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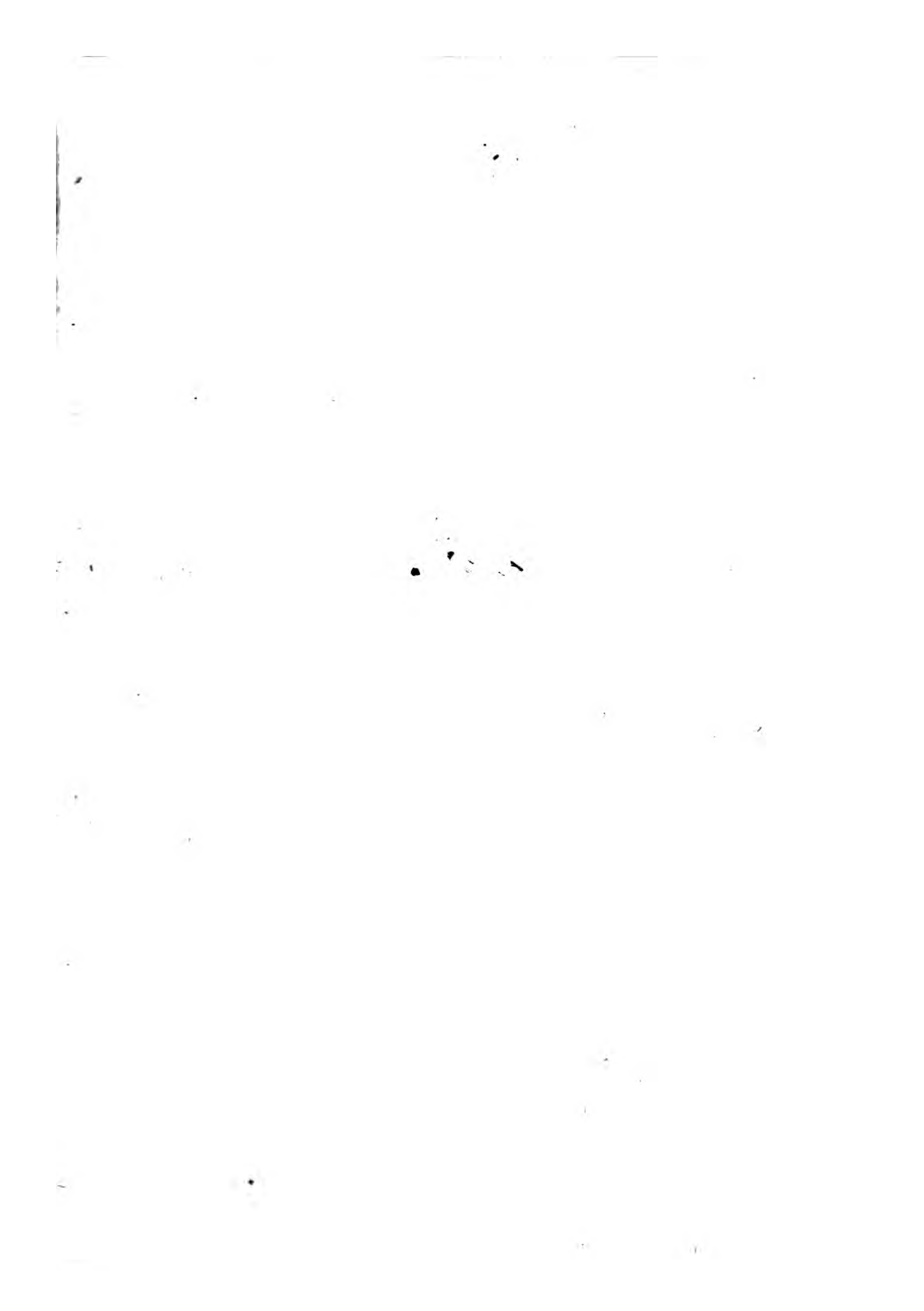
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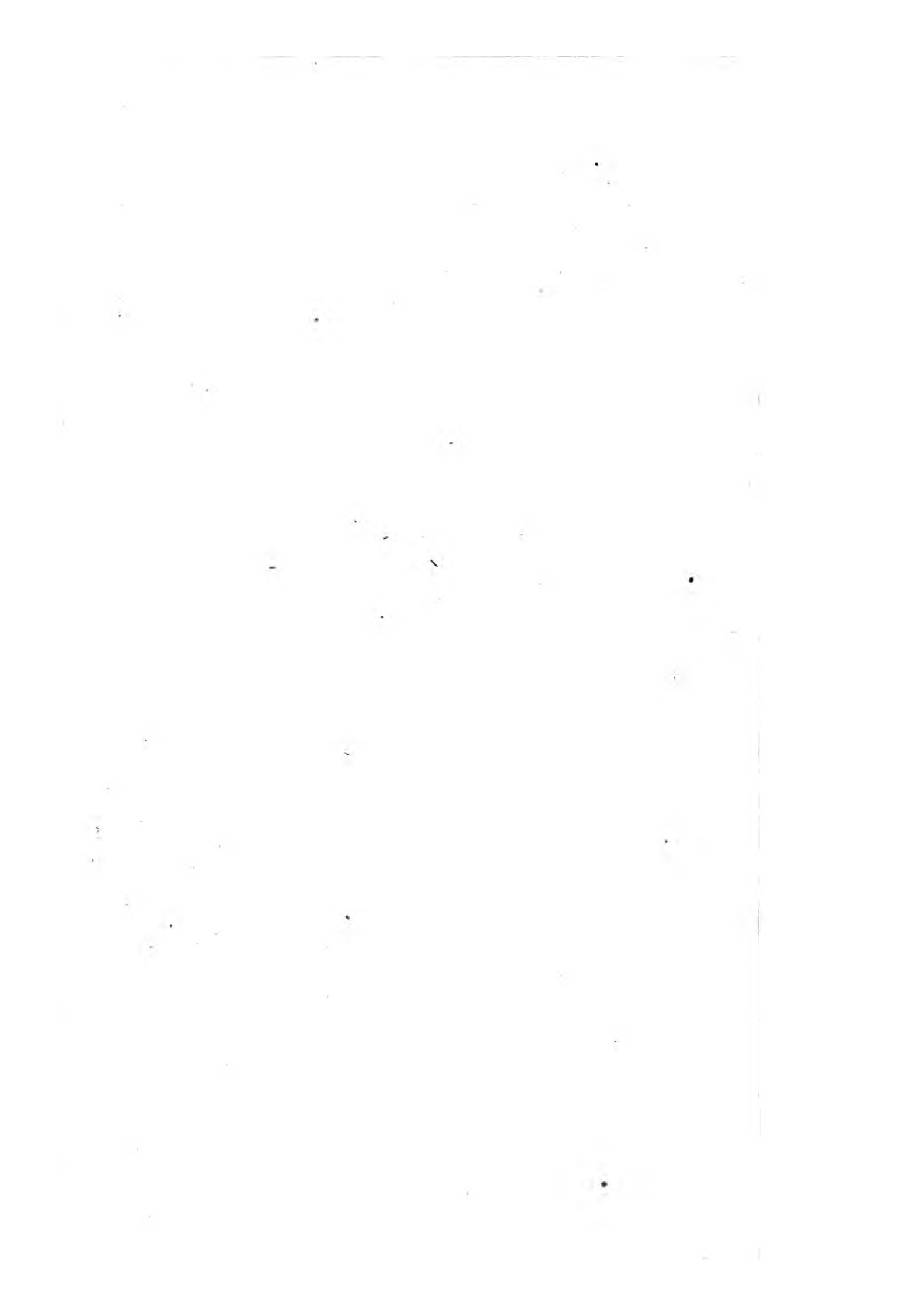


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45. 680.





A
K E Y
TO THE
COMMERCIAL ARITHMETIC :

IN WHICH ARE GIVEN
THE MODE OF ARRANGEMENT,
AND
SOLUTION OF EVERY QUESTION AND EXERCISE,
PROPOSED IN THAT WORK ;

COMPRISING
A System of Mercantile Calculation,
ACCORDING TO MODERN PRACTICE.

BY JAMES MORRISON,
ACCOUNTANT ;

AUTHOR OF "THE COMMERCIAL ARITHMETIC," "ELEMENTS OF BOOK-KEEPING,"
"MERCANTILE LETTER-WRITER," AND "YOUNG LADIES' GUIDE TO FIGURES
AND ACCOUNTS," ETC.

THIRD EDITION,
CORRECTED AND IMPROVED BY
SAMUEL MAYNARD,
EDITOR OF KEITH'S MATHEMATICAL WORKS, ETC. ETC.



LONDON :
PRINTED FOR
LONGMAN, BROWN, GREEN, AND LONGMANS,
PATERNOSTER-ROW.
1845.

LONDON :
Printed by A. SPOTTISWOODE,
New-Street-Square.

EDITOR'S PREFACE.

IN preparing for the press a new edition of the Key to Morrison's Arithmetic, the Editor has carefully revised and corrected the original solutions, and has reason to believe that few, if any, errors of consequence have escaped his attention. In accordance, too, with the present improved state of arithmetical science, he has introduced some important alterations, which, it is presumed, will be found alike useful to the learner and acceptable to the teacher. He therefore submits the volume to the public with the confident expectation that, in its present form, it will prove to be in every way more comprehensive and valuable than the former edition.

SAMUEL MAYNARD.

No. 8. Earl's Court, Leicester Square, London,
December 16. 1844.

ADVERTISEMENT

TO THE

SECOND EDITION.

IN consequence of the New System of Weights and Measures being introduced, several alterations both in the "ARITHMETIC," and in the "KEY," became necessary. In this edition, these alterations have been made, and *Solutions* to the additional new Questions are given.

An APPENDIX is also added, in which *Answers* are given to all the QUERIES annexed to the several Rules in the "COMMERCIAL ARITHMETIC."

The Author's view in proposing these Queries, was to impress upon the mind of the Pupil such rules and directions as were necessary for performing the most useful computations; and the method adopted by him, was to cause the Pupil to write out *Answers* to the Queries, and to commit them to memory as he went along. The Author had a copy of them, for the purpose of checking the Pupils' work with the least trouble; and the Teacher, by referring to the KEY, can do the same.

London, January 2. 1826.

AUTHOR'S PREFACE.

THE present Volume is intended to complete the "COMMERCIAL ARITHMETIC," as a proper Text-book for the use of Schools and Academies.

The judicious and candid Teacher will acknowledge, that when the young Pupil has ready access to the *Answers* to his Exercises, he is induced to attempt a *solution* before he has properly considered the nature of the Question. But though this were not the case, and though the Answers might, with propriety, have been annexed to the "Arithmetic," yet the Teacher will save much time, by having at hand the mode of arrangement, and solution of questions, in the System of Arithmetic which he uses in his school. Besides, many of the solutions in this volume are designed to illustrate some of the most difficult and important branches of commercial calculation; and on that account will be useful to the man of business.

As Arithmetic is, of all sciences, the most necessary to the Mercantile profession, to teach it well must be a matter of great importance to the community: it is therefore to be regretted, that the *Exercises* almost universally given in School-books on this subject, and taught in our seminaries, are so different from those in business; that young men, on entering the counting-house, find a great part of what they have acquired to be useless, and need to learn other methods, more adapted for facility and dispatch, before they can be of much service to their employers. This frequently subjects

the Teacher to the reproach of having neglected his Pupil; when the fact is, his attention has been directed to, *obsolete forms and methods*.

To remove this stigma is the design of the "COMMERCIAL ARITHMETIC;" in which the Author has endeavoured to point out and explain the most eligible methods of performing the various computations which occur in the practice of the Counting-house; with a proper set of Exercises subjoined, to be given to the Learner, in order that he may acquire a knowledge and facility in mercantile calculations. Since the publication of the "Arithmetic," the Author has had the satisfaction of finding the work approved of by experienced Teachers, and by several eminent commercial characters.

The method to be followed in using the "ARITHMETIC," and "KEY," will readily occur to the Teacher. He may appoint a certain number of Exercises in each Rule to be solved by the Learner: having performed his task, he will come up to the Teacher, who will inform him if his method and operations be correct, by referring to the KEY. If they be not right, the Teacher will give him the necessary information.

It only remains to be observed, that considerable care has been taken to have the solutions correct: most of the Exercises have been wrought by two or more persons before they were transcribed: it is therefore hoped that, notwithstanding the immense number of calculations contained in this Volume, few errors of importance have escaped notice.

MERCANTILE ACADEMY,
Wakefield, May 15. 1819.

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A

KEY

TO

THE SYSTEM OF COMMERCIAL ARITHMETIC.

SOLUTIONS OF THE QUESTIONS IN THE NEW WEIGHTS AND MEASURES.

[Page 10.]

<p>(1.) <i>lb. av. lb. tr.</i> As 144 : 175 :: 1080 <i>lbs. avoird.</i></p> $ \begin{array}{r} 175 \\ \hline 5400 \\ 7560 \\ 1080 \\ \hline 144 \left\{ \begin{array}{l} 12 \overline{)189000} \\ 12 \overline{)15750} \end{array} \right. \\ \hline \text{Ans. } \underline{\underline{1312 \text{ lbs. 6 oz.}}} \\ \text{ } \text{troy.} \end{array} $	<p>(3.) <i>cub. in. cub. in.</i> As 1109 : 1075 :: 2218 <i>win. bus.</i></p> $ \begin{array}{r} 1075 \\ \hline 11090 \\ 15526 \\ 2218 \\ \hline 1109 \overline{)2384350} (2150 \text{ imp.} \\ \underline{2218 \cdots} \text{ bus.} \\ 1663 \text{ Ans.} \\ 1109 \\ \hline 5545 \\ \underline{5545} \end{array} $
--	---

<p>(2.)... 1050 <i>lbs. troy.</i></p> $ \begin{array}{r} 144 \\ \hline 4200 \\ 4200 \\ 1050 \\ \hline 175 \overline{)151200} (864 \text{ lbs. avoird.} \\ \underline{1400 \cdots} \text{ Ans.} \\ 1120 \\ 1050 \\ \hline 700 \\ \underline{700} \end{array} $	<p>(4.)..... <i>qrs. bus.</i> 268.6</p> $ \begin{array}{r} 8 \text{ bushels.} \\ \hline 2150 \\ 1109 \\ \hline 19350 \\ 23650 \\ \hline 1075 \overline{)2384350} (2218 \text{ win. bus.} \\ \underline{2150 \cdots} \text{ Ans.} \\ 2343 \\ 2150 \\ \hline 1935 \\ 1075 \\ \hline 8600 \\ \underline{8600} \end{array} $
---	---

(5.) A tun of wine = 252 gals.
An old gallon = 231 cub. in.

$$\begin{array}{r}
 252 \\
 756 \\
 504 \\
 \hline
 277\frac{1}{4} \overline{)58212} \\
 \underline{4 4} \\
 1109 \overline{)232848} (209.96 = 209\frac{9}{10} \\
 \underline{2218 \cdot \cdot} \text{ gals. or 210} \\
 11048 \text{ gals. nearly} \\
 \underline{9981} \text{ Ans.} \\
 10670 \\
 \underline{9981} \\
 6890 \\
 \underline{6654} \\
 \underline{\underline{236, \&c.}}
 \end{array}$$

(7.)..... 2160 win. bushels.

$$\begin{array}{r}
 1075 \\
 \hline
 10800 \\
 15120 \\
 2160 \quad 8) \\
 \hline
 1109 \overline{)2322000} (2093.77 \text{ bush.} \\
 \underline{2218 \cdot \cdot} 261 \text{ qr. } 5\frac{3}{4} \text{ bus.} \\
 10400 \text{ Ans.} \\
 \underline{9981} \\
 4190 \\
 \underline{3327} \\
 8630 \\
 \underline{7763} \\
 8670 \\
 \underline{7763} \\
 \underline{\underline{907, \&c.}}
 \end{array}$$

(6.) A butt of beer contains
108 gals.
A beer gallon 282 cub. in.

$$\begin{array}{r}
 2256 \\
 282 \\
 \hline
 277\frac{1}{4} \overline{)30456} \\
 \underline{4 4} \\
 1109 \overline{)121824} (109.85 \text{ or} \\
 \underline{1109 \cdot \cdot} 109 \frac{7}{8} \text{ gals.} \\
 10924 \text{ Ans.} \\
 \underline{9981} \\
 9430 \\
 \underline{8872} \\
 5580 \\
 \underline{5545} \\
 \underline{\underline{35, \&c.}}
 \end{array}$$

(8.)..... qrs. bush.
84 4
8 qrs. = 1 bush.

$$\begin{array}{r}
 676 \\
 1075 \\
 \hline
 3380 \\
 4732 \\
 676 \\
 \hline
 1109 \overline{)727700} (656.176 \text{ new bush.} \\
 \underline{6654 \cdot \cdot} \text{ or } 656 \text{ bus. } \frac{7}{10} \text{ pe.} \\
 6230 \\
 \underline{5545} \\
 6850 \quad \frac{1}{4}) 656 \frac{7}{8} \text{ bus. @ } 5/ \\
 \underline{6654} \quad \text{£164.0.10}\frac{1}{2} \\
 1960 \text{ Ans.} \\
 \underline{1109} \\
 8510 \\
 \underline{7763} \\
 7470 \\
 \underline{6654} \\
 \underline{\underline{816}}
 \end{array}$$

- (15.) Five hundred billions, seven hundred and five thousand, and sixty millions, eight hundred and five thousand, and three.
 (16.) Nine thousand, two hundred and eight billions, three hundred and nine thousand, four hundred and ten millions, three hundred and seventy-nine thousand, nine hundred and ninety-nine.

CASE II., page 13.

EXERCISES.

1. Wales, contains	611,788	<i>inhabitants.</i>
2. England	9,538,827	
3. Scotland	1,805,688	
4. Ireland	4,500,000	
5. Great Britain and Ireland	16,456,303	
6. France, the population is	27,267,148	
7. National debt	780,952,381	<i>in guineas.</i>
Ditto	16,400,000,000	<i>in shillings.</i>
8. British Property, value.....	2,736,640,000	<i>in pounds.</i>

 ADDITION.

EXERCISES, page 16.

(1.) $\underline{\underline{3591}} = \text{Ans.}$	(2.) $\underline{\underline{4257}} = \text{Ans.}$	(3.) $\underline{\underline{42591}} = \text{Ans.}$	(4.) $\underline{\underline{24069}} = \text{Ans.}$
(5.) $\underline{\underline{10545}} = \text{An.}$	(6.) $\underline{\underline{54320}} = \text{An.}$	(7.) $\underline{\underline{98760}} = \text{An.}$	(8.) $\underline{\underline{467111}} = \text{An.}$
(9.) $\underline{\underline{36267}} = \text{Ans.}$	(10.) $\underline{\underline{38914}} = \text{A.}$	(11.) $\underline{\underline{26561}} = \text{A.}$	(12.) $\underline{\underline{133143}} = \text{A.}$

ADDITIONAL EXERCISES, page 16.

(1)... 531	(2)... 645	(3)... 81	(4)... 6290
84	198	1160	764
1176	10950	801	613
19	78	45	4731
1860	30901	198	5214
365	89	1010	289
91	1234	765	3102
910	1560	95	41
$\underline{\underline{5036}} = \text{Ans.}$	$\underline{\underline{45655}} = \text{Ans.}$	$\underline{\underline{4155}} = \text{Ans.}$	$\underline{\underline{21044}} = \text{Ans.}$

ADDITION.

7

(5.)... 92	(6.) 10467530	(7.) 909	(8.) 660000
853	37604	9090	666666
7654	6325493	90009	55505
65432	41320	1111	300033
543210	856758	<u>101119</u>	<u>1682204</u>
4321098	459	= Ans.	= Ans.
321976	2940275	(9.) 11000	(10.) 2500
2109	365	1100	1050
1098	10049421	11	730
182	1673	1707	7300
<u>5263704</u>	98	<u>13818</u>	<u>1817</u>
= Ans.	497324	= Ans.	<u>13397</u>
	7405		= Ans.
	<u>32040076</u>		
	<u>63265801</u>		
	= Ans.		

QUESTIONS FOR PRACTICE, page 17.

(1.)... East Riding	167353
North ditto	152445
West ditto	653315
	<u>Ans. 973113 inhabitants.</u>

(2.)... Population of Wales.....	611788
of England...	9538827
of Scotland...	1805688
of Ireland.....	4500000
	<u>Ans. 16456303 inhabitants.</u>

(3.) January 31 days.	... July 31	(4.) Cash	£150
Febr. 28	August 31	House	1050
March 31	Sept. 30	Farm	2500
April 30	October 31	Goods	976
May 31	Novem. 30	Debts	679
June 30	Decem. 31		<u>Ans. £5355</u>
<u>Ans. 181 days.</u>	<u>Ans. 184 days.</u>		

(5) To A.....	£125	(6) Wheat ...	^{qrs.} 199	(7.) No. 1...	137 gals.
B	236	Barley ...	220	2...	140
C.....	109	Oats	168	3...	139
D	83	Pease	216	4...	136
E	105		<u>Ans. 803</u>	5...	141
F.....	219			6...	140
G.....	401			7...	138
H.....	21			8...	140
<u>Ans. £1299</u>				9...	118
				10...	139
				<u>Ans. 1368 gals.</u>	

(8.)... St. Paul's Cathedral.....£800000
 Royal Exchange..... 80000
 Mansion House 40000
 Blackfriars Bridge 152840
 Westminster Bridge..... 389000
 Monument 13000
Ans. The expense is £1474840

<i>Chap. v.</i>	<i>years.</i>	<i>Chap. xi.</i>	<i>years.</i>
(9.) <i>ver.</i> 3. Adam.....	130	<i>ver.</i> 10. Shem	2*
6. Seth.....	105	12. Arphaxad ..	35
9. Enos.....	90	14. Salah.....	30
12. Cainan.....	70	16. Eber.....	34
15. Mehaleel.....	65	18. Peleg.....	30
18. Jared	162	20. Reu	32
21. Enoch.....	65	22. Serug	30
25. Methuselah ..	187	24. Nahor	29
28. Lamech	182	26. Terah	70
<i>Ch. vii.</i> 6. Noah, at } the Flood } 600		<i>Ch. xvii.</i> 1. Abraham } when called } 99	
<i>The age of the</i> } <i>world at the Flood</i> } <u>1656 yrs.</u>		<i>Time to the call</i> } <i>of Abraham</i> } <u>391 yr</u>	

Then $1656 + 391 = 2047 = \text{Ans.}$

(10.) Taxes in 1793..... £190312
 1794..... 606878
 1795..... 958481
 1796..... 1425951
 1797..... 2565301
 1798..... 950150
 1799..... 837352
 1800..... 884420
 1801..... 1364654
 1802..... 1311580
Ans. The sum is £11095079

COMPOUND ADDITION.

EXERCISES, page 19 to 23.

STERLING MONEY.

<i>Borr. from sundries.</i>	<i>Paid to sundries.</i>	<i>Lent to sundries.</i>
(1.) <u>£3962 . 18 . 9½</u>	(2.) <u>£1652 . 6 . 3¼</u>	(3.) <u>£8307 . 14 . 11</u>
<i>Rec. from sundries.</i>	<i>Owing by sundries.</i>	<i>Owing to sundries.</i>
(4.) <u>£2182 . 16 . 6</u>	(5.) <u>£5633 . 1 . 6½</u>	(6.) <u>£4896 . 8 . 2</u>

* Add 2 years, Shem being born that time after the Flood.

TROY WEIGHT.

- (7.) $\begin{array}{r} \text{oz. dwt. grs.} \\ 1 \ . \ 11 \ . \ 6 \\ \hline \end{array}$ (8.) $\begin{array}{r} \text{lbs. oz. dwt. grs.} \\ 1912 \ . \ 0 \ . \ 18 \ . \ 8 \\ \hline \end{array}$ (9.) $\begin{array}{r} \text{lbs. oz. dwt.} \\ 452 \ . \ 4 \ . \ 11 \\ \hline \end{array}$
- (10.) $\begin{array}{r} \text{Open Accounts.} \\ \pounds 19585 \ . \ 4 \ . \ 7 \\ \hline \end{array}$ (11.) $\begin{array}{r} \text{Accepted Bills.} \\ \pounds 39230 \ . \ 16 \ . \ 3 \\ \hline \end{array}$ (12.) $\begin{array}{r} \text{Notes Payable.} \\ \pounds 38578 \ . \ 0 \ . \ 6 \\ \hline \end{array}$

AVOIRDUPOIS WEIGHT.

- (13.) $\begin{array}{r} \text{lbs. oz. drs.} \\ 230 \ . \ 7 \ . \ 10 \\ \hline \end{array}$ (14.) $\begin{array}{r} \text{stones. lbs.} \\ 152 \ . \ 2 \\ \hline \end{array}$ (15.) $\begin{array}{r} \text{cwt. qr. lbs.} \\ 1117 \ . \ 3 \ . \ 10 \\ \hline \end{array}$ (16.) $\begin{array}{r} \text{tons. cwt. qr.} \\ 536 \ . \ 1 \ . \ 1 \\ \hline \end{array}$
- (17.) 329 Casks, 4491 Cwt. 0qr. 19lbs. Amount $\pounds 17346 \ . \ 3s \ . \ 2d.$

CLOTH MEASURE.

- (18.) $\begin{array}{r} \text{yds. qr. na.} \\ 699 \ . \ 2 \ . \ 3 \\ \hline \end{array}$ (19.) $\begin{array}{r} \text{Eng. ells. qr. nas. in.} \\ 1118 \ . \ 2 \ . \ 2 \ . \ 0\frac{1}{2} \\ \hline \end{array}$ (20.) $\begin{array}{r} \text{yds. qr. na.} \\ 514 \ . \ 2 \ . \ 3 \\ \hline \end{array}$

LONG MEASURE.

- (21.) $\begin{array}{r} \text{miles. fur. po. yds.} \\ 441 \ . \ 4 \ . \ 11 \ . \ 3\frac{1}{4} \\ \hline \end{array}$ (22.) $\begin{array}{r} \text{miles. fur. yds. ft. in.} \\ 2376 \ . \ 7 \ . \ 78 \ . \ 0 \ . \ 4 \\ \hline \end{array}$ (23.) $\begin{array}{r} \text{leag. mile. fur.} \\ 773 \ . \ 1 \ . \ 6 \\ \hline \end{array}$

LAND MEASURE.

- (24.) $\begin{array}{r} \text{acres. ro. per.} \\ 415 \ . \ 1 \ . \ 10 \\ \hline \end{array}$ (25.) $\begin{array}{r} \text{acres. ro. per. yds.} \\ 1476 \ . \ 3 \ . \ 32 \ . \ 10 \\ \hline \end{array}$ (26.) $\begin{array}{r} \text{acres. ro. per.} \\ 713 \ . \ 3 \ . \ 37 \\ \hline \end{array}$

WINE MEASURE.

- (27.) $\begin{array}{r} \text{gals. qt. pt.} \\ 388 \ . \ 2 \ . \ 1 \\ \hline \end{array}$ (28.) $\begin{array}{r} \text{hhds. gals. pt.} \\ 263 \ . \ 17 \ . \ 2 \\ \hline \end{array}$
- (29.) $\begin{array}{r} \text{tuns. hhd. gals.} \\ 611 \ . \ 1 \ . \ 19 \\ \hline \end{array}$ (30.) $\begin{array}{r} \text{tuns. pipe. gals.} \\ 462 \ . \ 0 \ . \ 79 \\ \hline \end{array}$

ALE OR BEER MEASURE.

- (31.) $\begin{array}{r} \text{gals. qt. pt.} \\ 231 \ . \ 1 \ . \ 1 \\ \hline \end{array}$ (32.) $\begin{array}{r} \text{bar. fir. gals. pt.} \\ 1035 \ . \ 2 \ . \ 2 \ . \ 5 \\ \hline \end{array}$ (33.) $\begin{array}{r} \text{hhds. gals. qt.} \\ 724 \ . \ 21 \ . \ 3 \\ \hline \end{array}$

CORN MEASURE.

- (34.) $\begin{array}{r} \text{qr. bus. peck.} \\ 781 \ . \ 1 \ . \ 0 \\ \hline \end{array}$ (35.) $\begin{array}{r} \text{lasts. qr. bus. pecks.} \\ 501 \ . \ 0 \ . \ 3 \ . \ 2 \\ \hline \end{array}$ (36.) $\begin{array}{r} \text{loads. qr. bus.} \\ 677 \ . \ 4 \ . \ 0 \\ \hline \end{array}$

MEASURE OF TIME.

$$(37.) \begin{array}{r} \text{years. days.} \\ \underline{1248.94} \end{array}$$

$$(38.) \begin{array}{r} \text{days. ho. min. sec.} \\ \underline{700.0.30.37} \end{array}$$

$$(39.) \begin{array}{r} \text{mo. we. days.} \\ \underline{98.1.5} \end{array}$$

QUESTIONS FOR PRACTICE.

Pages 24. and 25.

(1.) The Greater .£22 . 1 . 0	(2.) Lent.....£10 . 15 . 0
Less 11 . 19 . 6	Four Guin.... 4 . 4 . 0
<u>Ans. £34 . 0 . 6</u>	15 Shill..... 0 . 15 . 0
	A Dollar 0 . 4 . 6
	<u>Ans. £15 . 18 . 6</u>

(3.) Paid in part £10 . 0 . 0	(4.) Expended....£15 . 14 . 10
9½ Guineas... 9 . 19 . 6	Brings home 3 . 13 . 6
<u>Ans. £19 . 19 . 6</u>	<u>Ans. £19 . 8 . 4</u>

(5.) Paid in part £19 . 19 . 0	(6.) Bank Notes £175 . 10 . 0
Ditto..... 37 . 10 . 0	Gold..... 22 . 1 . 0
Ditto..... 15 . 10 . 6	Silver 0 . 19 . 6
Balance..... 57 . 10 . 6	Copper..... 0 . 7 . 9
<u>Ans. £130 . 10 . 0</u>	Bill due..... 96 . 11 . 10
	<u>Ans. £295 . 10 . 1</u>

(7.) Goods.....£432 . 11 . 8	(8.) Goods.....£1250 . 10 . 0
Freight ... 11 . 7 . 6	Charges 45 . 14 . 7
Charges... 6 . 13 . 10	Commission 32 . 8 . 3
Gain..... 112 . 10 . 3	Insurance... 57 . 10 . 9
<u>Ans. £563 . 3 . 3</u>	<u>Ans. £1386 . 3 . 7</u>

(9.) Seven Bags of Dollars.	(10.) From A.....£150 . 15 . 4
	B..... 301 . 10 . 8
No. 1..... $\begin{array}{r} \text{lbs. oz. dwt.} \\ 72 . 1 . 10 \end{array}$	C..... 452 . 6 . 0
2..... 72 . 1 . 10	<u>Ans. £904 . 12 . 0</u>
3..... 72 . 1 . 10	
4..... 72 . 3 . 0	
5..... 72 . 2 . 0	
6..... 72 . 2 . 10	
7..... 72 . 2 . 10	
<u>Ans. £505 . 2 . 10</u>	

(11.) Paid	£ 7 . 10 . 6
Repairs.....	0 . 18 . 10
Goods	4 . 3 . 2
Half Year	£12 . 12 . 6
Half Year	12 . 12 . 6
	<u>Ans. £25 . 5 . 0</u>

(12.) Two pieces of Gold Plate, weighing.....	oz.	dwt.	grs.
Three Gold Rings	0	8	6
Five gold Bracelets	1	15	12
Two Ear Rings.....	0	2	20
	<u>Whole Weight, 2 . 18 . 10 Ans.</u>		

(13.) Six Bales of Cotton.	cwt.	qr.	lb.
No. 1	2	2	17
2	2	3	10
3	2	2	21
4	2	1	27
5	2	3	0
6	2	2	11
	<u>Ans. 16 . 0 . 2</u>		

(14.) From A.....	£62 . 10 . 0
B.....	75 . 12 . 6
C.....	46 . 19 . 0
D.....	21 . 0 . 0
E.....	27 . 15 . 0
	<u>Ans. £233 . 16 . 6</u>

(15.) Bill	£109 . 11 . 7
Balance....	10 . 8 . 5
	<u>Ans. £120 . 0 . 0</u>

(16.) Seven Chests of Tea.	cwt.	qr.	lb.
No. 1	0	3	24
2	1	0	12
3	1	1	8
4	0	2	26
5	0	3	21
6	1	0	17
7	0	3	25
	<u>Ans. 7 . 0 . 21</u>		

(17.) Blue.....	yds.	qr.	na.
Black	56	1	3
Brown	49	3	2
Scarlet	84	0	3
Mixt	65	3	0
	120	0	1
	<u>Ans. 376 . 1 . 1</u>		

(18.) Port	pip.	hd.	gal.	pt.
Claret....	2	0	48	0
Madeira.	0	1	60	5
Sherry ...	0	0	62	7
Lisbon ...	2	1	0	0
	1	0	36	0
	<u>Ans. 7 . 1 . 18 . 4</u>			

(19.) A.'s Farm.....	a.	r.	p.	
Garden	59	2	25	
B.'s Farm.....	0	3	20	
Garden	65	2	0	
C.'s Farm.....	1	0	20	
Garden	74	0	30	
	0	2	28	
	<u>Ans. 202 . 0 . 3</u>			

(20.) 1st Field Measures	A.	R.	P.	Let for	£37 . 5 . 7
2d, Ditto,.....	7	2	25	—	33 . 19 . 6
3d, Ditto,.....	6	3	18	—	26 . 19 . 10
4th, Ditto,.....	5	1	19	—	22 . 19 . 8
5th, Ditto,.....	4	2	15	—	19 . 12 . 6
	3	3	28		
	<u>1st Ans. 28 . 1 . 25</u>			<u>2d Ans. £140 . 17 . 1</u>	

(21.) From London to Biggleswade is.....	ms.	fur.	po.	yds.	ft.
to Stilton	46	2	18	3	1½
to Newark	20	0	19	0	0
to Doncaster	50	1	17	4	0
and to York.....	37	1	0	7	2
	37	0	12	1	0
	<u>Ans. 190 . 5 . 28 . 5 . 0½</u>				

(22.) Ground for Building	£ 583 . 10 . 6
Mason's Bill.....	1268 . 18 . 10
Carpenter's ditto.....	1521 . 17 . 9
Slater's ditto	198 . 14 . 3
Smith's ditto	65 . 18 . 6
Glazier's ditto.....	295 . 4 . 10
Painter's ditto.....	76 . 10 . 11
Upholsterer's ditto.....	220 . 16 . 8
Petty Charges	19 . 14 . 11
	<u>Ans. £4251 . 7 . 2</u>

(23.) Imported Cotton, value	£3674 . 18 . 6
Agent's Commission	90 . 16 . 8
Freight	98 . 17 . 9½
Insurance	126 . 13 . 4
Duty	115 . 19 . 10½
Shipping Charges	101 . 14 . 7
Cellar-rent.....	15 . 10 . 0
Gain by the Sales	365 . 15 . 0
	<u>Ans. £4591 . 5 . 9</u>

(24.)	Wheat.		Price.		Barley.		Price.		Oats.		Price.	
	<i>qrs. bus.</i>	<i>£. s. d.</i>	<i>qrs. bus.</i>	<i>£. s. d.</i>	<i>qrs. bus.</i>	<i>£. s. d.</i>	<i>qrs. bus.</i>	<i>£. s. d.</i>	<i>qrs. bus.</i>	<i>£. s. d.</i>	<i>qrs. bus.</i>	<i>£. s. d.</i>
From A.	145 . 3	435 . 7 . 6	199 . 6	350 . 10 . 3	—	—	—	—	—	—	—	—
B.	—	—	100 . 0	175 . 12 . 0	132 . 2	198 . 15 . 0	—	—	—	—	—	—
C.	87 . 6	310 . 12 . 9	223 . 4	389 . 15 . 0	—	—	—	—	—	—	—	—
D.	—	—	—	—	118 . 0	177 . 13 . 4	—	—	—	—	—	—
E.	176 . 7	616 . 17 . 10	430 . 4	752 . 10 . 0	—	—	—	—	—	—	—	—
F.	—	—	112 . 6	196 . 18 . 9	215 . 2	421 . 9 . 8	—	—	—	—	—	—
	410 . 0	1362 . 18 . 1	1066 . 4	1865 . 6 . 0	465 . 4	797 . 18 . 0	—	—	—	—	—	—

ABSTRACT.

Stock of each kind, and value on hand.

410	Quarters Wheat	£1362 . 18 . 1
1066½	ditto Barley	1865 . 6 . 0
465½	ditto Oats.....	797 . 18 . 0
1942	Quarters, and the value=	£4026 . 2 . 1 <i>Ans.</i>

SUBTRACTION.

EXERCISES, pages 27. and 28.

(1.) Diff. 134112 (2.) 610964 (3.) 96279 (4.) 99271

(5.) Rem. 764710 (6.) 10386 (7.) 16802 (8.) 1234668

(9.) From 12054860 (10.) From 1000000 (11.) From 705043
 Take 506091 Sub. 99019 Sub. 30904
Ans. 11448769 *Ans.* 900981 *Ans.* 674139

(12.) From 924999 (13.) From 110001 (14.) From 100000000
 Take 880008 Take 99999 Take 123456789
Ans. 44991 *Ans.* 10002 *Ans.* 876543211

(15.) From 1000000 (16.) From 100020 (17.) From 23000
 Sub. 12111 Sub. 1817 Take 15005
Ans. 987889 *Ans.* 98203 *Ans.* 7995

(18.) From 1500000	(19.) From 1000000000	(20.) Take 8009008
Sub. 906506	Sub. 709080706	From 9111117
<u>Ans. 593494</u>	<u>Ans. 290919294</u>	<u>Ans. 1102109</u>

QUESTIONS FOR PRACTICE, page 28.

(1.) June... 6 days.	(2.) Dec. ... 6 days.	(3.) Dec. ... 9 days.
July ... 31	Jan. ... 31	Jan. ... 31
Aug. ... 31	Feb. ... 28	Feb. ... 28
Sept. ... 30	Mar. ... 25	Mar. ... 31
Oct. ... 31	<u>Ans. 90 days.</u>	April ... 30
Nov. ... 30		May ... 14
Dec. ... 25		<u>Ans. 143 days.</u>
<u>Ans. 184 days.</u>		

(4.) From 1846 yrs.	(5.) London contains ^{inhabitants.} 1050000
Subtract 1215	Edinburgh 102987
<u>Since Mag. Charta 631 yrs. 1st Ans.</u>	<u>Ans. 947013</u>

From 1817
Act passed 1678
<u>Since the Act 139 yrs. 2nd Ans.</u>

(6.) Britain and Ireland ^{inhabitants.} 16456303	(7.) France contains ^{inhabitants.} 27267148
England contains... 9538827	Britain and Ireland 16456303
Wales 611788	<u>Ans. 10810845</u>
Scotland 1805688	
<u>11956303</u>	
<u>Ireland. Ans. 4500000</u>	

(8.) Property Tax... £11359229	(9.) Annual exports £14950000
Payments only 3100631	Annual imports 1183300
<u>Sum in arrears £8258598 Ans.</u>	<u>Ans. £13766700</u>

(10.) An Open Account..... £ 63
A Bill of..... 194
A purchase for Cash ... 78
<u>£335</u>
Six £5 notes £ 30
Ten £10 notes 100
Twenty guinea-notes... 21
<u>151</u>
<u>Ans. £184</u>

(11.) A merchant imported,	<i>of which he sold</i>
12 pun. rum, No. 1.....114 gals.	No. 1...114 gals.
2.....110	
3.....100	3...100
4.....109	
5..... 99	5... 99
6.....100	
7.....106	7...106
8.....110	
9.....112	9...112
10.....104	
11.....107	<i>Sold.....</i> <u>531</u> <i>2nd Ans.</i>
12.....102	

Gallons imported 1273 1st Ans.

gals. { Imported 1273
 Sold..... 531
 On hand 742 3d Ans.

(12.) Amount of Taxes £28862795	Navy.....£ 6160000
Land and Malt Taxes 2475000	Army 3000000
Profit of Lottery ... 400000	Land Service.. 500000
Annual revenue..... <u>£31757795</u>	Misc. Services 1000000
	Civil List 900000
	Int. of debt ... 25314811
	<i>Annual Expences</i> 36874811
	<i>Income</i> 31757795
	<i>Ans.</i> <u>£ 5117016</u>

COMPOUND SUBTRACTION.

EXERCISES, page 30. to 32.

- (1.) Balance £ 76 . 9 . 11 (2.) £126 . 14 . 3½ (3.) £799 . 6 . 6¾
 (4.) Remains £256 . 3 . 7¾ (5.) £ 88 . 7 . 9¾ (6.) £580 . 6 . 6½
 (7.) Balance £130 . 1 . 5 (8.) £ 9 . 0 . 2¼ (9.) £ 82 . 9 . 9
 (10.) Dr. Side ...£1436 . 14 . 7 (11.)Dr. Side ...£3981 . 9 . 9
 Cr. Side ... 1204 . 18 . 7 Cr. Side ... 4069 . 19 . 11
 Balance £ 231 . 16 . 0 Balance £ 88 . 10 . 2
 (11.) Amount of my drafts£6978 . 1 . 0 Cr.
 remittances 6335 . 6 . 10 Dr.
 Balance to be remitted£ 642 . 14 . 2 Cr.

TROY WEIGHT.

$$(12.) \text{ Remains } \begin{array}{l} \text{oz. dwt. grs.} \\ \underline{29.8.21} \end{array} \quad (13.) \begin{array}{l} \text{lb. oz. dwt. grs.} \\ \underline{28.9.2.16} \end{array} \quad (14.) \begin{array}{l} \text{lbs. oz. dwt.} \\ \underline{87.10.17} \end{array}$$

AVOIRDUPOIS WEIGHT.

$$(15.) \text{ Rem. } \begin{array}{l} \text{lb. oz. drs.} \\ \underline{103.6.14} \end{array} \quad (16.) \begin{array}{l} \text{cwt. qr. lb.} \\ \underline{264.2.17} \end{array} \quad (17.) \begin{array}{l} \text{tons. cwt. qr.} \\ \underline{103.1.2} \end{array} \quad (18.) \begin{array}{l} \text{st. lb.} \\ \underline{28.12} \end{array}$$

$$(19.) \begin{array}{l} \text{Gross weight of the 10 hhds.....} \\ \text{Tare of ditto} \\ \text{Net weight} \end{array} \begin{array}{l} \text{cwt. qr. lb.} \\ 161.0.24 \\ 7.3.5 \\ \underline{153.1.19} \end{array}$$

CLOTH MEASURE.

$$(20.) \text{ Remains } \begin{array}{l} \text{yds. qrs. na.} \\ \underline{40.2.3} \end{array} \quad (21.) \begin{array}{l} \text{yds. qrs. na. in.} \\ \underline{924.2.2.1\frac{3}{4}} \end{array} \quad (22.) \begin{array}{l} \text{ells. qrs. na.} \\ \underline{93.0.3} \end{array}$$

LONG MEASURE.

$$(23.) \text{ Remains } \begin{array}{l} \text{yds. ft. in.} \\ \underline{89.1.11} \end{array} \quad (24.) \begin{array}{l} \text{miles. fur. po. yds.} \\ \underline{1460.6.35.4} \end{array} \quad (25.) \begin{array}{l} \text{lea. mil. fur.} \\ \underline{28.1.5} \end{array}$$

LAND MEASURE.

$$(26.) \text{ Remains } \begin{array}{l} \text{acres. ro. per.} \\ \underline{40.3.32} \end{array} \quad (27.) \begin{array}{l} \text{acres. ro. per. yds.} \\ \underline{401.3.4.27} \end{array} \quad (28.) \begin{array}{l} \text{acres. ro. per.} \\ \underline{76.1.23} \end{array}$$

WINE AND SPIRIT MEASURE.

$$(29.) \text{ Remains } \begin{array}{l} \text{hhd. gal. pt.} \\ \underline{19.14.4} \end{array} \quad (30.) \begin{array}{l} \text{pip. hhd. gal. qt.} \\ \underline{15.0.47.3} \end{array} \quad (31.) \begin{array}{l} \text{tun. hhd. gal.} \\ \underline{59.2.35} \end{array}$$

ALE AND BEER MEASURE.

$$(32.) \text{ Ans. } \begin{array}{l} \text{gal. qt. pt.} \\ \underline{100.2.1} \end{array} \quad (33.) \begin{array}{l} \text{bar. fir. gal.} \\ \underline{8.2.7} \end{array} \quad (34.) \begin{array}{l} \text{butt. hhd. gal. qt.} \\ \underline{82.0.41.3} \end{array}$$

CORN AND COAL MEASURE.

$$(35.) \text{ Ans. } \begin{array}{l} \text{qr. bus. pec.} \\ \underline{151.5.3} \end{array} \quad (36.) \begin{array}{l} \text{lasts. qr. bus. pec.} \\ \underline{88.8.6.2} \end{array} \quad (37.) \begin{array}{l} \text{score. chal. bus.} \\ \underline{82.19.19} \end{array}$$

MEASURE OF TIME.

$$(38.) \text{ Ans. } \begin{array}{l} \text{days. ho. min.} \\ \underline{100.18.51} \end{array} \quad (39.) \begin{array}{l} \text{yrs. mo. we. da.} \\ \underline{11.11.1.6} \end{array} \quad (40.) \begin{array}{l} \text{yrs. da.} \\ \underline{907.301} \end{array}$$

QUESTIONS FOR PRACTICE.

Page 32. to 34.

- (1.) From £52 . 10 . 0
 Subtract 19 . 19 . 9½
Ans. £32 . 10 . 2½
- (2.) From £40 . 0 . 0
 A bill of..... 17 . 11 . 10
 Another of. 22 . 1 . 0
Subtract ... 39 . 12 . 10
Ans. £ 0 . 7 . 2

- (3.) Sent to pay } £120 . 0 . 0
 a bill }
 Received back 7 . 14 . 7
Ans. £112 . 5 . 5
- (4.) Gig and horse £105 . 0 . 0
 Horse cost.... 37 . 10 . 0
 Gig cost..... 67 . 10 . 0
Subtract..... 37 . 10 . 0
Ans. £ 30 . 0 . 0

- (5.) A clerk's salary £73 . 10 . 0
 He received.. 5 . 0 . 0
 Ditto..... 6 . 0 . 0
 Ditto..... 10 . 10 . 0
 Ditto..... 8 . 6 . 0
 Ditto 15 . 10 . 0
 Ditto 12 . 12 . 0
Subtract..... 57 . 18 . 0
Ans. £15 . 12 . 0
- (6.) Lent £100 . 0 . 0
 Received.... 13 . 13 . 6
 Ditto 1 . 19 . 0
 Ditto 21 . 0 . 0
In all 36 . 12 . 6
Ans. £ 63 . 7 . 6

- (7.) Debit side £1050 . 0 . 0
 Credit side 561 . 9 . 6
 Ditto 15 . 17 . 3
 Ditto 197 . 5 . 7
 Ditto 41 . 11 . 10
 Ditto 8 . 3 . 9
Amount, Cr. side £824 . 7 . 11
Ans. Balance £225 . 12 . 1
- (8.) Received.... £3 . 3 . 0
 Monday 0 . 7 . 3½
 Tuesday.... 0 . 10 . 9
 Wednesday 0 . 6 . 10¼
 Thursday... 0 . 5 . 8
 Friday 0 . 8 . 7¾
 Saturday ... 0 . 12 . 6
Subtract ... 2 . 11 . 8½
Ans. £0 . 11 . 3½

- (9.) An Estate £300 . 0 . 0
 Land tax 15 . 15 . 0
 Factor 15 . 0 . 0
 Repairs 27 . 10 . 0
Deduct 58 . 5 . 0
Ans. 241 . 15 . 0

(10.) For the Navy £9951378 . 13 . 1
 Demands..... 8174711 . 14 . 2¼
Ans. £1776666 . 18 . 10¾

(11.) Three p Cents £317395183 . 4 . 5¼
 Land tax 10454778 . 1 . 8
 Commission 29089400 . 0 . 0
 Deduct..... 39544178 . 1 . 8
Ans. £277851005 . 2 . 9¼

(12.) Sales of } £1667. 5.11
 Dollars }
 Sundry charges 41.19. 7
 Brokerage 2. 1. 8
 Commission 8. 6. 8
 Deduct 52. 7. 11
Ans. £1614.18. 0

(13.) Sales of } £1675.10. 0
 Sugar }
 Duty 561. 9. 6
 Dock dues..... 15. 7. 3
 Freight..... 197.15.10
 Primage..... 22.19. 9
 Interest..... 5. 8. 6
 Brokerage..... 8. 3. 6
 Commission 41.17. 9
 Deduct..... 853. 2. 1
Ans. £ 822. 7. 11

(14.) Goods valued at £617 . 10 . 0
 Open Accounts 290 . 12 . 9
 Two Bills..... 220 . 13 . 0
 Amount of his Effects..... £1128 . 15 . 9
 He owes to A..... £430 . 15 . 0
 to B 347 . 11 . 6
 to C 275 . 13 . 7
 to D..... 120 . 18 . 4
 In Accounts and Bills 701 . 12 . 0
 Amount of his Debts..... £1876 . 10 . 5
Ans. £ 747 . 14 . 8

(15.) A Silversmith buys *lbs. oz. dwt.* 10 . 4 . 0
 He makes a pair of salts..... *lb. oz. dwt.* 0 . 4 . 7
 12 table spoons..... 3 . 0 . 11
 A cup 0 . 9 . 18
 A tankard..... 1 . 4 . 3
 A tureen 1 . 6 . 9
7 . 1 . 8
Ans. lb. 3 . 2 . 12

(16.) Six chests of Tea.

	<i>cwt.</i>	<i>qr.</i>	<i>lb.</i>	<i>lb.</i>
No. 1. Gros.	0	3	26	Tare 26
2. —	1	0	5	— 26
3. —	1	0	7	— 26
4. —	1	0	3	— 26
5. —	0	3	27	— 26
6. —	1	0	9	— 26
<i>Gross</i>	6	0	21	<u>156</u>
<i>Tare</i>	1	1	16	
<i>Net</i>	<u>4</u>	<u>3</u>	<u>5</u>	<i>Ans.</i>

(17.) From	<i>yds.</i> 29 . 1 <i>qr.</i>
Subtract	{ 9 . 3 9 . 3
Sum	<u>19 . 2</u>
	<u><i>Ans.</i> 9 . 3</u>

(18.) From	<i>miles.</i> 198 . 0 . 0 <i>fur.</i> <i>yds.</i>
Subtract {	79 . 5 . 200 79 . 5 . 200
Sum	<u>159 . 3 . 180</u>
	<u><i>Ans.</i> 38 . 4 . 40</u>

(19.) A Com- mon of }	<i>acres.</i> 1560 . 0 . 0 <i>ro.</i> <i>per.</i>
A has	405 . 2 . 0
B —	390 . 0 . 20
C —	316 . 3 . 35
Deduct	<u>1112 . 2 . 15</u>
	<u><i>D's share</i> 447 . 1 . 25</u> <i>Ans.</i>

(20.) Whole garden }	<i>acr.</i> 4 . 2 . 0 . 0 <i>ro.</i> <i>per.</i> <i>yds.</i>
Grass walks...	0 . 3 . 20 . 0
Gravel walks	0 . 0 . 35 . 28
Flower borders	1 . 2 . 0 . 15
Deduct	<u>2 . 2 . 16 . 12³/₄</u>
	<u><i>Ans.</i> 1 . 3 . 23 . 17¹/₂</u>

(21.) A hhd. Wine	<i>gals.</i> 63 . 0 . 0 <i>qt.</i> <i>pt.</i>
Bottled	8 . 2 . 1
Ditto	5 . 2 . 0
Ditto	9 . 1 . 0
Ditto	12 . 0 . 0
Deduct	<u>35 . 1 . 1</u>
	<u><i>Ans.</i> 27 . 2 . 1</u>

	hhd.	fir.	gal.	hhd.	fir.	gal.
(22.) He brews of ale	40	1	0			
Sells of ditto	25	5	4			
Increase of strong ale.....				14	1	5
He brews of porter.....	35	0	0			
Sells of ditto	32	2	3			
Increase of porter				2	3	6
He brews of beer	20	0	6			
Sells of ditto	10	3	0			
Increase of table beer.....				9	3	6
				<u>Ans. 24 . 2 . 7</u>		

	butts.	bar.	kil.	gal.	doz.	bottles.
(23.) In his cellars	45	2	0	0	200	6
Sends to A.	9	2	0	0	30	0
B.	12	0	0	8		
C.	7	0	1	0	15	7
D.					50	9
Amount of sales ...	28	2	1	8	96	4
Ans.	16	2	0	10	104	2

(24.) Six hhds. Tobacco, weighing,

No.		cwt.	qr.	lb.	Tare	cwt.	qr.	lb.
1.	Gross	18	1	10	1	2	19	
2.	—	19	2	12	—	1	3	5
3.	—	18	1	10	—	1	2	6
4.	—	18	1	14	—	1	2	21
5.	—	12	3	26	—	1	1	8
6.	—	12	3	5	—	1	1	13
	Gross weight ...	100	1	21	1st Ans.	9	1	16
	Tare	9	1	16				
	Net cwt.	91	0	5	3rd Ans.			

	qrs.	bus.	pec.	qrs.	bus.	pec.
(25.) A farmer's crop of wheat is	52	5	3			
He sold	37	6	0			
Stock of wheat.....				14	7	3
— Crop of barley	39	2	1			
He sold	30	2	2			
Stock of barley ...				8	7	3
— Crop of oats	68	6	0			
He sold	49	7	3			
Stock of oats				18	6	1
— Crop of beans	40	4	0			
He sold	19	0	2			
Stock of beans				21	3	2
				<u>Ans.</u>		

	years.	mo.
(26.) A. and B.'s ages amount to	110	3
B.'s age is	47	8 $\frac{1}{2}$
A.'s age is	62	6 $\frac{1}{2}$
Deduct B.'s age	47	8 $\frac{1}{2}$
<i>Ans.</i>	14	10

(27.) A Bond on W. Jones for ..	£500 . 0 . 0	
Interest due	37 . 10 . 0	
	£537 . 10 . 0	
Another on J. Gale	£300 . 0 . 0	
Interest due.....	9 . 18 . 4	
	£309 . 18 . 4	
Received in part...	150 . 0 . 0	
	159 . 18 . 4	
*A Bill on C. Wells.....	£ 98 . 12 . 6	
Interest due.....	1 . 7 . 6	
	100 . 0 . 0	
An Account due by E. Weston.....	54 . 11 . 8	
	<i>Ans.</i> £852 . 0 . 0	

(28.) A pays £	250 . 10 . 6	House-keeping	£ 985 . 10 . 8
B —	265 . 13 . 4	Tradesmen's bill	560 . 14 . 6
C —	287 . 10 . 6	Merchants'	438 . 13 . 9
D —	220 . 16 . 8	Carriage and Horses	250 . 12 . 7
E —	276 . 19 . 10	Garden Expences	67 . 14 . 8
F —	490 . 18 . 3	Duties	98 . 10 . 6
G —	365 . 11 . 10	Improvements	325 . 6 . 6
H —	289 . 7 . 6	Private Expences	89 . 6 . 10
	£2447 . 8 . 5	<i>Total Expence</i>	£2816 . 10 . 0
		<i>Income</i>	2447 . 8 . 5
		<i>Ans. He is in debt</i>	£369 . 1 . 7

(29.) January 3. Paid into the Bank	£270 . 10 . 0
20. Paid ditto.....	105 . 0 . 0
	375 . 10 . 0
February 4. Drew for	50 . 0 . 0
	325 . 10 . 0
18. Paid in	35 . 0 . 0
	360 . 10 . 0
March 17. Gave a check for ...	84 . 0 . 0
	276 . 10 . 0
21. Gave another for ...	28 . 15 . 0
	<i>Carry forward,</i> £247 . 15 . 0

	<i>Brought forward</i> , £247 . 15 . 0
April 1. Paid in	63 . 0 . 0
	310 . 15 . 0
18. Paid in.....	25 . 0 . 0
	335 . 15 . 0
May 19. Gave a check for...	17 . 14 . 6
	318 . 0 . 6
23. Paid in	30 . 0 . 0
	348 . 0 . 6
June 11. Gave a draft for....	19 . 5 . 0
	367 . 5 . 6
<i>Ans. In Banker's hands</i> ,	£328 . 15 . 6

(30.) A merchant's Effects at the beginning of the year	£8749 . 13 . 4
His debts amounted to.....	2519 . 8 . 4
<i>His Stock at the beginning was</i>	£6230 . 5 . 0
At the end of the year,	
He has in Cash	£1290 . 8 . 4
Goods & Inventory	1654 . 15 . 0
Open accounts	2584 . 1 . 4
Notes to him.....	3138 . 7 . 6
<i>Amount of his Effects at the end of the year</i>	£8667 . 12 . 2
He owes in open accounts	516 . 18 . 7
in acceptances...	935 . 13 . 9
<i>Amount of his debts at same time</i>	1452 . 12 . 4
<i>His Stock at the end of the year</i>	£7214 . 19 . 10
<i>at the beginning</i>	6230 . 5 . 0
<i>Gain during the year</i> ,	£ 984 . 14 . 10

MULTIPLICATION.

RULE I.

EXERCISES, page 36.

(1.) Prod	2596296	(2.) Prod.	7664344
(3.) ———	25836170	(4.) ———	40230570
(5.) ———	69135801	(6.) ———	49286744
(7.) ———	888888888	(8.) ———	17890640
(9.) ———	135802458	(10.) ———	969817152

RULE II.

EXERCISES, page 37.

$$\begin{array}{r} (1.) \text{ Mult. } 483725 \\ \text{by } 13 \\ \hline 1451175 \\ 483725 \\ \hline \text{Ans. } \underline{\underline{6288425}} \end{array}$$

$$\begin{array}{r} (2.) \text{ Mult. } 196057 \\ \text{by } 17 \\ \hline 1372399 \\ 196057 \\ \hline \text{Ans. } \underline{\underline{3332969}} \end{array}$$

$$\begin{array}{r} (3.) \text{ Mult. } 318564 \\ \text{by } 19 \\ \hline 2867076 \\ 318564 \\ \hline \text{Ans. } \underline{\underline{6052716}} \end{array}$$

$$\begin{array}{r} (4.) \dots 789036 \\ 21 \\ \hline 789036 \\ 1578072 \\ \hline \underline{\underline{16569756}} \end{array}$$

$$\begin{array}{r} (5.) \dots 2456783 \\ 32 \\ \hline 4913566 \\ 7370349 \\ \hline \underline{\underline{78617056}} \end{array}$$

$$\begin{array}{r} (6.) \dots 398765 \\ 43 \\ \hline 1196295 \\ 1595060 \\ \hline \underline{\underline{17146895}} \end{array}$$

$$\begin{array}{r} (7.) \dots 103219 \\ 54 \\ \hline 412876 \\ 516095 \\ \hline \underline{\underline{5573826}} \end{array}$$

$$\begin{array}{r} (8.) \dots 761328 \\ 65 \\ \hline 3806640 \\ 4567968 \\ \hline \underline{\underline{49486320}} \end{array}$$

$$\begin{array}{r} (9.) \dots 1210803 \\ 76 \\ \hline 7264818 \\ 8475621 \\ \hline \underline{\underline{92021028}} \end{array}$$

$$\begin{array}{r} (10.) \dots 5256542 \\ 87 \\ \hline 36795794 \\ 42052336 \\ \hline \underline{\underline{457319154}} \end{array}$$

$$\begin{array}{r} (11.) \dots 987654 \\ 98 \\ \hline 7901232 \\ 8888886 \\ \hline \underline{\underline{96790092}} \end{array}$$

$$\begin{array}{r} (12.) \dots 3456789 \\ 123 \\ \hline 10370367 \\ 41481468 \\ \hline \underline{\underline{425185047}} \end{array}$$

$$\begin{array}{r} (13.) \dots 98765432 \\ 321 \\ \hline 98765432 \\ 197530864 \\ 296296296 \\ \hline \underline{\underline{31703703672}} \end{array}$$

$$\begin{array}{r} (14.) \dots 7987654 \\ 654 \\ \hline 31950616 \\ 39938270 \\ 47925924 \\ \hline \underline{\underline{5223925716}} \end{array}$$

$$\begin{array}{r} (15.) \dots 19080739 \\ 987 \\ \hline 133565173 \\ 152645912 \\ 171726651 \\ \hline \underline{\underline{18832689393}} \end{array}$$

$$\begin{array}{r} (16.) \dots 3818208 \\ 500 \\ \hline 1909104000 \\ \hline \underline{\underline{\hspace{1.5cm}}} \end{array}$$

$$\begin{array}{r} (17.) \dots 73094165 \\ 1200 \\ \hline 8771299800 \\ \hline \underline{\underline{\hspace{1.5cm}}} \end{array}$$

$$\begin{array}{r} (18.) \dots 34567897 \\ 706 \\ \hline 207407382 \\ 241975279 \\ \hline \underline{\underline{24404935282}} \end{array}$$

$$\begin{array}{r} (19.) \dots 6473254 \\ 915 \\ \hline 32366270 \\ 6473254 \\ 58259286 \\ \hline \underline{\underline{5923027410}} \end{array}$$

$$\begin{array}{r} (20.) \dots 12606169 \\ 1207 \\ \hline 88243183 \\ 151274028 \\ \hline \underline{\underline{15215645983}} \end{array}$$

$$\begin{array}{r} (21.) \dots 8143203 \\ 9008 \\ \hline 65145624 \\ 73288827 \\ \hline \underline{\underline{73353972624}} \end{array}$$

(22.) Mult. 25186546 by 1109 <u>226678914</u> <u>277052006</u> Ans. <u>27931879514</u>	(23.) Mult. 9438700 by 1800 <u>7550960000</u> <u>9438700</u> Ans. <u>16989660000</u>	(24.) Mult. 41687400 by 98700 <u>29181180000</u> <u>333499200</u> <u>375186600</u> Ans. <u>4114546380000</u>
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(25.)..... 8765432 39 <u>78888888</u> <u>26296296</u> <u>341851848</u>	(26.)... 8765432 75 <u>43827160</u> <u>61358024</u> <u>657407400</u>	(27.)... 8765432 94 <u>35061728</u> <u>78888888</u> <u>823950608</u>
--	--	--

(28.)... 9876500 113 <u>296295</u> <u>1086415</u> <u>1116044500</u>	(29.) ... 9876500 245 <u>493825</u> <u>395060</u> <u>197530</u> <u>2419742500</u>	(30.)... 9876500 678 <u>790120</u> <u>691355</u> <u>592590</u> <u>6696267000</u>
---	--	---

(31.)... 9876500 910 <u>9876500</u> <u>88888500</u> <u>8987615000</u>	(34.)... 780456 30 <u>23413680</u>	(39.)... 1956800 125 <u>9784000</u> <u>23481600</u> <u>244600000</u>
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(32.)... 9876500 1814 <u>395060</u> <u>98765</u> <u>790120</u> <u>98765</u> <u>17915971000</u>	(35.)... 780456 70 <u>54631920</u>	(40.)... 1956800 431 <u>19568</u> <u>58704</u> <u>78272</u> <u>843380800</u>
--	--	---

(33.)... 9876500 56789 <u>888885</u> <u>790120</u> <u>691355</u> <u>592590</u> <u>493825</u> <u>560876558500</u>	(36.).... 780456 110 <u>85850160</u>	(41.)... 1956800 7300 <u>58704</u> <u>136976</u> <u>14284640000</u>
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(37.)... 780456 4600 <u>4682736</u> <u>3121824</u> <u>3590097600</u>	(38.)... 780456 8005 <u>3902280</u> <u>6243648</u> <u>6247550280</u>	(42.)... 1956800 51100 <u>215248</u> <u>97840</u> <u>99992480000</u>
--	--	--

CONTRACTIONS, *page 38.*

(1.) Mult. 3765489 by 18 $\begin{array}{r} 6 \\ \hline 22592934 \\ 3 \\ \hline 67778802 \end{array}$	or, 3765489×18 $\begin{array}{r} 3 \\ \hline 11296467 \\ 6 \\ \hline 67778802 \end{array}$	or, 3765489 $\begin{array}{r} 9 \\ \hline 33889401 \\ 2 \\ \hline 67778802 \end{array}$
---	--	--

(2.) 3765489×22 $\begin{array}{r} 11 \\ \hline 41420379 \\ 2 \\ \hline 82840758 \end{array}$	(3.) 3765489×36 $\begin{array}{r} 12 \\ \hline 45185868 \\ 3 \\ \hline 135557604 \end{array}$	(4.) 3765489×45 $\begin{array}{r} 9 \\ \hline 33889401 \\ 5 \\ \hline 169447005 \end{array}$
--	---	--

(5.) 3765489×54 $\begin{array}{r} 9 \\ \hline 33889401 \\ 6 \\ \hline 203336406 \end{array}$	(6.) 9087065×64 $\begin{array}{r} 8 \\ \hline 72696520 \\ 8 \\ \hline 581572160 \end{array}$	(7.) 9087065×84 $\begin{array}{r} 12 \\ \hline 109044780 \\ 7 \\ \hline 763313460 \end{array}$
--	--	--

(8.) 9087065×108 $\begin{array}{r} 12 \\ \hline 109044780 \\ 9 \\ \hline 981403020 \end{array}$	(9.) 9087065×121 $\begin{array}{r} 11 \\ \hline 99957715 \\ 11 \\ \hline 1099534865 \end{array}$	(10.) 9087065×144 $\begin{array}{r} 12 \\ \hline 109044780 \\ 12 \\ \hline 1308537360 \end{array}$
---	--	--

II. (1.) 5438×99 $\begin{array}{r} 543800 \\ 5438 \text{ ded.} \\ \hline 538362 \text{ Ans.} \end{array}$	(2.) 87364×9999 $\begin{array}{r} 873640000 \\ 87364 \text{ ded.} \\ \hline 873552636 \end{array}$	(3.) 16836×998 $\begin{array}{r} 16836000 \\ 16836 \times 2 = 33672 \text{ ded.} \\ \hline 16802328 \end{array}$
---	--	--

(4.) 39853000×997 $\begin{array}{r} 39853 \times 3 = 119559 \text{ ded.} \\ \hline 39733441 \end{array}$	(5.) 6845000×995 $\begin{array}{r} 6845 \times 5 = 34225 \text{ ded.} \\ \hline 6810775 \end{array}$
--	--

III. (1.) 3852 $\begin{array}{r} 147 \\ \hline 26964 \\ 53928 \\ \hline 566244 \end{array}$	(2.)... 16827 $\begin{array}{r} 426 \\ \hline 100962 \\ 706734 \\ \hline 7168302 \end{array}$	(3.)... 5695 $\begin{array}{r} 4812 \\ \hline 68340 \\ 273360 \\ \hline 27404340 \end{array}$
--	--	--

$$\begin{array}{r}
 (4.)\dots 14231 \\
 \quad 13212 \\
 \hline
 \quad 170772 \\
 1878492 \\
 \hline
 \underline{\underline{188019972}}
 \end{array}$$

$$\begin{array}{r}
 (5.)\dots 79562 \\
 \quad 98497 \\
 \hline
 \quad 556934 \\
 3898538 \\
 7797076 \\
 \hline
 \underline{\underline{7836618314}}
 \end{array}$$

$$\begin{array}{r}
 (6.)\dots 82413 \\
 \quad 112567 \\
 \hline
 \quad 576891 \\
 4615128 \\
 9230256 \\
 \hline
 \underline{\underline{9276984171}}
 \end{array}$$

$$\begin{array}{r}
 (7.)\dots 364296 \\
 \quad 216729 \\
 \hline
 \quad 3278664 \\
 26229312 \\
 78687936 \\
 \hline
 \underline{\underline{78953507784}}
 \end{array}$$

QUESTIONS FOR PRACTICE, page 39.

$$\begin{array}{r}
 (1.)\dots 94 \text{ battalions.} \\
 \text{Each... } 320 \text{ men.} \\
 \hline
 \quad 1880 \\
 \quad 282 \\
 \hline
 \text{Ans. } \underline{\underline{30080}} \text{ men.}
 \end{array}$$

$$\begin{array}{r}
 (2.)\dots \text{In 12 hours } 78 \text{ strokes.} \\
 \quad 2 \\
 \hline
 \text{In a day... } 156 \text{ strokes.} \\
 \text{A year } = 365 \text{ days.} \\
 \hline
 \quad 780 \\
 \quad 936 \\
 \quad 468 \\
 \hline
 \text{Ans. } \underline{\underline{56940}} \text{ strokes.}
 \end{array}$$

$$\begin{array}{r}
 (3.)\dots \text{In..... } 99 \text{ bags.} \\
 \text{Each... } 999 \text{ dollars.} \\
 \hline
 \quad 8991 \\
 \quad 8991 \\
 \hline
 \text{Ans. } \underline{\underline{98901}} \text{ dollars.}
 \end{array}$$

$$\begin{array}{r}
 (4.)\dots \text{In... } 250 \text{ waggons.} \\
 \text{Each } 320 \text{ loaves.} \\
 \hline
 \quad 5000 \\
 \quad 750 \\
 \hline
 \text{Ans. } \underline{\underline{80000}} \text{ loaves.}
 \end{array}$$

$$\begin{array}{r}
 (5.)\dots \text{A pint} = 7680 \text{ grains.} \\
 \quad 64 \text{ pints.} \\
 \hline
 \quad 30720 \\
 46080 \\
 \hline
 \quad 491520 \\
 \text{A quarter} = 8 \text{ bushels.} \\
 \text{Ans. } \underline{\underline{3932160}} \text{ grains.}
 \end{array}$$

$$\begin{array}{r}
 (6.)\dots \text{A piece... } 56 \text{ yards.} \\
 \quad 13 \text{ pieces.} \\
 \hline
 \quad 728 \\
 \quad 19 \\
 \hline
 \quad 6552 \\
 \quad 728 \\
 \hline
 \text{Ans. } \underline{\underline{13832}} \text{ yards.}
 \end{array}$$

(7.)... A year=365 days.
 80 years.
 29200 days.
 24 hours.
 116800
 58400
 700800 hours.
 60 min.
 42048000 min.
 70
 2943360000

(10.)... An island 56 counties.
 Each..... 35 parishes.
 280
 168
 1960 parishes.
 Each.....99 families.
 17640
 17640
 194040 families.
 Each... 7 persons.
 Ans. 1358280 persons.

(8.).... ̄ acre...234 stones.
 123 acres.
 702
 2808
 1st crop 28782 stones.
 ̄ acre... 78
 123 acres.
 984
 861
 2d crop 9594 stones.

(11.)... A field.....460 yards.
 Each325 drills.
 19500
 1300
 149500 drills.
 Each... 15 plants.
 747500
 149500
 2242500 plants.
 Each... 12 stalks.
 26910000 stalks.
 19 grains.
 242190000
 26910000
 Ans. 511290000 grains.

(9.)... Each vol. 625 pages.
 Each page 47 lines.
 4375
 2500
 29375 lines.
 Each line 42 letters.
 58750
 117500
 1233750=1 vol.
 18 vols.
 9870000
 1233750
 Ans. 22207500 letters.

(12.) 14 boats.
 30 days.
 420
 15 times.
 6300
 13 fishes.
 Ans. 81900 fishes.

(13.) $1 \times 2 \times 3 \times 4 = 24$ on 4 bells.

5	
120	on 5 do.
6	
720	on 6 do.
7	
5040	on 7 do.
8	
40320	on 8 do.
9	
362880	on 9 do.
10	
<u>3628800</u>	on 10 bells.

Ans. 3628800

(14.)..... 19968 men.
2l.
 39936
 13 weeks.
£519168 *Ans.*

(15.)..... 650 gun-boats.
 Each..... 12 guns.
7800
 39 rounds.
70200
 23400
Ans. 304200 balls.

(16.)..... 57233 sq. miles.

177	
400631	
400631	
57233	
<u>10130241</u>	<i>inhabitants.</i>

Ans. 10130241

(17.)..... 15 stalks.
 Each..... 12 flowers.

180	
Each..... 48 seeds.	
1440	
720	
<u>8640</u>	<i>seeds.</i>

Ans. 8640

(18.) $3 \times 14 = 42$ pints.

7 days.	
294 pints φ week.	
32 acres.	
588	
882	
<u>9408</u>	<i>pints.</i>

Ans. 9408

(19.)... φ min..... 24576 yards.
 60 min.

1474560	φ min.
10 hours φ day.	
14745600	
313 days φ ann.	
44236800	
14745600	
44236800	
<u>4615372800</u>	<i>yards.</i>

Ans. 4615372800

(20.).....	Each jenny has	216 spindles.
	Each produces	3 hanks.
	Produce of each.....	<u>648 hanks</u> $\text{\textcircled{r}}$ day.
		8 jennies.
	Each story	5184 hanks.
		4 stories.
	Four stories	<u>20736 hanks.</u>
		300 days $\text{\textcircled{r}}$ ann.
		<u><u>Ans. 6220800 hanks.</u></u>

COMPOUND MULTIPLICATION.

RULE I.

EXERCISES, page 40.

<p>(1.) Mult. £4 . 11 . 8½ by 2 <u>£9 . 3 . 5</u></p>	<p>(2.)... £1 . 14 . 10 3 <u>£5 . 4 . 6</u></p>	<p>(3.) £ 2 . 10 . 11¾ 4 <u>£10 . 3 . 11</u></p>
<p>(4.)... £0 . 17 . 9¼ 5 <u>£4 . 8 . 10¼</u></p>	<p>(5.)... £0 . 18 . 6 6 <u>£5 . 11 . 0</u></p>	<p>(6.)... £1 . 2 . 3¼ 7 <u>£7 . 15 . 10¾</u></p>
<p>(7.)... £0 . 12 . 11 8 <u>£5 . 3 . 4</u></p>	<p>(8.)... £ 3 . 4 . 5 9 <u>£28 . 19 . 9</u></p>	<p>(9.)... £0 . 6 . 8 10 <u>£3 . 6 . 8</u></p>
<p>(10.)... £ 1 . 17 . 6 11 <u>£20 . 12 . 6</u></p>	<p>(11.) £ 5 . 11 . 11 12 <u>£67 . 3 . 0</u></p>	<p>(12.) £0 . 3 . 10½ 9 <u>£1 . 14 . 10½</u></p>
<p>(13.)... lb. oz. dwt. 7 . 9 . 18 6 <u>46 . 11 . 8</u></p>	<p>(14.)... cwt. qr. lb. 14 . 2 . 19 9 <u>132 . 0 . 3</u></p>	<p>(15.)... ton. cwt. qr. 9 . 12 . 2 5 <u>48 . 2 . 2</u></p>
<p>(16.)... yd. qr. na. 25 . 3 . 2 10 <u>258 . 3 . 0</u></p>	<p>(17.)... miles. fur. po. 45 . 7 . 35 9 <u>413 . 6 . 35</u></p>	<p>(18.)... acres. ro. per. 19 . 3 . 39 11 <u>219 . 3 . 29</u></p>
<p>(19.)... gal. qt. pt. 56 . 2 . 1 8 <u>453 . 0 . 0</u></p>	<p>(20.)... qr. bu. pe. 14 . 5 . 3 12 <u>176 . 5 . 0</u></p>	

RULE II.

EXERCISES, *page 41.*

- | | |
|---|---|
| (1.)... Mult. £0 . 11 . 8 by 15 | (2.)... £3 . 2 . 6 by 18 |
| $\begin{array}{r} 3 \\ \hline 1 . 15 . 0 \\ 5 \\ \hline \underline{\underline{£8 . 15 . 0}} \end{array}$ | $\begin{array}{r} 6 \\ \hline 18 . 15 . 0 \\ 3 \\ \hline \underline{\underline{£56 . 5 . 0}} \end{array}$ |
| (3.)... £0 . 3 . 10 $\frac{1}{4}$ by 20 | (4.)... £1 . 14 . 3 by 32 |
| $\begin{array}{r} 4 \\ \hline 0 . 15 . 5 \\ 5 \\ \hline \underline{\underline{£3 . 17 . 1}} \end{array}$ | $\begin{array}{r} 8 \\ \hline 13 . 14 . 0 \\ 4 \\ \hline \underline{\underline{£54 . 16 . 0}} \end{array}$ |
| (5.)... £0 . 5 . 9 $\frac{3}{4}$ by 45 | (6.)... £2 . 6 . 7 by 54 |
| $\begin{array}{r} 9 \\ \hline 2 . 12 . 3\frac{3}{4} \\ 5 \\ \hline \underline{\underline{£13 . 1 . 6\frac{3}{4}}} \end{array}$ | $\begin{array}{r} 9 \\ \hline 20 . 19 . 3 \\ 6 \\ \hline \underline{\underline{£125 . 15 . 6}} \end{array}$ |
| (7.)... £1 . 7 . 11 $\frac{1}{2}$ by 63 | (8.)... £2 . 8 . 4 $\frac{1}{2}$ by 72 |
| $\begin{array}{r} 9 \\ \hline 12 . 11 . 7\frac{1}{2} \\ 7 \\ \hline \underline{\underline{£88 . 1 . 4\frac{1}{2}}} \end{array}$ | $\begin{array}{r} 8 \\ \hline 19 . 7 . 0 \\ 9 \\ \hline \underline{\underline{£174 . 3 . 0}} \end{array}$ |
| (9.)... £1 . 11 . 6 by 84 | (10.)... £0 . 19 . 4 by 96 |
| $\begin{array}{r} 12 \\ \hline 18 . 18 . 0 \\ 7 \\ \hline \underline{\underline{£132 . 6 . 0}} \end{array}$ | $\begin{array}{r} 12 \\ \hline 11 . 12 . 0 \\ 8 \\ \hline \underline{\underline{£92 . 16 . 0}} \end{array}$ |
| (11.)..... £1 . 2 . 5 $\frac{1}{2}$ by 110 | (12.)... £5 . 13 . 4 by 132 |
| $\begin{array}{r} 10 \\ \hline 11 . 4 . 7 \\ 11 \\ \hline \underline{\underline{£123 . 10 . 5}} \end{array}$ | $\begin{array}{r} 12 \\ \hline 68 . 0 . 0 \\ 11 \\ \hline \underline{\underline{£748 . 0 . 0}} \end{array}$ |

$$\begin{array}{r}
 \text{(13.) } \begin{array}{l} \text{lb.} \quad \text{oz.} \quad \text{dwt.} \quad \text{gr.} \\ 3 \cdot 0 \cdot 15 \cdot 20 \\ \hline 21 \cdot 5 \cdot 10 \cdot 20 \\ \hline 42 \cdot 11 \cdot 1 \cdot 16 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(14.) } \begin{array}{l} \text{cwt.} \quad \text{qr.} \quad \text{lb.} \\ 12 \cdot 1 \cdot 27 \\ \hline 87 \cdot 1 \cdot 21 \\ \hline 262 \cdot 1 \cdot 7 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(15.) } \begin{array}{l} \text{tons.} \quad \text{cwt.} \quad \text{qr.} \\ 9 \cdot 18 \cdot 3 \\ \hline 99 \cdot 7 \cdot 2 \\ \hline 298 \cdot 2 \cdot 2 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(16.)... } \begin{array}{l} \text{en.ells.} \quad \text{qr.} \quad \text{na.} \\ 17 \cdot 4 \cdot 2 \\ \hline 107 \cdot 2 \cdot 0 \\ \hline 751 \cdot 4 \cdot 0 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(17.) } \begin{array}{l} \text{yds.} \quad \text{ft.} \quad \text{in.} \\ 5 \cdot 2 \cdot 10 \\ \hline 47 \cdot 1 \cdot 8 \\ \hline 332 \cdot 2 \cdot 8 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(18.) } \begin{array}{l} \text{acr.} \quad \text{ro.} \quad \text{per.} \\ 36 \cdot 1 \cdot 19 \\ \hline 290 \cdot 3 \cdot 32 \\ \hline 2327 \cdot 2 \cdot 16 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(19.)... } \begin{array}{l} \text{bar.} \quad \text{gal.} \quad \text{qt.} \\ 12 \cdot 25 \cdot 3 \\ \hline 127 \cdot 5 \cdot 2 \\ \hline 890 \cdot 2 \cdot 2 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(20.)... } \begin{array}{l} \text{qr.} \quad \text{bus.} \quad \text{pk.} \\ 9 \cdot 6 \cdot 2 \\ \hline 88 \cdot 2 \cdot 2 \\ \hline 794 \cdot 6 \cdot 2 \end{array} \\
 \hline
 \end{array}$$

RULE III.

EXERCISES, page 41.

$$\begin{array}{r}
 \text{(1.).....Mult. } \pounds 0 \cdot 13 \cdot 6\frac{1}{4} \times 1 \\
 \hline 2 \cdot 14 \cdot 1 \\
 \hline 10 \cdot 16 \cdot 4 \\
 \hline 0 \cdot 13 \cdot 6\frac{1}{4} \\
 \hline \pounds 11 \cdot 9 \cdot 10\frac{1}{4} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(2.).....Mult. } \pounds 0 \cdot 6 \cdot 8 \times 1 \\
 \hline 3 \cdot 13 \cdot 4 \\
 \hline 7 \cdot 6 \cdot 8 \\
 \hline 6 \cdot 8 \\
 \hline \pounds 7 \cdot 13 \cdot 4 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(3.)..... } \pounds 1 \cdot 10 \cdot 7\frac{1}{2} \times 1 \\
 \hline 15 \cdot 6 \cdot 3 \\
 \hline 45 \cdot 18 \cdot 9 \\
 \hline 1 \cdot 10 \cdot 7\frac{1}{2} \\
 \hline 47 \cdot 9 \cdot 5\frac{1}{2} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(4.)..... } \pounds 0 \cdot 17 \cdot 9 \times 1 \\
 \hline 6 \cdot 4 \cdot 3 \\
 \hline 37 \cdot 5 \cdot 6 \\
 \hline 0 \cdot 17 \cdot 9 \\
 \hline \pounds 38 \cdot 3 \cdot 3 \\
 \hline
 \end{array}$$

<p>(5.)..... Mult. £11 . 8 . 4 × 1</p> $\begin{array}{r} 8 \\ \hline 91 . 6 . 8 \\ 7 \\ \hline 639 . 6 . 8 \\ 11 . 8 . 4 \\ \hline \underline{\underline{£650 . 15 . 0}} \end{array}$	<p>(6.)... Mult. £2 . 12 . 10½ × 1</p> $\begin{array}{r} 8 \\ \hline 21 . 3 . 0 \\ 8 \\ \hline 169 . 4 . 0 \\ 2 . 12 . 10\frac{1}{2} \\ \hline \underline{\underline{£171 . 16 . 10\frac{1}{2}}} \end{array}$
---	---

<p>(7.)..... £3 . 4 . 2 × 4</p> $\begin{array}{r} 12 \\ \hline 38 . 10 . 0 \\ 6 \\ \hline 231 . 0 . 0 \\ 12 . 16 . 8 \\ \hline \underline{\underline{£243 . 16 . 8}} \end{array}$	<p>(8.)..... £0 . 10 . 11¼ × 3</p> $\begin{array}{r} 12 \\ \hline 6 . 11 . 9 \\ 7 \\ \hline 46 . 2 . 3 \\ 1 . 12 . 11\frac{1}{4} \\ \hline \underline{\underline{£47 . 15 . 2\frac{3}{4}}} \end{array}$
---	---

<p>(9.)..... £1 . 14 . 3¼ × 2</p> $\begin{array}{r} 12 \\ \hline 20 . 11 . 3 \\ 8 \\ \hline 164 . 10 . 0 \\ 3 . 8 . 6\frac{1}{2} \\ \hline \underline{\underline{£167 . 18 . 6\frac{1}{2}}} \end{array}$	<p>(10.)..... £0 . 15 . 1½ × 2</p> $\begin{array}{r} 10 \\ \hline 7 . 11 . 3 \\ 10 \\ \hline 75 . 12 . 6 \\ 1 . 10 . 3 \\ \hline \underline{\underline{£77 . 2 . 9}} \end{array}$
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<p>(11.)..... £3 . 16 . 5 × 3</p> $\begin{array}{r} 12 \\ \hline 45 . 17 . 0 \\ 11 \\ \hline 504 . 7 . 0 \\ 11 . 9 . 3 \\ \hline \underline{\underline{£515 . 16 . 3}} \end{array}$	<p>(12.)..... £1 . 7 . 9¾</p> $\begin{array}{r} 12 \\ \hline 16 . 13 . 9 \times 1 \\ 12 \\ \hline 200 . 5 . 0 \\ 16 . 13 . 9 \\ \hline \underline{\underline{£216 . 18 . 9}} \end{array}$
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<p>(13.) Mult. $\begin{array}{l} \text{oz.} \\ \text{dwt.} \\ \text{grs.} \end{array}$ 0 . 3 . 21 × 1</p> $\begin{array}{r} 5 \\ \hline 0 . 19 . 9 \\ 5 \\ \hline 4 . 16 . 21 \\ 0 . 3 . 21 \\ \hline \underline{\underline{5 . 0 . 18}} \end{array}$	<p>(14.) $\begin{array}{l} \text{cwt.} \\ \text{gr.} \\ \text{lb.} \end{array}$ 15 . 2 . 11 × 2</p> $\begin{array}{r} 5 \\ \hline 77 . 3 . 27 \\ 9 \\ \hline 701 . 3 . 19 \\ 31 . 0 . 22 \\ \hline \underline{\underline{733 . 0 . 13}} \end{array}$	<p>(15.) $\begin{array}{l} \text{yd.} \\ \text{ft.} \\ \text{in.} \end{array}$ 3 . 1 . 7 × 2</p> $\begin{array}{r} 12 \\ \hline 42 . 1 . 0 \\ 3 \\ \hline 127 . 0 . 0 \\ 7 . 0 . 2 \\ \hline \underline{\underline{134 . 0 . 2}} \end{array}$
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<p><i>miles. fur. po.</i> (16.) 5 . 3 . 17 × 3</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>54 . 2 . 10</p> <hr style="width: 100%;"/> <p style="text-align: right;">5</p> <hr style="width: 100%;"/> <p>271 . 3 . 10</p> <hr style="width: 100%;"/> <p>16 . 2 . 11</p> <hr style="width: 100%;"/> <p>287 . 5 . 21</p> <hr style="width: 100%;"/>	<p><i>hhd. gal. qt.</i> (17.) 2 . 60 . 3 × 1</p> <hr style="width: 100%;"/> <p style="text-align: right;">4</p> <hr style="width: 100%;"/> <p>11 . 54 . 0</p> <hr style="width: 100%;"/> <p style="text-align: right;">7</p> <hr style="width: 100%;"/> <p>83 . 0 . 0</p> <hr style="width: 100%;"/> <p>2 . 60 . 3</p> <hr style="width: 100%;"/> <p>85 . 60 . 3</p> <hr style="width: 100%;"/>	<p><i>qr. bu. pk.</i> (18.) 0 . 7 . 3 × 2</p> <hr style="width: 100%;"/> <p style="text-align: right;">12</p> <hr style="width: 100%;"/> <p>11 . 5 . 0</p> <hr style="width: 100%;"/> <p style="text-align: right;">5</p> <hr style="width: 100%;"/> <p>58 . 1 . 0</p> <hr style="width: 100%;"/> <p>1 . 7 . 2</p> <hr style="width: 100%;"/> <p>60 . 0 . 2</p> <hr style="width: 100%;"/>
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<p><i>days. ho. min.</i> (19.)...30 . 12 . 36 × 1</p> <hr style="width: 100%;"/> <p style="text-align: right;">8</p> <hr style="width: 100%;"/> <p>244 . 4 . 48</p> <hr style="width: 100%;"/> <p style="text-align: right;">11</p> <hr style="width: 100%;"/> <p>2686 . 4 . 48</p> <hr style="width: 100%;"/> <p>30 . 12 . 36</p> <hr style="width: 100%;"/> <p><i>Days</i> 2716 . 17 . 24</p> <hr style="width: 100%;"/>	<p><i>we. da. ho.</i> (20.)...13 . 6 . 10 × 1</p> <hr style="width: 100%;"/> <p style="text-align: right;">12</p> <hr style="width: 100%;"/> <p>167 . 0 . 0</p> <hr style="width: 100%;"/> <p style="text-align: right;">6</p> <hr style="width: 100%;"/> <p>1002 . 0 . 0</p> <hr style="width: 100%;"/> <p>13 . 6 . 10</p> <hr style="width: 100%;"/> <p><i>Weeks</i> 1015 . 6 . 10</p> <hr style="width: 100%;"/>
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RULE IV.

EXERCISES, page 42.

<p>(1.).. Mult. £1 . 11 . 4 × 9</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>15 . 13 . 4 × 8</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>156 . 13 . 4</p> <hr style="width: 100%;"/> <p>125 . 6 . 8</p> <hr style="width: 100%;"/> <p>14 . 2 . 0</p> <hr style="width: 100%;"/> <p>£296 . 2 . 0</p> <hr style="width: 100%;"/>	<p>(2.)... Mult. £0 . 13 . 11½ × 4</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>6 . 19 . 7 × 3</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>69 . 15 . 10</p> <hr style="width: 100%;"/> <p style="text-align: right;">2</p> <hr style="width: 100%;"/> <p>139 . 11 . 8</p> <hr style="width: 100%;"/> <p>20 . 18 . 9</p> <hr style="width: 100%;"/> <p>2 . 15 . 10</p> <hr style="width: 100%;"/> <p>£163 . 6 . 3</p> <hr style="width: 100%;"/>
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<p>(3.)..... £3 . 1 . 8 × 7</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>30 . 16 . 8 × 6</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>308 . 6 . 8</p> <hr style="width: 100%;"/> <p style="text-align: right;">5</p> <hr style="width: 100%;"/> <p>1541 . 13 . 4</p> <hr style="width: 100%;"/> <p>185 . 0 . 0</p> <hr style="width: 100%;"/> <p>21 . 11 . 8</p> <hr style="width: 100%;"/> <p>£1748 . 5 . 0</p> <hr style="width: 100%;"/>	<p>(4.)..... £0 . 2 . 5¼</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>1 . 4 . 4½ × 9</p> <hr style="width: 100%;"/> <p style="text-align: right;">10</p> <hr style="width: 100%;"/> <p>12 . 3 . 9</p> <hr style="width: 100%;"/> <p style="text-align: right;">8</p> <hr style="width: 100%;"/> <p>97 . 10 . 0</p> <hr style="width: 100%;"/> <p>10 . 19 . 4½</p> <hr style="width: 100%;"/> <p>£108 . 9 . 4½</p> <hr style="width: 100%;"/>
---	---

(5.) Mult. £2 . 9 . 3½

$$\begin{array}{r}
 . . \times 1 \\
 . . \\
 \hline
 246 . 9 . 2 \\
 . . \\
 . . \\
 \hline
 2218 . 2 . 6 \\
 . . \\
 . . \\
 \hline
 \text{Ans. } \underline{\underline{£2242 . 15 . 5}}
 \end{array}$$

(6.)... Mult. £0 . 4 . 10×6

$$\begin{array}{r}
 . . \times 1 \\
 . . \\
 \hline
 24 . 3 . 4 \\
 . . \\
 . . \\
 \hline
 241 . 13 . 4 \\
 . . \\
 . . \\
 \hline
 1 . 9 . 0 \\
 \hline
 \text{Ans. } \underline{\underline{£245 . 10 . 8}}
 \end{array}$$

(7.)..... £4 . 18 . 7¾×4

$$\begin{array}{r}
 . . \frac{1}{2} \\
 . . \phantom{\frac{1}{2}} \\
 \hline
 493 . 4 . 7 \times 2 \\
 . . \times 2 \\
 . . \\
 \hline
 4932 . 5 . 10 \\
 . . \\
 . . \\
 \hline
 986 . 9 . 2 \\
 . . \\
 . . \\
 \hline
 19 . 14 . 7 \\
 \hline
 \text{Ans. } \underline{\underline{£5938 . 9 . 7}}
 \end{array}$$

(8.)..... £1 . 2 . 9×7

$$\begin{array}{r}
 . . \times 8 \\
 . . \\
 \hline
 113 . 15 . 0 \times 7 \\
 . . \times 7 \\
 . . \\
 \hline
 1137 . 10 . 0 \\
 . . \\
 . . \\
 \hline
 11375 . 0 . 0 \\
 . . \\
 . . \\
 \hline
 796 . 5 . 0 \\
 . . \\
 . . \\
 \hline
 91 . 0 . 0 \\
 . . \\
 . . \\
 \hline
 7 . 19 . 3 \\
 \hline
 \text{Ans. } \underline{\underline{£12270 . 4 . 3}}
 \end{array}$$

(9.)..... lb. oz. dwt. gr. 3 . 9 . 0 . 12×5

$$\begin{array}{r}
 . . . \times 9 \\
 . . . \\
 \hline
 375 . 2 . 10 . 0 \\
 . . . \\
 . . . \\
 \hline
 337 . 8 . 5 . 0 \\
 . . . \\
 . . . \\
 \hline
 18 . 9 . 2 . 12 \\
 \hline
 \text{Ans. } \underline{\underline{731 . 7 . 17 . 12}}
 \end{array}$$

(10.)..... Cwt. qr. lb. 14 . 1 . 19×1

$$\begin{array}{r}
 . . \times 2 \\
 . . \\
 \hline
 1441 . 3 . 24 \\
 . . \\
 . . \\
 \hline
 4325 . 3 . 16 \\
 . . \\
 . . \\
 \hline
 288 . 1 . 16 \\
 . . \\
 . . \\
 \hline
 14 . 1 . 19 \\
 \hline
 \text{Ans. } \underline{\underline{4628 . 2 . 23}}
 \end{array}$$

<p>(11.)... Mult. $\begin{array}{r} \text{st. lb. oz.} \\ 3 . 12 . 10 \times 8 \\ \hline 39 . 0 . 4 \\ \hline 390 . 2 . 8 \\ \hline 1560 . 10 . 0 \\ 31 . 3 . 0 \\ \hline \text{Ans. } \underline{\underline{1591 . 13 . 0}} \end{array}$</p>	<p>(12.)... Mult. $\begin{array}{r} \text{mi. fur. po. yd.} \\ 0 . 2 . 38 . 4\frac{1}{2} \\ \hline 3 . 5 . 28 . 1 \times 6 \\ \hline 37 . 1 . 1 . 4\frac{1}{2} \times 7 \\ \hline 371 . 2 . 18 . 1 \\ 259 . 7 . 12 . 4 \\ 22 . 2 . 9 . 0\frac{1}{2} \\ \hline \text{Ans. } \underline{\underline{653 . 4 . 0 . 0}} \end{array}$</p>
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APPLICATION OF MULTIPLICATION.

EXERCISES, page 42.

<p>(1.)... Mult. $\begin{array}{r} \text{£}0 . 5 . 3 \\ \hline \text{Ans. } \underline{\underline{\text{£}3 . 3 . 0}} \end{array}$</p>	<p>(2.)... Mult. $\begin{array}{r} \text{£}0 . 7 . 6 \times 5 \\ \hline 4 . 10 . 0 \\ 1 . 17 . 6 \\ \hline \text{Ans. } \underline{\underline{\text{£}6 . 7 . 6}} \end{array}$</p>
<p>(3.)... $\begin{array}{r} \text{£}3 . 19 . 4 \times 1 \\ \hline 43 . 12 . 8 \times 1 \\ 43 . 12 . 8 \\ 3 . 19 . 4 \\ \hline \text{Ans. } \underline{\underline{\text{£}91 . 4 . 8}} \end{array}$</p>	<p>(4.)... $\begin{array}{r} \text{£}1 . 9 . 8 \\ \hline 17 . 16 . 0 \\ \hline \text{Ans. } \underline{\underline{\text{£}53 . 8 . 0}} \end{array}$</p>
<p>(5.)... $\begin{array}{r} \text{£}1 . 2 . 6 \\ \hline 10 . 2 . 6 \\ \hline \text{Ans. } \underline{\underline{\text{£}50 . 12 . 6}} \end{array}$</p>	<p>(6.)... $\begin{array}{r} \text{£}31 . 10 . 0 \\ \hline 189 . 0 . 0 \\ \hline \text{Ans. } \underline{\underline{\text{£}1701 . 0 . 0}} \end{array}$</p>
<p>(7.)... $\begin{array}{r} \text{£}1 . 11 . 9 \times 2 \\ \hline 9 . 10 . 6 \\ \hline 104 . 15 . 6 \\ 3 . 3 . 6 \\ \hline \text{Ans. } \underline{\underline{\text{£}107 . 19 . 0}} \end{array}$</p>	<p>(8.)... $\begin{array}{r} \text{£}2 . 12 . 6 \times 1 \\ \hline 21 . 0 . 0 \\ \hline 231 . 0 . 0 \\ 2 . 12 . 6 \\ \hline \text{Ans. } \underline{\underline{\text{£}233 . 12 . 6}} \end{array}$</p>

<p>(9.)... Mult. £0 . 2 . 11 × 2</p> $\begin{array}{r} 12 \\ 1.15.0 \\ 8 \\ \hline 14.0.0 \\ 0.5.10 \\ \hline \text{Ans. } \underline{\underline{£14.5.10}} \end{array}$	<p>(10.)... Mult. £4 . 7 . 6 × 3</p> $\begin{array}{r} 12 \\ 52.10.0 \\ 10 \\ \hline 525.0.0 \\ 13.2.6 \\ \hline \text{Ans. } \underline{\underline{£538.2.6}} \end{array}$
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<p>(11.)... £0 . 13 . 9</p> $\begin{array}{r} 10 \\ 6.17.6 \\ 3 \\ \hline 20.12.6 \\ 7 \\ \hline \text{Ans. } \underline{\underline{£144.7.6}} \end{array}$	<p>(12.)... £4 . 9 . 8 × 5</p> $\begin{array}{r} 12 \\ 53.16.0 \\ 3 \\ \hline 161.8.0 \\ 10 \\ \hline 1614.0.0 \\ 22.8.4 \\ \hline \text{Ans. } \underline{\underline{£1636.8.4}} \end{array}$
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EXERCISES, page 43.

<p>(13.)... <i>lb. oz.</i></p> $\begin{array}{r} 7.9 \\ 9 \\ \hline 68.1 \\ 11 \\ \hline \text{Ans. } \underline{\underline{748.11}} \end{array}$	<p>(14.) <i>lb. oz. dwt. gr.</i></p> $\begin{array}{r} 0.0.16.22 \\ 10 \\ \hline 0.8.9.4 \\ 10 \\ \hline 7.0.11.16 \\ 10 \\ \hline \text{Ans. } \underline{\underline{70.5.16.16}} \end{array}$	<p>(15.) <i>cwt. qr. lb.</i></p> $\begin{array}{r} 3.1.23 \\ 10 \\ \hline 34.2.6 \times 6 \\ 10 \\ \hline 345.2.4 \\ 207.1.8 \\ \hline \text{Ans. } \underline{\underline{552.3.12}} \end{array}$
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<p>(16.) <i>cwt. qr. lb.</i></p> $\begin{array}{r} 9.3.19 \\ 7 \\ \hline 69.1.21 \\ 8 \\ \hline \text{Ans. } \underline{\underline{555.2.0}} \end{array}$	<p>(17.) <i>oz. dwt. gr.</i></p> $\begin{array}{r} 0.3.20 \times 7 \\ 12 \\ \hline 2.6.0 \\ 1.6.20 \\ \hline \text{Ans. } \underline{\underline{3.12.20}} \end{array}$	<p>(18.)... <i>lb. oz. dwt. gr.</i></p> $\begin{array}{r} 0.0.5.9\frac{1}{2} \\ 10 \\ \hline 0.2.13.23 \\ 10 \\ \hline \text{Ans. } \underline{\underline{2.2.19.14}} \end{array}$
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<p>(19.) <i>acr. ro. per.</i></p> $\begin{array}{r} 89.3.25 \times 7 \\ 12 \\ \hline 1078.3.20 \\ 629.1.15 \\ \hline \text{Ans. } \underline{\underline{1708.0.35}} \end{array}$	<p>(20.)... <i>yd. qr.</i></p> $\begin{array}{r} 28.3 \\ 10 \\ \hline 287.2 \\ 5 \\ \hline \text{Ans. } \underline{\underline{1437.2}} \end{array}$	<p>(21.) <i>yd. ft. in.</i></p> $\begin{array}{r} 31.6.9 \times 2 \\ 12 \\ \hline 381.0.0 \\ 63.4.6 \\ \hline \text{Ans. } \underline{\underline{444.4.6}} \end{array}$
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<p>(22.)... $\begin{array}{r} \text{sq. yd. ft.} \\ 42 \cdot 8\frac{1}{2} \times 1 \\ \underline{12} \\ 515 \cdot 3 \\ \underline{42 \cdot 8\frac{1}{2}} \\ \text{Ans. } \underline{\underline{558 \cdot 2\frac{1}{2}}} \end{array}$</p>	<p>(23.)... $\begin{array}{r} \text{fur. po. yd. ft.} \\ 0 \cdot 2 \cdot 1 \cdot 2 \\ \underline{7} \\ 0 \cdot 16 \cdot 0 \cdot 2 \\ \underline{4} \\ \text{Ans. } \underline{\underline{1 \cdot 14 \cdot 2 \cdot 2}} \end{array}$</p>	<p>(24.)... $\begin{array}{r} \text{yd. ft. in.} \\ 13 \cdot 2 \cdot 6 \\ \underline{12} \\ 166 \cdot 0 \cdot 0 \\ \underline{13 \cdot 2 \cdot 6} \\ \text{Ans. } \underline{\underline{179 \cdot 2 \cdot 6}} \end{array}$</p>
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<p>(25.) $\begin{array}{r} \text{£}0 \cdot 6 \cdot 1 \times 5 \\ \underline{12} \\ 3 \cdot 13 \cdot 0 \\ \underline{3} \\ 10 \cdot 19 \cdot 0 \\ \underline{10} \\ \text{Ans. } 109 \cdot 10 \cdot 0 \\ \underline{1 \cdot 10 \cdot 5} \\ \text{Ans. } \underline{\underline{\text{£}111 \cdot 0 \cdot 5}} \end{array}$</p>	<p>(26.) $\begin{array}{r} \text{st. lb. oz.} \\ 99 \cdot 13 \cdot 8 \times 2 \\ \underline{10} \\ 999 \cdot 9 \cdot 0 \\ \underline{5} \\ 4998 \cdot 3 \cdot 0 \\ \underline{199 \cdot 13 \cdot 0} \\ \text{Ans. } \underline{\underline{5198 \cdot 2 \cdot 0}} \end{array}$</p>	<p>(27.)... $\begin{array}{r} \text{mi. fur. po.} \\ 30 \cdot 7 \cdot 35 \\ \underline{7} \\ 216 \cdot 7 \cdot 5 \\ \underline{3} \\ \text{Ans. } \underline{\underline{650 \cdot 5 \cdot 15}} \end{array}$</p>
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EXERCISES, page 44.

<p>(28.)... $\begin{array}{r} \text{£}999 \cdot 19 \cdot 11 \\ \underline{20} \\ 19999 \\ \underline{12} \\ \text{Ans. } \underline{\underline{239999 \text{ pence.}}} \end{array}$</p>	<p>(29.)..... $\begin{array}{r} \text{£}2150 \cdot 12 \cdot 9\frac{1}{2} \\ \underline{20} \\ 43012 \\ \underline{12} \\ 516153 \\ \underline{2} \\ \text{Ans. } \underline{\underline{1032307 \text{ halfpence.}}} \end{array}$</p>
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<p>(30.)..... $\begin{array}{r} \text{£}1867 \cdot 8 \cdot 7\frac{3}{4} \\ \underline{20} \\ 37348 \\ \underline{12} \\ 448183 \\ \underline{4} \\ \text{Ans. } \underline{\underline{1792735 \text{ farthings.}}} \end{array}$</p>	<p>(31.)..... $\begin{array}{r} \text{£}1234 \cdot 19 \cdot 6 \\ \underline{20} \\ 24699 \\ \underline{2} \\ \text{Ans. } \underline{\underline{49399 \text{ sixpences.}}} \end{array}$</p>
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<p>(32.)..... $\begin{array}{r} \text{£}109 \cdot 7 \cdot 8 \\ \underline{20} \\ 2187 \\ \underline{3} \\ \text{Ans. } \underline{\underline{6563 \text{ fourpences.}}} \end{array}$</p>	<p>(33.)..... $\begin{array}{r} \text{£}540 \cdot 12 \cdot 9 \\ \underline{20} \\ 10812 \\ \underline{4} \\ \text{Ans. } \underline{\underline{43251 \text{ threepences.}}} \end{array}$</p>
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$$\begin{array}{r}
 (34.) \dots\dots \text{£}212 . 13 . 2 \\
 \quad \quad \quad 20 \\
 \quad \quad \quad \hline
 \quad \quad \quad 4253 \\
 \quad \quad \quad \quad 6 \\
 \quad \quad \quad \hline
 \text{Ans. } \underline{\underline{25519}} \text{ twopences.}
 \end{array}$$

$$\begin{array}{r}
 (35.) \dots\dots \text{lb. oz. dwt. grs.} \\
 \quad \quad \quad 9 . 8 . 9 . 11 \\
 \quad \quad \quad \quad 12 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 116 \\
 \quad \quad \quad \quad 20 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 2329 \\
 \quad \quad \quad \quad 24 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 9317 \\
 \quad \quad \quad 4659 \\
 \text{Ans. } \underline{\underline{55907}} \text{ grains.}
 \end{array}$$

$$\begin{array}{r}
 (36.) \dots\dots \text{lb. oz. dwt.} \\
 \quad \quad \quad 156 . 7 . 15 \\
 \quad \quad \quad \quad 12 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 1879 \\
 \quad \quad \quad \quad 20 \\
 \text{Ans. } \underline{\underline{37595}} \text{ dwt.}
 \end{array}$$

$$\begin{array}{r}
 (37.) \dots\dots \text{lb. oz. dr.} \\
 \quad \quad \quad 42 . 12 . 15 \\
 \quad \quad \quad \quad 16 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 254 \\
 \quad \quad \quad \quad 43 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 684 \\
 \quad \quad \quad \quad 16 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 4109 \\
 \quad \quad \quad 685 \\
 \text{Ans. } \underline{\underline{10959}} \text{ drams.}
 \end{array}$$

$$\begin{array}{r}
 (38.) \dots\dots \text{cwt. qr. lb.} \\
 \quad \quad \quad 36 . 2 . 16 \\
 \quad \quad \quad \quad 36 \\
 \quad \quad \quad \quad 36 \\
 \quad \quad \quad 36,72 = 2 \text{ qr. } 16 \text{ lb.} \\
 \text{Ans. } \underline{\underline{4104}} \text{ lb.}
 \end{array}$$

$$\begin{array}{r}
 (39.) \dots\dots \text{tons. cwt. qr.} \\
 \quad \quad \quad 19 . 18 . 3 \\
 \quad \quad \quad \quad 20 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 398 \\
 \quad \quad \quad \quad 4 \\
 \text{Ans. } \underline{\underline{1595}} \text{ qr.}
 \end{array}$$

$$\begin{array}{r}
 (40.) \dots\dots \text{yds. qr. na.} \\
 \quad \quad \quad 67 . 3 . 2 \\
 \quad \quad \quad \quad 4 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 271 \\
 \quad \quad \quad \quad 4 \\
 \text{Ans. } \underline{\underline{1086}} \text{ nails.}
 \end{array}$$

$$\begin{array}{r}
 (41.) \dots\dots \text{yds. qr.} \\
 \quad \quad \quad 185 . 1 \\
 \quad \quad \quad \quad 4 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 741 \\
 \quad \quad \quad \quad 9 \\
 \text{Ans. } \underline{\underline{6669}} \text{ inches.}
 \end{array}$$

$$\begin{array}{r}
 (42.) \dots\dots \text{miles. fur. po.} \\
 \quad \quad \quad 492 . 7 . 35 \\
 \quad \quad \quad \quad 8 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 3943 \text{ furlongs.} \\
 \quad \quad \quad \quad 40 \\
 \quad \quad \quad 157755 \text{ poles.} \\
 \quad \quad \quad \quad 5\frac{1}{2} \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 788775 \\
 \quad \quad \quad \quad 78877\frac{1}{2} \\
 \text{Ans. } \underline{\underline{867652\frac{1}{2}}} \text{ yards.}
 \end{array}$$

$$\begin{array}{r}
 (43.) \dots\dots \text{acres. ro.} \\
 \quad \quad \quad 3695 . 3 \\
 \quad \quad \quad \quad 4 \\
 \quad \quad \quad \quad \hline
 \quad \quad \quad 14783 \\
 \quad \quad \quad \quad 40 \\
 \text{Ans. } \underline{\underline{591320}} \text{ perches.}
 \end{array}$$

$$\begin{array}{r}
 \text{(44.)} \dots\dots\dots \text{acres. ro. per.} \\
 1680 . 1 . 38 \\
 \underline{4} \\
 6721 \\
 \underline{40} \\
 268878 \\
 \underline{30\frac{1}{4}} \\
 8066340 \\
 \underline{67219\frac{1}{2}} \\
 \text{Ans. } \underline{\underline{8133559\frac{1}{2}}} \text{ yards.}
 \end{array}$$

$$\begin{array}{r}
 \text{(45.)} \dots\dots\dots \text{gall. qt. pt.} \\
 1185 . 3 . 1 \\
 \underline{4} \\
 4743 \\
 \underline{2} \\
 \text{Ans. } \underline{\underline{9487}} \text{ pints.}
 \end{array}$$

$$\begin{array}{r}
 \text{(46.)} \dots\dots\dots \text{bar. gal.} \\
 108 . 33 \\
 \underline{36} \\
 651 \\
 \underline{327} \\
 \text{Ans. } \underline{\underline{3921}} \text{ gallons.}
 \end{array}$$

$$\begin{array}{r}
 \text{(47.)} \dots\dots\dots \text{hhd. gal. qt.} \\
 144 . 50 . 2 \\
 \underline{54} \\
 576 \\
 \underline{725} \\
 7826 \\
 \underline{4} \\
 \text{Ans. } \underline{\underline{31306}} \text{ quarts.}
 \end{array}$$

$$\begin{array}{r}
 \text{(48.)} \dots\dots\dots \text{qr. bu.} \\
 1849 . 7 \\
 \underline{8} \\
 14799 \\
 \underline{4} \\
 \text{Ans. } \underline{\underline{59196}} \text{ pecks.}
 \end{array}$$

$$\begin{array}{r}
 \text{(49.)} \dots\dots\dots \text{lasts. qr. bu.} \\
 450 . 9 . 5 \\
 \underline{10} \\
 4509 \\
 \underline{8} \\
 \text{Ans. } \underline{\underline{36077}} \text{ bushels.}
 \end{array}$$

$$\begin{array}{r}
 50 \dots\dots\dots \text{years. days.} \\
 126 . 219 \\
 \underline{365} \\
 639 \\
 \underline{757} \\
 380 \\
 \underline{46209} \\
 24 \\
 184836 \\
 \underline{92418} \\
 \text{Ans. } \underline{\underline{1109016}} \text{ hours.}
 \end{array}$$

$$\begin{array}{r}
 \text{(51.)} \dots\dots \text{da. ho. min. sec.} \\
 365 . 5 . 48 . 49 \\
 \underline{24} \\
 1465 \\
 \underline{730} \\
 8765 \\
 \underline{60} \\
 525948 \\
 \underline{60} \\
 \text{Ans. } \underline{\underline{31556929}} \text{ seconds.}
 \end{array}$$

PROMISCUOUS QUESTIONS, pages 45, 46.

$$\begin{array}{r}
 (1.) \dots\dots 103 \text{ casks} \\
 114 = 9\frac{1}{2} \text{ doz.} \\
 \hline
 412 \\
 1133 \\
 \hline
 \text{Ans. } \underline{\underline{11742}} \text{ bottles.}
 \end{array}$$

$$\begin{array}{r}
 (2.) \dots\dots\dots \text{gross. doz.} \\
 136 . 3 \\
 \hline
 12 \\
 \hline
 1635 \\
 12 \\
 \hline
 \text{Ans. } \underline{\underline{19620}} \text{ bottles.}
 \end{array}$$

$$\begin{array}{r}
 (3) \dots 21 \text{ gs.} = \text{£}22 . 1 \\
 \phantom{21 \text{ gs.} = \text{£}22 .} 10 \\
 \hline
 220 . 10 \\
 5 \\
 \hline
 1102 . 10 \\
 9 \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}9922 . 10}}
 \end{array}$$

$$\begin{array}{r}
 (4.) \dots\dots\dots \text{£}18 . 18 \\
 \phantom{\text{£}18 . 18} 10 \\
 \hline
 189 \\
 5 \\
 \hline
 9450 \\
 1134 \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}122850}}
 \end{array}$$

$$\begin{array}{r}
 (5.) \dots\dots \text{£}0 . 17 . 6 \times 2 \\
 \phantom{\text{£}0 . 17 . 6 \times 2} 10 \\
 \hline
 8 . 15 \\
 5 \\
 \hline
 43 . 15 \\
 1 . 15 \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}45 . 10}}
 \end{array}$$

$$\begin{array}{r}
 (6.) \dots\dots \text{£}0 . 13 . 4 \\
 \phantom{\text{£}0 . 13 . 4} 10 \\
 \hline
 6 . 13 . 4 \\
 10 \\
 \hline
 66 . 13 . 4 \\
 5 \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}333 . 6 . 8}}
 \end{array}$$

$$\begin{array}{r}
 (7.) \dots\dots \text{£}0 . 3 . 9 \text{ } \text{p} \text{ pint.} \\
 \phantom{\text{£}0 . 3 . 9 \text{ } \text{p} \text{ pint.}} 8 \\
 \hline
 1 . 10 . 0 \text{ } \text{p} \text{ gall.} \\
 \phantom{1 . 10 . 0 \text{ } \text{p} \text{ gall.}} 10 \\
 \hline
 15 \\
 13 \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}195}}
 \end{array}$$

$$\begin{array}{r}
 (8.) \text{£}0 . 3 . 7\frac{1}{2} \text{ } \text{p} \text{ bottle.} \\
 \phantom{\text{£}0 . 3 . 7\frac{1}{2} \text{ } \text{p} \text{ bottle.}} 12 \\
 \hline
 2 . 3 . 6 \text{ } \text{p} \text{ doz.} \\
 \phantom{2 . 3 . 6 \text{ } \text{p} \text{ doz.}} 10 \\
 \hline
 21 . 15 \\
 5 \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}108 . 15}}
 \end{array}$$

$$\begin{array}{r}
 (9.) \dots \text{£}0 . 3 . 11 \text{ } \text{p} \text{ bottle.} \\
 \phantom{\text{£}0 . 3 . 11 \text{ } \text{p} \text{ bottle.}} 5\frac{1}{2} \text{ bottles.} \\
 \hline
 19 . 7 \\
 1 . 11\frac{1}{2} \\
 \hline
 1 . 1 . 6\frac{1}{2} \text{ } \text{p} \text{ gall.} \\
 \phantom{1 . 1 . 6\frac{1}{2} \text{ } \text{p} \text{ gall.}} 12 \\
 \hline
 12 . 18 . 6 \\
 11 \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}142 . 3 . 6}}
 \end{array}$$

$$\begin{array}{r}
 (10.) \dots \text{£}0 . 0 . 10\frac{1}{2} \times 9 \\
 \phantom{\text{£}0 . 0 . 10\frac{1}{2} \times 9} 10 \\
 \hline
 0 . 8 . 9 \times 1 \\
 10 \\
 \hline
 4 . 7 . 6 \\
 2 \\
 \hline
 8 . 15 . 0 \\
 0 . 8 . 9 \\
 0 . 7 . 10\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\text{£}9 . 11 . 7\frac{1}{2}}}
 \end{array}$$

(11.)... £0 . 10 . 6 p week.
 $\begin{array}{r} 4 \\ \hline 2 . 2 . 0 \text{ p month.} \\ 5 \\ \hline 10 . 10 . 0 \\ 5 \\ \hline \end{array}$
 Ans. £52 . 10 . 0

(12.)..... *dozen. bottles.*
 $\begin{array}{r} 52 . 9 \\ 12 \\ \hline 633 \text{ bottles.} \\ 18 \text{ pipes.} \\ \hline 5064 \\ 633 \\ \hline \end{array}$
 Ans. 11394 bottles.

(13.)... £0 . 1 . 1 $\frac{3}{4}$ p day.
 $\begin{array}{r} 7 \\ \hline 0 . 8 . 0\frac{1}{4} \text{ p week.} \\ 3 \\ \hline 1 . 4 . 0\frac{3}{4} \\ 10 \\ \hline 12 . 0 . 7\frac{1}{2} \\ 5 \\ \hline 60 . 3 . 1\frac{1}{2} \\ 9 \text{ companies.} \\ \hline \end{array}$
 Ans. £541 . 8 . 1 $\frac{1}{2}$

(14.)... £3 . 7 . 6 p month.
 $\begin{array}{r} 8 \\ \hline 27 . 0 . 0 \\ 40 \\ \hline 1080 \\ 18 \\ \hline 8640 \\ 1080 \\ \hline \end{array}$
 Ans. £19440

(15.)..... £0 . 16 . 8 $\times 1$
 $\begin{array}{r} 12 \\ \hline 10 \\ 9 \\ \hline 90 \\ 0 . 16 . 8 \\ \hline \end{array}$
 Ans. £90 . 16 . 8

(16.)..... *cwt. qr.*
 $\begin{array}{r} 19 . 2 \\ 19 \\ 19 \\ \hline 1956 \\ 2184 \text{ lbs.} \\ 16 \\ \hline 13104 \\ 2184 \\ \hline 34944 \\ 60 \text{ drops.} \\ \hline \end{array}$
 Ans. 2096640

(17.)... 4 doz. 5 lb. = 53 lb.
 20 boxes.
 $\begin{array}{r} 1060 \text{ lb.} \\ \hline \end{array}$
 $\begin{array}{r} £0 . 0 . 10\frac{1}{2} \\ 10 \\ \hline 0 . 8 . 9 \times 6 \\ 10 \\ \hline 4 . 7 . 6 \\ 10 \\ \hline 43 . 15 . 0 \\ 2 . 12 . 6 \\ \hline \end{array}$
 Ans. £46 . 7 . 6

(18.)..... *yd. qr. na.*
 $\begin{array}{r} 1 . 0 . 3 \\ 10 \\ \hline 11 . 3 . 2 \times 5 \\ 10 \\ \hline 118 . 3 . 0 \\ 9 \\ \hline 1068 . 3 . 0 \\ 59 . 1 . 2 \\ \hline \end{array}$
 Ans. 1128 . 0 . 2

(19.)... $\begin{array}{r} \text{cwt. gr. lb.} \\ 0 . 2 . 14 \\ \hline 5 \\ 3 . 0 . 14 \\ \hline 3 \\ \hline 9 . 1 . 14 \text{ weight.} \end{array}$

1 qr. $\frac{1}{4}$... £4 . 4 . 6 $\frac{3}{4}$ cwt.

$\begin{array}{r} 38 . 0 . 6 \\ 14 \text{ lb. } \frac{1}{2} \dots 1 \quad 1 . 1 \frac{1}{2} \\ \hline 10 . 6 \frac{3}{4} \\ \hline \text{Ans. } \underline{\underline{\pounds 39 . 12 . 2 \frac{1}{4}}} \end{array}$

(23.)..... £ 1 . 2 . 6 $\frac{3}{10}$ sec.

$\begin{array}{r} 10 \\ \hline 11 . 5 \\ \hline 6 \\ \hline \pounds 67 . 10 \frac{3}{10} \text{ min.} \\ \hline 10 \\ \hline 675 \\ \hline 6 \\ \hline \pounds 4050 \frac{3}{24} \text{ hour.} \\ \hline 24 \\ \hline 16200 \\ \hline 8100 \\ \hline \pounds 97200 \frac{3}{365} \text{ day.} \\ \hline 365 \\ \hline 4860 \\ \hline 5832 \\ \hline 2916 \end{array}$

(20.)..... £166 . 13 . 4
12

$\begin{array}{r} 2000 \\ \hline 20 \\ \hline \text{Ans. } \underline{\underline{\pounds 40000}} \end{array}$

Ans. $\underline{\underline{\pounds 35478000}}$ $\frac{3}{}$ ann.

(21.)..... £1527 . 11 . 8 $\times 4$
12

$\begin{array}{r} 18331 . 0 . 0 \\ 6110 . 6 . 8 \\ \hline \text{Ans. } \underline{\underline{\pounds 24441 . 6 . 8}} \end{array}$

(24.)..... £0 . 15 . 3 $\times 9$
10

$\begin{array}{r} 7 . 12 . 6 \\ \hline 10 \\ \hline 76 . 5 . 0 \\ \hline 3 \\ \hline 228 . 15 . 0 \\ \hline 6 . 17 . 3 \\ \hline \text{Rum } \underline{\underline{\pounds 235 . 12 . 3}} \end{array}$

(22.) £0 . 13 . 4 $\times 5$
12

$\begin{array}{r} 8 \\ \hline 30 \\ \hline 240 \\ \hline 3 . 6 . 8 \\ \hline 243 . 6 . 8 \text{ expences } \frac{3}{8} \text{ yr.} \\ 54 . 12 . 0 \text{ lays up.} \\ \hline \text{Ans. } \underline{\underline{\pounds 297 . 18 . 8}} \end{array}$

£3 . 15 . 6 $\times 1$
8

$\begin{array}{r} 30 . 4 . 0 \\ \hline 8 \\ \hline 241 . 12 . 0 \\ \hline \frac{1}{2} \dots\dots 3 . 15 . 6 \\ \hline \frac{1}{2} \dots\dots 1 . 17 . 9 \\ \hline 0 . 18 . 10 \frac{1}{2} \end{array}$

Ans. { Sugar £248 . 4 . 1 $\frac{1}{2}$
Rum 235 . 12 . 3
 $\underline{\underline{\pounds 483 . 16 . 4 \frac{1}{2}}}$

(25.)..... £ 5 . 5 × 2

	10
	<u>52 . 10</u>
	5
	<u>262 . 10</u>
	10 . 10
Spent	£273 . 0 a year
Income	250 . 0
In debt	£ 23 . 0 1st Ans.
To save	10 . 10
Deduct	33 . 10
From	£250 . 0
2nd Ans.	<u>£216 . 10</u>

(26.).....^{yds.} 3 miles = 1760 × 3 = ^{yds.} 5280
 2 do. = 1760 × 2 = 3520

	1056
	2640
	<u>1584</u>
Sq. yds.	18585600
	340 yds. deep.
	<u>743424</u>
	557568
Sol. yds.	<u>6319104000</u>
	72 her. φ sol. yard.
	<u>12638208</u>
	44233728
Ans.	<u>454975488000 herrings.</u>

(27.)... ^{lb. oz.} 2 . 3

	12
	<u>27 oz.</u>
	20
	<u>540 dwt.</u>
	24
	<u>2160</u>
	1080
	<u>12960 grains.</u>
	250
	<u>64800</u>
	25920

(28.)..... ^{4½} pecks.

	6
	<u>27 pecks φ day.</u>
	6
	<u>162 pecks φ week.</u>
	16
	<u>972</u>
	162
	<u>2592 pecks ea. man.</u>
	17 men.
	<u>18144</u>
	2592

Ans. { 3240000 fishes.
13 lb.
42120000 lb. weight.

Ans. { 44064 pecks, quantity.
10 lb. each.
440640 lb. weight.

$$\begin{array}{r}
 \text{(29.)} \dots \dots \text{ gr. bu.} \\
 4 \ . \ 3 \\
 \hline
 12 \\
 \hline
 52 \ . \ 4 \\
 4 \\
 \hline
 \end{array}$$

1st Ans. 210 . 0 quarters.

$$\begin{array}{r}
 \text{£}1 \ . \ 12 \ . \ 6 \\
 3 \\
 \hline
 4 \ . \ 17 \ . \ 6 \\
 7 \\
 \hline
 34 \ . \ 2 \ . \ 6 \\
 10 \\
 \hline
 \end{array}$$

2dA. 341 . 5 . 0 val.

$$\begin{array}{r}
 \text{cwt. gr. lb.} \\
 3 \ . \ 1 \ . \ 14 \\
 3 \\
 \hline
 10 \ . \ 0 \ . \ 14 \\
 7 \\
 \hline
 70 \ . \ 3 \ . \ 14 \\
 10 \\
 \hline
 \end{array}$$

3d Ans. 708 . 3 . 0 weight.

(30.) ... 20000 soldiers.
20 rounds each.

$$\begin{array}{r}
 16 \left\{ \begin{array}{l} 4 \\ 4 \end{array} \right| \begin{array}{l} 400000 \text{ ounces.} \\ 100000 \end{array} \\
 28 \left\{ \begin{array}{l} 4 \\ 7 \end{array} \right| \begin{array}{l} 25000 \\ 6250 \end{array} \\
 4 \quad 892 \ . \ 0 \ . \ 24 \ \text{lb.}
 \end{array}$$

4 drs. = $\frac{1}{4}$ cwt. 223 . 0 . 24 lb. lead.
55 . 3 . 6 lb. powder. } Ans.

DIVISION.

RULE I.

EXERCISES, page 47.

(1.) $2)8432564$
4216282

(4.) $5)4986089$
997217 $\frac{4}{5}$

(7.)... $8)98765432$
12345679

(2.) $3)980546$
326848 $\frac{2}{3}$

(5.) $6)7308687$
1218114 $\frac{1}{2}$

(8.) $9)88888888$
98765432

(3.) $4)1673248$
418312

(6.) $7)12345678$
1763668 $\frac{2}{7}$

(9.) $11)71065430$
6460493 $\frac{7}{11}$

(10.)... $12)1481481468$
Ans. 123456789

RULE II.

EXERCISES, pp. 48. 49.

- (1)... 13)615433 (47341 *Ans.* (2.) 17)1862086 (109534 $\frac{8}{17}$
- | | |
|---------|----------------------|
| 52..... | 13 |
| 95 | 142023 |
| 91 | 47341 |
| 44 | 615433 <i>Proof.</i> |
| 39 | |
| 53 | |
| 52 | |
| 13 | |
| 13 | |
| 13 | |
- | | |
|---------|-----------------------|
| 17..... | 17 |
| 162 | 766746 |
| 153 | 109534 |
| 90 | 1862086 <i>Proof.</i> |
| 85 | |
| 58 | |
| 51 | |
| 76 | |
| 68 | |
| 8 | |
| 8 | |
- (3.) 19)432174(22746 *Ans.* (4.) 21)7360320(350491 $\frac{9}{21}$
- | | |
|---------|--|
| 38..... | |
| 52 | |
| 38 | |
| 141 | |
| 133 | |
| 87 | |
| 76 | |
| 114 | |
| 114 | |
| 114 | |
- | | |
|---------------|-------------|
| 63..... | <i>Ans.</i> |
| 106 | |
| 105 | |
| 103 | |
| 84 | |
| 192 | |
| 189 | |
| 30 | |
| 21 | |
| 9 <i>rem.</i> | |
| 9 <i>rem.</i> | |
- (5.) 32)651083(20346 $\frac{11}{32}$ *Ans.* (6.) 43)1165467(27103 $\frac{38}{43}$
- | | |
|----------------|--|
| 64..... | |
| 110 | |
| 96 | |
| 148 | |
| 128 | |
| 203 | |
| 192 | |
| 11 <i>rem.</i> | |
| 11 <i>rem.</i> | |
- | | |
|----------------|-------------|
| 86..... | <i>Ans.</i> |
| 305 | |
| 301 | |
| 44 | |
| 43 | |
| 167 | |
| 129 | |
| 38 <i>rem.</i> | |
| 38 <i>rem.</i> | |
- (7.) 54)876528(16232 *Ans.* (8.) 65)1310530(20162 *Ans.*
- | | |
|---------|--|
| 54..... | |
| 336 | |
| 324 | |
| 125 | |
| 108 | |
| 172 | |
| 162 | |
| 108 | |
| 108 | |
| 108 | |
- | | |
|----------|--|
| 130..... | |
| 105 | |
| 65 | |
| 403 | |
| 390 | |
| 130 | |
| 130 | |
| 130 | |

$$\begin{array}{r}
 (9.) \dots 76)763252(10042\frac{60}{78} \\
 \underline{76 \dots \dots} \text{ Ans.} \\
 325 \\
 \underline{304} \\
 212 \\
 \underline{152} \\
 60 \text{ rem.} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (10.) \quad 87)2614765(30054\frac{67}{87} \\
 \underline{261 \dots \dots} \text{ Ans.} \\
 476 \\
 \underline{435} \\
 415 \\
 \underline{348} \\
 67 \text{ rem.} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (11.) \quad 98)9267566(94567 \text{ Ans.} \\
 \underline{882 \dots \dots} \\
 447 \\
 \underline{392} \\
 555 \\
 \underline{490} \\
 656 \\
 \underline{588} \\
 686 \\
 \underline{686} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (12.) \quad 123)876543(7126\frac{45}{123} \\
 \underline{861 \dots \dots} \text{ Ans.} \\
 155 \\
 \underline{123} \\
 324 \\
 \underline{246} \\
 783 \\
 \underline{738} \\
 45 \text{ rem.} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (13.) \quad 321)1815483(5655\frac{226}{321} \\
 \underline{1605 \dots \dots} \text{ Ans.} \\
 2104 \\
 \underline{1926} \\
 1788 \\
 \underline{1605} \\
 1833 \\
 \underline{1605} \\
 228 \text{ rem.} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (14.) \quad 654)6753210(10326\frac{6}{654} \\
 \underline{654 \dots \dots} \text{ Ans.} \\
 2132 \\
 \underline{1962} \\
 1701 \\
 \underline{1308} \\
 3930 \\
 \underline{3924} \\
 6 \text{ rem.} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (15.) \quad 987)10867495(11010\frac{625}{987} \\
 \underline{987 \dots \dots} \text{ Ans.} \\
 997 \\
 \underline{987} \\
 1049 \\
 \underline{987} \\
 625 \text{ rem.} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (16.) \quad 1564)84095326(53769\frac{610}{1564} \\
 \underline{7820 \dots \dots} \text{ Ans.} \\
 5895 \\
 \underline{4692} \\
 12033 \\
 \underline{10948} \\
 10852 \\
 \underline{9384} \\
 14686 \\
 \underline{14076} \\
 610 \text{ rem.} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 (17.) 6095) 62914930 \quad (10322 \frac{2340}{8095}) \\
 \underline{6095 \cdots \text{Ans.}} \\
 19649 \\
 \underline{18285} \\
 13643 \\
 \underline{12190} \\
 14530 \\
 \underline{12190} \\
 \underline{\underline{2340 \text{ rem.}}}
 \end{array}$$

$$\begin{array}{r}
 (18.) 1728) 6189685 \quad (3581 \frac{1717}{1728}) \\
 \underline{5184 \cdots \text{Ans.}} \\
 10056 \\
 \underline{8640} \\
 14168 \\
 \underline{13824} \\
 3445 \\
 \underline{1728} \\
 \underline{\underline{1717 \text{ rem.}}}
 \end{array}$$

$$\begin{array}{r}
 (19.) 56789) 27878400 \quad (490 \frac{51790}{56789}) \\
 \underline{227156 \cdots \text{Ans.}} \\
 516280 \\
 \underline{511101} \\
 \underline{\underline{51790 \text{ rem.}}}
 \end{array}$$

$$\begin{array}{r}
 (20.) 1628) 4189684 \quad (2573 \frac{840}{1628}) \\
 \underline{3256 \cdots \text{Ans.}} \\
 9336 \\
 \underline{8140} \\
 11968 \\
 \underline{11396} \\
 5724 \\
 \underline{4884} \\
 \underline{\underline{840 \text{ rem.}}}
 \end{array}$$

$$\begin{array}{r}
 (21.) 9009) 2655492840 \quad (294760) \\
 \underline{18018 \cdots \text{Ans.}} \\
 85369 \\
 \underline{81081} \\
 42882 \\
 \underline{36036} \\
 68468 \\
 \underline{63063} \\
 54054 \\
 \underline{54054} \\
 \underline{\underline{0}}
 \end{array}$$

$$\begin{array}{r}
 (22.) 3205) 7842603 \quad (2446 \frac{3173}{3205}) \\
 \underline{6410 \cdots \text{Ans.}} \\
 14326 \\
 \underline{12820} \\
 15060 \\
 \underline{12820} \\
 22403 \\
 \underline{19230} \\
 \underline{\underline{3173 \text{ rem.}}}
 \end{array}$$

$$\begin{array}{r}
 (23.) 2197) 1554584788 \quad (707594 \frac{770}{2197}) \\
 \underline{15379 \cdots \text{Ans.}} \\
 16684 \\
 \underline{15379} \\
 13057 \\
 \underline{10985} \\
 20728 \\
 \underline{19773} \\
 9558 \\
 \underline{8788} \\
 \underline{\underline{770 \text{ rem.}}}
 \end{array}$$

$$\begin{array}{r}
 (24.) 96328) 60706194584 \quad (630203) \\
 \underline{577968 \cdots \text{Ans.}} \\
 290939 \\
 \underline{288984} \\
 195545 \\
 \underline{192656} \\
 288984 \\
 \underline{288984} \\
 \underline{\underline{0}}
 \end{array}$$

$$(25.) \quad 43 \overline{)1234567890} (28710881 \frac{7}{43} \quad (26.) \quad 65 \overline{)1234567890} (18993352 \frac{10}{65}$$

rem. $\overline{37,4} \dots \dots$ *Ans.*

$\overline{58,4} \dots \dots$ *Ans.*

$$\begin{array}{r} \overline{305} \\ \quad \underline{46} \\ \quad \quad \underline{378} \\ \quad \quad \quad \underline{349} \\ \quad \quad \quad \quad \underline{50} \\ \quad \quad \quad \quad \quad \underline{7 \text{ rem.}} \end{array}$$

$$\begin{array}{r} \overline{645} \\ \quad \underline{606} \\ \quad \quad \underline{217} \\ \quad \quad \quad \underline{228} \\ \quad \quad \quad \quad \underline{339} \\ \quad \quad \quad \quad \quad \underline{140} \\ \quad \quad \quad \quad \quad \quad \underline{10 \text{ rem.}} \end{array}$$

$$(27.) \quad 87 \overline{)1234567890} (14190435 \frac{45}{87} \quad (28.) \quad 123 \overline{)1234567890} (10037137 \frac{39}{123}$$

$\overline{36,4} \dots \dots$ *Ans.*

$\overline{45,6} \dots \dots$ *Ans.*

$$\begin{array}{r} \overline{165} \\ \quad \underline{786} \\ \quad \quad \underline{378} \\ \quad \quad \quad \underline{309} \\ \quad \quad \quad \quad \underline{480} \\ \quad \quad \quad \quad \quad \underline{45} \end{array}$$

$$\begin{array}{r} \overline{877} \\ \quad \underline{168} \\ \quad \quad \underline{459} \\ \quad \quad \quad \underline{900} \\ \quad \quad \quad \quad \underline{39 \text{ rem.}} \end{array}$$

$$29.) \quad 156 \overline{)1234567890} (7913896 \frac{14}{156} \quad (30.) \quad 213 \overline{)987654321} (4636874 \frac{59}{213}$$

$\overline{142,5} \dots \dots$ *Ans.*

$\overline{135,6} \dots \dots$ *Ans.*

$$\begin{array}{r} \overline{216} \\ \quad \underline{607} \\ \quad \quad \underline{1398} \\ \quad \quad \quad \underline{1509} \\ \quad \quad \quad \quad \underline{1050} \\ \quad \quad \quad \quad \quad \underline{114 \text{ rem.}} \end{array}$$

$$\begin{array}{r} \overline{785} \\ \quad \underline{1464} \\ \quad \quad \underline{1863} \\ \quad \quad \quad \underline{1592} \\ \quad \quad \quad \quad \underline{1011} \\ \quad \quad \quad \quad \quad \underline{159 \text{ rem.}} \end{array}$$

$$(31.) \quad 365 \overline{)987654321} (2705902 \frac{91}{365} \quad (32.) \quad 543 \overline{)987654321} (1818884 \frac{3}{543}$$

$\overline{257,6} \dots \dots$ *Ans.*

$\overline{444,6} \dots \dots$ *Ans.*

$$\begin{array}{r} \overline{2154} \\ \quad \underline{3293} \\ \quad \quad \underline{821} \\ \quad \quad \quad \underline{91 \text{ rem.}} \end{array}$$

$$\begin{array}{r} \overline{1025} \\ \quad \underline{4824} \\ \quad \quad \underline{4803} \\ \quad \quad \quad \underline{4592} \\ \quad \quad \quad \quad \underline{2481} \\ \quad \quad \quad \quad \quad \underline{309 \text{ rem.}} \end{array}$$

$$\begin{array}{r}
 (33.) \ 768 \overline{)987654321} (1286008 \frac{177}{783} \quad \text{Ans.} \\
 \underline{2196} \ \cdots \cdots \\
 \underline{6605} \\
 \underline{4614} \\
 \underline{6321} \\
 \underline{177} \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 (34.) \ 987 \overline{)987654321} (1000662 \frac{927}{987} \quad \text{Ans.} \\
 \underline{6543} \\
 \underline{6212} \\
 \underline{2901} \\
 \underline{927} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 (35.) \ 73 \overline{)53872694} (737982 \frac{8}{73} \quad \text{Ans.} \\
 \underline{277} \ \cdots \cdots \\
 \underline{582} \\
 \underline{716} \\
 \underline{599} \\
 \underline{154} \\
 \underline{8} \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 (36.) \ 146 \overline{)53872694} (368991 \frac{8}{146} \quad \text{Ans.} \\
 \underline{1007} \ \cdots \cdots \\
 \underline{1312} \\
 \underline{1446} \\
 \underline{1329} \\
 \underline{154} \\
 \underline{8} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 (37.) \ 219 \overline{)53872694} (245994 \frac{8}{219} \quad \text{Ans.} \\
 \underline{1007} \ \cdots \cdots \\
 \underline{1312} \\
 \underline{2176} \\
 \underline{2059} \\
 \underline{884} \\
 \underline{8} \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 (38.) \ 292 \overline{)53872694} (184495 \frac{154}{292} \quad \text{Ans.} \\
 \underline{2467} \ \cdots \cdots \\
 \underline{1312} \\
 \underline{1446} \\
 \underline{2789} \\
 \underline{1614} \\
 \underline{154} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 (39.) \ 365 \overline{)131406570} (360018 \quad \text{Ans.} \\
 \underline{2180} \ \cdots \cdots \\
 \underline{657} \\
 \underline{2920} \\
 \underline{0} \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 (40.) \ 438 \overline{)131406570} (300015 \\
 \cdots \cdots \underline{657} \quad \text{Ans.} \\
 \underline{2190} \\
 \underline{0} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 (41.) \ 511 \overline{)131406570} (257155 \frac{365}{511} \quad \text{Ans.} \\
 \underline{2920} \ \cdots \cdots \\
 \underline{3656} \\
 \underline{795} \\
 \underline{2847} \\
 \underline{2920} \\
 \underline{365} \\
 \hline
 \end{array}
 \quad
 \begin{array}{r}
 (42.) \ 584 \overline{)131406570} (225011 \frac{146}{584} \quad \text{Ans.} \\
 \underline{1460} \ \cdots \cdots \\
 \underline{2926} \\
 \underline{657} \\
 \underline{730} \\
 \underline{146} \\
 \hline
 \end{array}$$

(43.) 657)131406570(200010 *Ans.*

$$\begin{array}{r}
 1314 \\
 \hline
 657 \\
 657 \\
 \hline
 0
 \end{array}$$

RULE III.

EXERCISES, page 49.

$$\begin{array}{r}
 (1.) \dots \quad 2\frac{1}{4} \overline{)7325} \\
 \quad \quad \quad 4 \quad \quad \quad 4 \\
 \hline
 9)29300 \\
 \hline
 3255\frac{5}{9}
 \end{array}$$

$$\begin{array}{r}
 (2.) \dots \quad 7\frac{1}{2} \overline{)16108} \\
 \quad \quad \quad 2 \quad \quad \quad 2 \\
 \hline
 15)32216 \\
 \hline
 2147\frac{1}{15}
 \end{array}$$

$$\begin{array}{r}
 (3.) \dots \quad 9\frac{3}{4} \overline{)4567} \\
 \quad \quad \quad 4 \quad \quad \quad 4 \\
 \hline
 39)18268 \\
 \hline
 468\frac{16}{39}
 \end{array}$$

$$\begin{array}{r}
 (4.) \quad 8\frac{2}{5} \overline{)50413} \\
 \quad \quad 5 \quad \quad \quad 5 \\
 \hline
 42)252065 \\
 \hline
 6001\frac{5}{42}
 \end{array}$$

$$\begin{array}{r}
 (5.) \quad 3\frac{5}{8} \overline{)19320} \\
 \quad \quad 6 \quad \quad \quad 6 \\
 \hline
 23)115920 \\
 \hline
 5040
 \end{array}$$

$$\begin{array}{r}
 (6.) \quad 12\frac{2}{8} \overline{)87654} \\
 \quad \quad 8 \quad \quad \quad 8 \\
 \hline
 99)701232 \\
 \hline
 7083\frac{5}{99}
 \end{array}$$

RULE IV.

EXERCISES, page 49.

$$\begin{array}{r}
 (1.) \dots \quad \text{Mult. } 5432 \text{ by } 6\frac{2}{3} \\
 \quad \quad \quad 6 \\
 \hline
 32592 \\
 3621\frac{1}{3} \text{ for } \frac{2}{3} \\
 \hline
 36213\frac{1}{3} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (2.) \dots \quad \text{Mult. } 1984 \text{ by } 9\frac{3}{4} \\
 \quad \quad \quad 9 \\
 \hline
 17856 \\
 1488 \text{ for } \frac{3}{4} \\
 \hline
 19344 \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (3.) \dots \quad 3210 \text{ by } 12\frac{1}{4} \\
 \quad \quad \quad 12 \\
 \hline
 38520 \\
 802\frac{1}{2} \text{ for } \frac{1}{4} \\
 \hline
 39322\frac{1}{2} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (4.) \dots \quad 8132 \text{ by } 27\frac{1}{2} \\
 \quad \quad \quad 27 \\
 \hline
 56924 \\
 16264 \\
 4066 \text{ for } \frac{1}{2} \\
 \hline
 223630 \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (5.) \dots \quad 1675 \text{ by } 33\frac{1}{3} \\
 \quad \quad \quad 33 \\
 \hline
 5025 \\
 5025 \\
 558\frac{1}{3} \text{ for } \frac{1}{3} \\
 \hline
 55833\frac{1}{3} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (6.) \dots \quad 9876 \text{ by } 52\frac{1}{8} \\
 \quad \quad \quad 52 \\
 \hline
 19752 \\
 49380 \\
 9258\frac{1}{4} \text{ for } \frac{1}{8} \\
 \hline
 522810\frac{1}{4} \text{ Ans.}
 \end{array}$$

CONTRACTIONS.

I.

- | | |
|--|--|
| <p>(1.) $25 \left\{ \begin{array}{l} 5 \overline{) 730146292 \text{ by } 25} \\ 5 \overline{) 146029258 - 2} \\ \hline 29205851 \frac{17}{25} \text{ Ans.} \end{array} \right.$</p> | <p>(2.) $35 \left\{ \begin{array}{l} 7 \overline{) 730146292 \text{ by } 35} \\ 5 \overline{) 104306613 - 1} \\ \hline 20861322 \frac{22}{35} \text{ Ans.} \end{array} \right.$</p> |
| <p>(3.) $42 \left\{ \begin{array}{l} 7 \overline{) 730146292 \text{ by } 42} \\ 6 \overline{) 104306613 - 1} \\ \hline 17384435 \frac{22}{42} \text{ Ans.} \end{array} \right.$</p> | <p>(4.) $54 \left\{ \begin{array}{l} 9 \overline{) 730146292 \text{ by } 54} \\ 6 \overline{) 81127365 - 7} \\ \hline 13521227 \frac{34}{54} \text{ Ans.} \end{array} \right.$</p> |
| <p>(5.) $63 \left\{ \begin{array}{l} 9 \overline{) 730146292 \text{ by } 63} \\ 7 \overline{) 81127365 - 7} \\ \hline 11589623 \frac{43}{63} \text{ Ans.} \end{array} \right.$</p> | <p>(6.) $72 \left\{ \begin{array}{l} 12 \overline{) 365438511 \text{ by } 72} \\ 6 \overline{) 30453209 - 3} \\ \hline 5075534 \frac{63}{72} \text{ Ans.} \end{array} \right.$</p> |
| <p>(7.) $81 \left\{ \begin{array}{l} 9 \overline{) 365438511 \text{ by } 81} \\ 9 \overline{) 40604279} \\ \hline 4511586 \frac{45}{81} \text{ Ans.} \end{array} \right.$</p> | <p>(8.) $96 \left\{ \begin{array}{l} 12 \overline{) 365438511 \text{ by } 96} \\ 8 \overline{) 30453209 - 3} \\ \hline 3806651 \frac{15}{96} \text{ Ans.} \end{array} \right.$</p> |
| <p>(9.) $121 \left\{ \begin{array}{l} 11 \overline{) 365438511 \text{ by } 121} \\ 11 \overline{) 33221682 - 9} \\ \hline 3020152 \frac{9}{121} \text{ Ans.} \end{array} \right.$</p> | <p>(10.) $132 \left\{ \begin{array}{l} 11 \overline{) 365438511 \text{ by } 132} \\ 12 \overline{) 33221682 - 9} \\ \hline 2768473 \frac{75}{132} \text{ Ans.} \end{array} \right.$</p> |

II.

- | | |
|---|---|
| <p>(1.) $31,0)15610,8(503 \frac{178}{310} \text{ Ans.}$
 $\begin{array}{r} 155 \cdot \cdot \\ \hline 110 \\ 93 \\ \hline 178 \end{array}$</p> | <p>(4.) $73,00)74932,15(1026 \frac{3415}{7300}$
 $\begin{array}{r} 73 \cdot \cdot \cdot \\ \hline 193 \\ 146 \\ \hline 472 \\ 438 \\ \hline 3415 \end{array}$</p> |
| <p>(2.) $8,00)6270,96$
 $\begin{array}{r} 783 \frac{696}{800} \end{array}$</p> | <p>(5.) $9)19186,00 \text{ by } 81,00$
 $\begin{array}{r} 9 \overline{) 2131 - 7} \\ \hline 236 \frac{70}{9} \text{ Ans.} \end{array}$</p> |
| <p>(3.) $11,00)15164,80$
 $\begin{array}{r} 1378 \frac{600}{1100} \end{array}$</p> | |

III.

$$(1.) \dots \begin{array}{r} 99)67403 \\ \quad 674 \\ \quad \quad 6 \\ \hline \text{Ans. } \underline{\underline{680}}/\underline{\underline{\frac{83}{99}}} \text{ rem.} \end{array}$$

$$(2.) \dots \begin{array}{r} 999)23548 \\ \quad \quad 230 \\ \hline \text{Ans. } \underline{\underline{23}}/\underline{\underline{\frac{778}{999}}} \text{ rem.} \end{array}$$

$$(3.) \dots \begin{array}{r} 999)6748378 \\ \quad 6748 \\ \quad \quad 6 \\ \quad \quad \quad 1 \\ \hline \text{Ans. } \underline{\underline{6755}}/\underline{\underline{\frac{131}{999}}} \end{array}$$

$$(4.) \dots \begin{array}{r} 9999)5278376 \\ \quad \quad \quad 527 \\ \hline \text{Ans. } \underline{\underline{527}}/\underline{\underline{\frac{8903}{9999}}} \end{array}$$

QUESTIONS FOR PRACTICE, page 51.

$$(1.) \begin{array}{r} 99)1000000(10101\frac{1}{99} \\ \quad 99 \dots \dots \text{Ans.} \\ \quad \quad 100 \\ \quad \quad \quad 99 \\ \quad \quad \quad \quad 100 \\ \quad \quad \quad \quad \quad 99 \\ \quad \quad \quad \quad \quad \quad 1 \\ \hline \hline \end{array}$$

$$(6.) \begin{array}{r} \text{miles.} \\ 52)4550(87\frac{1}{2} \text{ miles.} \\ \quad 416 \cdot \text{Ans.} \\ \quad \quad 390 \\ \quad \quad \quad 364 \\ \quad \quad \quad \quad 26 \\ \quad \quad \quad \quad \quad 52 = \frac{1}{2} \\ \hline \hline \end{array}$$

$$(2.) \begin{array}{r} 62\frac{1}{2} \overline{)500000} \\ \quad 2 \quad \quad 2 \\ \hline 125 \overline{)1000000}(8000 \text{ times.} \\ \quad 1000 \dots \dots \text{Ans.} \\ \hline \hline \end{array}$$

$$(7.) 25 \left\{ \begin{array}{l} 5 \overline{)44800} \text{ yards.} \\ 5 \overline{)8960} \\ \hline 1792 \text{ yards per bale.} \end{array} \right.$$

$$(3.) 42 \left\{ \begin{array}{l} 6 \overline{)4704000} \text{ bottles.} \\ 7 \overline{)784} \\ \hline \text{Ans. } \underline{\underline{112}} \text{ bottles.} \end{array} \right.$$

$$56,0 \overline{)4480,0}(80 \text{ yards per piece.} \\ \quad \underline{448}$$

$$(4.) 25,0 \left\{ \begin{array}{l} 5 \overline{)100000,0} \text{ oranges.} \\ 5 \overline{)20000} \\ \hline \text{Ans. } \underline{\underline{4000}} \text{ chests.} \end{array} \right.$$

$$(8.) \begin{array}{r} 3\frac{1}{4} \overline{)52} \text{ yards.} \\ \quad 4 \overline{)4} \\ 13 \overline{)208}(16 \text{ shirts.} \\ \quad \quad 13 \\ \quad \quad \quad 78 \\ \quad \quad \quad \quad 78 \\ \hline \hline \end{array}$$

$$(5.) 18 \left\{ \begin{array}{l} 9 \overline{)2475} \text{ gallons.} \\ 2 \overline{)275} \\ \hline \text{Ans. } \underline{\underline{137\frac{1}{2}}} \text{ gallons.} \end{array} \right.$$

$$(9.) \begin{array}{r} \text{A hhd. is } 63 \text{ gallons.} \\ \quad \quad 8 \\ 3 \overline{)504} \text{ pints.} \\ \text{Ans. } \underline{\underline{168}} \text{ bottles.} \end{array}$$

(10.)... $\begin{array}{r} \text{feet.} \\ 25 \overline{)900} \end{array} (36 \text{ feet. Ans.}$
 $\begin{array}{r} 75 \cdot \\ \underline{150} \\ 150 \\ \underline{\quad} \end{array}$

(16.)... $\begin{array}{r} \text{sacks.} \\ 7 \frac{1}{2} \overline{)157 \frac{1}{2}} \end{array} \text{sacks.}$
 $\begin{array}{r} 2 \quad 2 \\ \underline{15} 315 (21 \text{ days. Ans.} \\ 30 \\ \underline{15} \\ 15 \\ \underline{\quad} \end{array}$

(11.)... $96 \overline{)1440} (15 \text{ feet. Ans.}$
 $\begin{array}{r} 96 \cdot \\ \underline{480} \\ 480 \\ \underline{\quad} \end{array}$

(17.) $128 \times 21 \text{ da.}$
 $2688 \overline{)6720} (2 \frac{1}{2} \text{ stones } \frac{1}{2} \text{ day.}$
 $\begin{array}{r} 5376 \quad \text{Ans.} \\ \underline{1344} \\ 2688 \\ \underline{\quad} \end{array}$

(12.)... $7 \overline{)1106} \text{ miles.}$
 $24 \overline{)158} \text{ hours.}$
Ans. 6 da. 14 hours.

(13.)... $6 \overline{)24932} \text{ miles.}$
 $24 \left\{ \begin{array}{l} 2 \overline{)4155} \text{ ho. 20 min.} \\ 12 \overline{)2077} - 1 \end{array} \right.$
Ans. 173 da. 3 ho. 20 min.

(18.) $27793 \overline{)1805688} (65 \text{ nearly,}$
 $\begin{array}{r} 166758 \cdot \quad \text{Ans.} \\ \underline{138108} \\ 138965 \end{array}$

(14.) $\begin{array}{r} \text{par. inhabit.} \quad \text{pers.} \\ 102 \overline{)1050000} (10294 \text{ Ans.} \\ 102 \cdot \cdot \cdot \cdot \\ \underline{300} \\ 204 \\ \underline{960} \\ 918 \\ \underline{420} \\ 408 \\ \underline{12} \end{array}$

(19.) $\text{add } \frac{1}{8} \overline{)36000} \text{ men.}$
 $\text{ded. } \frac{1}{5} \overline{)12000} \text{ recruits}$
 $\text{off } \frac{1}{5} \overline{)48000} \text{ amount.}$
 $\text{6000 deserters, \&c.}$
 8400 slain.
Ans. 33600 left.

(15.) $57231 \overline{)10150615} (177 \text{ Ans.}$
 $\begin{array}{r} 57231 \cdot \cdot \\ \underline{442751} \\ 400617 \\ \underline{421345} \\ 400617 \\ \underline{20728} \end{array}$

(20.) $365 \cdot 6 \cdot 9 = 525969 \text{ min.}$
 $\begin{array}{r} \text{min.} \quad \text{miles.} \quad \text{miles.} \\ 525969 \overline{)744457824} (1415 \frac{1}{2} \text{ nearly.} \\ 525969 \cdot \cdot \cdot \quad \text{Ans.} \\ \underline{2184888} \\ 2103876 \\ \underline{810122} \\ 525969 \\ \underline{2841534} \\ 2629845 \\ \underline{211689} \end{array}$

COMPOUND DIVISION.

RULE I.

EXERCISES, page 52.

$$(1.) \dots\dots\dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 2 \overline{) 96 \cdot 17 \cdot 6} \\ \text{Ans. } \underline{\underline{\text{£} 48 \cdot 8 \cdot 9}} \end{array}$$

$$(2.) \dots\dots\dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 3 \overline{) 715 \cdot 6 \cdot 8 \frac{1}{4}} \\ \text{Ans. } \underline{\underline{\text{£} 238 \cdot 8 \cdot 10 \frac{3}{4}}} \end{array}$$

$$(3.) \dots\dots\dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 5 \overline{) 40 \cdot 13 \cdot 4} \\ \text{Ans. } \underline{\underline{\text{£} 8 \cdot 2 \cdot 8}} \end{array}$$

$$(4.) \dots\dots\dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 7 \overline{) 9 \cdot 18 \cdot 4} \\ \text{Ans. } \underline{\underline{\text{£} 1 \cdot 8 \cdot 4}} \end{array}$$

$$(5.) \dots\dots\dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 9 \overline{) 100 \cdot 10 \cdot 0} \\ \text{Ans. } \underline{\underline{\text{£} 11 \cdot 3 \cdot 4}} \end{array}$$

$$(6.) \dots\dots\dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 12 \overline{) 8 \cdot 16 \cdot 8} \\ \text{Ans. } \underline{\underline{\text{£} 0 \cdot 14 \cdot 8 \frac{1}{2} - 8}} \end{array}$$

$$(7.) \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 17 \overline{) 360 \cdot 4 \cdot 10} (\text{£} 21 \cdot 3 \cdot 9 \frac{3}{4} \\ \underline{34 \cdot} \\ 20 \\ \underline{17} \\ 3 \\ \underline{20} \\ 17 \overline{) 64} (3s. \\ \underline{51} \\ 13 \\ \underline{12} \\ 166 (9d. \\ \underline{153} \\ 13 \\ \underline{4} \\ 17 \overline{) 52} (3q. \\ \underline{51} \\ 1 \end{array}$$

$$(8.) \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 19 \overline{) 182 \cdot 10 \cdot 0} (\text{£} 9 \cdot 12 \cdot 1 \frac{1}{4} \\ \underline{171} \\ 11 \\ \underline{20} \\ 19 \overline{) 230} (12s. \\ \underline{19 \cdot} \\ 40 \\ \underline{38} \\ 2 \\ \underline{12} \\ 19 \overline{) 24} (1d. \\ \underline{19} \\ 5 \\ \underline{4} \\ 19 \overline{) 20} (1q. \\ \underline{19} \\ 1 \end{array}$$

$$(9.) \dots 20 \overline{) 234 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{3}} \overset{\text{d.}}{\text{9}}} \\ \text{Ans. } \underline{\underline{\text{£}11 \text{ } \text{s.}14 \text{ } \text{d.}2\frac{1}{4}}}}$$

$$(10.) \dots 35 \left\{ \begin{array}{l} 5 \overline{) 3076 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{14}} \overset{\text{d.}}{\text{4}\frac{1}{2}}} \\ 7 \overline{) 615 \text{ } \overset{\text{s.}}{\text{6}} \overset{\text{d.}}{\text{10}\frac{1}{2}}} \end{array} \right. \\ \text{Ans. } \underline{\underline{\text{£}87 \text{ } \text{s.}18 \text{ } \text{d.}1\frac{1}{4}}}}$$

$$(11.) 41 \overline{) 250 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{15}} \overset{\text{d.}}{\text{6}}} (\text{£}6 \text{ } \text{s.}2 \text{ } \text{d.}3\frac{3}{4}) \\ \underline{246} \\ 4 \\ \underline{20} \\ 41 \overline{) 95} (2\text{s.}) \\ \underline{82} \\ 13 \\ \underline{12} \\ 41 \overline{) 162} (3\text{d.}) \\ \underline{123} \\ 39 \\ \underline{4} \\ 41 \overline{) 156} (3\text{q.}) \\ \underline{123} \\ 33 \\ \underline{\underline{\hspace{1.5cm}}}}$$

$$(14.) \dots 12 \overline{) 113 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{8}} \overset{\text{d.}}{\text{0}}} \\ \underline{6} \overline{) 9 \text{ } \overset{\text{s.}}{\text{9}} \overset{\text{d.}}{\text{0}}} \\ \text{Ans. } \underline{\underline{\text{£}1 \text{ } \text{s.}11 \text{ } \text{d.}6}}$$

$$(15.) 87 \overline{) 931 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{19}} \overset{\text{d.}}{\text{9}}} (\text{£}10 \text{ } \text{s.}14 \text{ } \text{d.}3) \\ \underline{87} \\ 61 \\ \underline{20} \\ 87 \overline{) 1239} (14\text{s.}) \\ \underline{87} \cdot \\ 369 \\ \underline{348} \\ 21 \\ \underline{12} \\ 87 \overline{) 261} (3\text{d.}) \\ \underline{261}$$

$$(12.) \dots 60 \left\{ \begin{array}{l} 10 \overline{) 135 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{4}} \overset{\text{d.}}{\text{2}}} \\ 6 \overline{) 13 \text{ } \overset{\text{s.}}{\text{10}} \overset{\text{d.}}{\text{5}}} \end{array} \right. \\ \text{Ans. } \underline{\underline{\text{£}2 \text{ } \text{s.}5 \text{ } \text{d.}0\frac{3}{4} - 2}}$$

$$(16.) \dots 96 \left\{ \begin{array}{l} 12 \overline{) 18 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{6}} \overset{\text{d.}}{\text{0}}} \\ 8 \overline{) 1 \text{ } \overset{\text{s.}}{\text{10}} \overset{\text{d.}}{\text{6}}} \end{array} \right. \\ \text{Ans. } \underline{\underline{\text{£}0 \text{ } \text{s.}3 \text{ } \text{d.}9\frac{3}{4}}}}$$

$$(13.) 65 \overline{) 418 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{13}} \overset{\text{d.}}{\text{2}\frac{3}{4}}} (\text{£}6 \text{ } \text{s.}8 \text{ } \text{d.}9\frac{3}{4}) \\ \underline{390} \\ 28 \\ \underline{20} \\ 65 \overline{) 573} (8\text{s.}) \\ \underline{520} \\ 53 \\ \underline{12} \\ 65 \overline{) 638} (9\text{d.}) \\ \underline{585} \\ 53 \\ \underline{4} \\ 65 \overline{) 215} (3\text{q.}) \\ \underline{195} \\ 20 \\ \underline{\underline{\hspace{1.5cm}}}}$$

$$(17.) \dots 102 \overline{) 102 \text{ } \overset{\text{£}}{\text{.}} \overset{\text{s.}}{\text{10}} \overset{\text{d.}}{\text{6}\frac{1}{4}}} (\text{£}0 \text{ } \text{s.}18 \text{ } \text{d.}9\frac{3}{4}) \\ \underline{20} \\ 109 \overline{) 2050} (18\text{s.}) \\ \underline{109} \cdot \\ 960 \\ \underline{872} \\ 88 \\ \underline{12} \\ 109 \overline{) 1062} (9\text{d.}) \\ \underline{981} \\ 81 \\ \underline{4} \\ 109 \overline{) 327} (3\text{q.}) \\ \underline{327}$$

$$(18.) \dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 7 \overline{) 63.14.0} \\ 4 \overline{) 9.2.0} \\ 4 \overline{) 2.5.6} \\ \text{Ans. } \underline{\underline{\text{£}0.11.4\frac{1}{2}}} \end{array}$$

$$(19.) \quad \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 103.14.2\frac{1}{4} \\ \underline{20} \\ 231 \overline{) 2074} \text{(8s.} \\ \underline{1848} \\ 226 \\ \underline{12} \\ 231 \overline{) 2714} \text{(11d.} \\ \underline{2541} \\ 173 \\ \underline{4} \\ 231 \overline{) 693} \text{(3q.} \\ \underline{693} \end{array} \text{Ans. } \underline{\underline{\text{£}0.8.11\frac{3}{4}}}$$

$$(20.) \dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 12 \overline{) 1050.10.0} \\ 10 \overline{) 87.10.10} \\ \text{Ans. } \underline{\underline{\text{£}8.15.1}} \end{array}$$

$$(21.) \dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 7 \overline{) 125.10.6} \\ \text{Ans. } \underline{\underline{\text{£}17.18.7\frac{1}{2}}} \end{array}$$

$$(22.) \dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 9 \overline{) 125.10.6} \\ \text{Ans. } \underline{\underline{\text{£}13.18.11\frac{1}{4}-3}} \end{array}$$

$$(23.) \dots \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 12 \overline{) 125.10.6} \\ \text{Ans. } \underline{\underline{\text{£}10.9.2\frac{1}{4}}} \end{array}$$

$$(24.) \quad \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 13 \overline{) 1600.6.8} \text{(123.2.0}\frac{1}{2} \\ \underline{156.} \quad \text{Ans.} \\ 40 \\ \underline{39} \\ 1 \\ \underline{20} \\ 13 \overline{) 26} \text{(2s.} \\ \underline{26} \\ 8d. \\ \underline{4} \\ 13 \overline{) 32} \text{(2q.} \\ \underline{26} \\ 6 \end{array}$$

$$(25.) \quad \begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 19 \overline{) 1600.6.8} \text{(84.4.6}\frac{1}{2} \\ \underline{152.} \quad \text{Ans.} \\ 80 \\ \underline{76} \\ 4 \\ \underline{20} \\ 19 \overline{) 86} \text{(4s.} \\ \underline{76} \\ 10 \\ \underline{12} \\ 19 \overline{) 128} \text{(6d.} \\ \underline{114} \\ 14 \\ \underline{4} \\ 19 \overline{) 56} \text{(2q.} \\ \underline{38} \\ 18 \end{array}$$

$$\begin{array}{r}
 \text{(26.) } 26 \overline{) 1600 . 6 . 8} \text{ (61 . 11 . 0}\frac{1}{4}\text{)} \\
 \underline{156} \\
 40 \\
 \underline{26} \\
 14 \\
 \underline{20} \\
 26 \overline{) 286} \text{ (11)} \\
 \underline{26} \\
 26 \\
 \underline{\dots 8d} \\
 4 \\
 26 \overline{) 32} \text{ (1 q.)} \\
 \underline{26} \\
 \underline{6} \\
 \underline{\quad}
 \end{array}$$

$$\begin{array}{r}
 \text{(29.) } 36 \left\{ \begin{array}{l} 6 \overline{) 950 . 18 . 4} \\ 6 \overline{) 158 . 9 . 8}\frac{1}{2} - 4 \end{array} \right. \\
 \text{Ans. } \underline{\underline{\pounds 26 . 8 . 3}\frac{1}{4} - 28}
 \end{array}$$

$$\begin{array}{r}
 \text{(30.) } 73 \overline{) 950 . 18 . 4} \text{ (13 . 0 . 6}\frac{1}{2}\text{)} \\
 \underline{949} \\
 1 \\
 \underline{20} \\
 38 \\
 \underline{12} \\
 73 \overline{) 460} \text{ (6d.)} \\
 \underline{438} \\
 22 \\
 \underline{4} \\
 73 \overline{) 88} \text{ (1 q.)} \\
 \underline{73} \\
 \underline{15} \\
 \underline{\quad}
 \end{array}$$

$$\begin{array}{r}
 \text{(27.) } 170 \overline{) 1600 . 6 . 8} \text{ (9 . 8 . 3}\frac{1}{4}\text{)} \\
 \underline{1530} \\
 70 \\
 \underline{20} \\
 170 \overline{) 1406} \text{ (8s.)} \\
 \underline{1360} \\
 46 \\
 \underline{12} \\
 170 \overline{) 560} \text{ (3d.)} \\
 \underline{510} \\
 50 \\
 \underline{4} \\
 170 \overline{) 200} \text{ (1q.)} \\
 \underline{170} \\
 \underline{30} \\
 \underline{\quad}
 \end{array}$$

$$\begin{array}{r}
 \text{(31.) } \dots 12 \overline{) 950 . 18 . 4} \\
 \underline{12} \overline{) 79 . 4 . 10}\frac{3}{4} - 4 \\
 \text{Ans. } \underline{\underline{\pounds 6 . 12 . 0}\frac{3}{4} - 64}
 \end{array}$$

$$\begin{array}{r}
 \text{¶ (32.) } \dots 8 \overline{) 110 . 6 . 15 . 0} \\
 \text{Ans. } \underline{\underline{13 . 9 . 16 . 21}}
 \end{array}$$

$$\begin{array}{r}
 \text{(33.) } 13 \overline{) 32 . 15 . 0} \text{ (2 . 8 . 8)} \\
 \underline{26} \\
 6 \\
 \underline{16} \\
 13 \overline{) 111} \text{ (8 oz.)} \\
 \underline{104} \\
 7 \\
 \underline{16} \\
 13 \overline{) 112} \text{ (8 dr.)} \\
 \underline{104} \\
 \underline{8} \\
 \underline{\quad}
 \end{array}$$

$$\begin{array}{r}
 \text{(28.) } \dots 2 \overline{) 950 . 18 . 4} \\
 \underline{9} \overline{) 475 . 9 . 2} \\
 \text{Ans. } \underline{\underline{\pounds 52 . 16 . 6}\frac{3}{4}}
 \end{array}$$

(34.)..... 6 $\begin{array}{r} \text{sto. lb. oz.} \\ 322 . 6 . 0 \\ 7 \overline{) 53 . 10 . 5 - 2} \\ \text{Ans. } \underline{\underline{7 . 9 . 7 \frac{28}{49}}} \end{array}$

(41.) 29) $\begin{array}{r} \text{cwt. qr. lb. cwt. qr. lb.} \\ 1260 . 1 . 14(43 . 1 . 23 \\ 116 . \\ \hline 100 \\ 87 \\ \hline 13 \\ 4 \end{array}$ *Ans.*

(35.) 81 $\left\{ \begin{array}{l} 9 \overline{) 1109 . 3 . 20} \\ 9 \overline{) 123 . 1 . 8 - 4} \end{array} \right.$
Ans. $\underline{\underline{13 . 2 . 22 \frac{58}{81}}}$

29) $\begin{array}{r} 53(1 \text{ qr.} \\ 29 \\ \hline 24 \\ 28 \end{array}$

(36.)... 54 $\left\{ \begin{array}{l} 6 \overline{) 2050 . 1 . 6} \\ 9 \overline{) 341 . 2 . 3} \end{array} \right.$
Ans. $\underline{\underline{37 . 2 . 11}}$

29) $\begin{array}{r} 686(23 \text{ lb.} \\ 58 \\ \hline 106 \\ 87 \\ \hline 19 \end{array}$

(37.) ... 63 $\left\{ \begin{array}{l} 9 \overline{) 1094 . 2 . 20} \\ 7 \overline{) 121 .} \end{array} \right.$
Ans. $\underline{\underline{17 . 1 . 20}}$

(42.) 50 $\left\{ \begin{array}{l} 10 \overline{) 1260 . 1 . 14} \\ 5 \overline{) 126 . 0 . 4 - 2} \end{array} \right.$
Ans. $\underline{\underline{25 . 0 . 23 \frac{12}{50}}}$

(38) 98 $\left\{ \begin{array}{l} 2 \overline{) 3168 . 0 . 30} \\ 7 \overline{) 1584 . 0 . 15} \\ 7 \overline{) 226 . 2 . 13 - 4} \end{array} \right.$
Ans. $\underline{\underline{32 . 2 . 24 \frac{78}{98}}}$

(43.) 75 $\left\{ \begin{array}{l} 5 \overline{) 1260 . 1 . 14} \\ 5 \overline{) 252 . 0 . 8 - 2} \\ 3 \overline{) 50 . 1 . 18 - 12} \end{array} \right.$
Ans. $\underline{\underline{16 . 3 . 6 \frac{2}{75}}}$

(39.) 73) $\begin{array}{r} \text{yrs. da. yrs. da.} \\ 294 . 146(4 . 12 \text{ Ans.} \\ 292 \\ \hline 2 \\ 365 \\ 73)876(12 \text{ days.} \\ 73 \\ \hline 146 \\ 146 \end{array}$

(44.)..... 8) $\begin{array}{r} \text{yds. qr. na.} \\ 1000 . 3 . 2 \\ \text{Ans. } \underline{\underline{125 . 0 . 1 \frac{1}{4}}} \end{array}$

40..... 11) $\begin{array}{r} \text{cwt. qr. lb.} \\ 1260 . 1 . 14 \\ \text{Ans. } \underline{\underline{114 . 2 . 8 \frac{0}{11}}} \end{array}$

(45.)..... 14 $\left\{ \begin{array}{l} 2 \overline{) 1000 . 3 . 2} \\ 7 \overline{) 500 . 1 . 3} \end{array} \right.$
Ans. $\underline{\underline{71 . 1 . 3 \frac{5}{7}}}$

(46.)..... 20 $\left\{ \begin{array}{l} 2 \overline{) 1000 . 3 . 2} \\ 10 \overline{) 500 . 1 . 3} \end{array} \right.$
Ans. $\underline{\underline{50 . 0 . 0 \frac{7}{10}}}$

(47.) 38) $\begin{array}{r} \text{yds. qr. na.} \\ 1000 . 3 . 2 . \\ \underline{76 \cdot} \\ 240 \\ \underline{228} \\ 12 \\ \underline{4} \end{array}$ (26 . 1 . 2 $\frac{6}{8}$)

38) 51 (1 qr.
 $\begin{array}{r} 38 \\ 13 \\ \underline{4} \end{array}$

38) 54 (1 nail.
 $\begin{array}{r} 38 \\ \underline{16} \end{array}$

(48.) 150) $\begin{array}{r} \text{yds. qr. na.} \\ 10 \mid 1000 . 3 . 2 \\ 5 \mid 100 . 0 . 1 - 4 \\ 3 \mid 20 . 0 . 0 - 14 \\ \hline \text{Ans.} \quad 6 . 2 . 2 \frac{14}{150} \end{array}$

(49.)... 6) $\begin{array}{r} \text{qr. bu. pe.} \\ 115 . 6 . 2 \\ \hline \text{Ans.} \quad 19 . 2 . 1 \frac{2}{3} \end{array}$

(50.) 17) $\begin{array}{r} \text{qr. bu. pe. qr. bu. pe.} \\ 115 . 6 . 2 \quad (6 . 6 . 2 \\ \underline{102} \\ 13 \\ \underline{8} \\ 17) 110 (6 \text{ bushels.} \\ \underline{102} \\ 8 \\ \underline{4} \\ 17) 34 (2 \text{ pecks.} \\ \underline{34} \end{array}$

(51.) 40) $\begin{array}{r} \text{qr. bu. pe.} \\ 10 \mid 115 . 6 . 2 \\ 4 \mid 11 . 4 . 3 - 2 \\ \hline \text{Ans.} \quad 2 . 7 . 0 \frac{2}{40} \end{array}$

(52.) 110) $\begin{array}{r} \text{qr. bu. pe.} \\ 11 \mid 115 . 6 . 2 \\ 10 \mid 10 . 4 . 0 - 10 \\ \hline \text{Ans.} \quad 1 . 0 . 1 \frac{70}{110} \end{array}$

(53.)..... 4) $\begin{array}{r} \text{yrs. da. ho.} \\ 118 . 310 . 18 \\ \hline \text{Ans.} \quad 29 . 260 . 4 \frac{1}{2} \end{array}$

(54.)..... 28) $\begin{array}{r} \text{yrs. da. ho.} \\ 7 \mid 118 . 310 . 18 \\ 4 \mid 16 . 357 . 6 \\ \hline \text{Ans.} \quad 4 . 89 . 7 \frac{1}{2} \end{array}$

(55.) 56) $\begin{array}{r} \text{yrs. da. ho.} \\ 7 \mid 118 . 310 . 18 \\ 8 \mid 16 . 357 . 6 \\ \hline \text{Ans.} \quad 2 . 44 . 15 \frac{2}{8} \end{array}$

(56.)... 112) $\begin{array}{r} \text{yrs. da. ho.} \\ 7 \mid 118 . 310 . 18 \\ 4 \mid 16 . 357 . 6 \\ 4 \mid 4 . 89 . 7 - 2 \\ \hline \text{Ans.} \quad 1 . 22 . 7 \frac{98}{112} \end{array}$

RULE II.

EXERCISES, page 53.

$$\begin{array}{r}
 (1.) \dots \text{£}4.2.6 \quad (210.7.6) \quad (2.) \quad \text{£}5.18) 147.10 \\
 \begin{array}{r}
 8 \qquad \qquad 8 \\
 \hline
 33 \qquad \qquad)1683(51 \text{ Ans.} \\
 \underline{165} \cdot \\
 33 \\
 \hline
 \hline
 \end{array}
 \end{array}
 \quad
 \begin{array}{r}
 \begin{array}{r}
 20 \qquad \qquad 20 \\
 \hline
 118 \qquad \qquad)2950(25 \text{ Ans.} \\
 \underline{236} \cdot \\
 590 \\
 \underline{590} \\
 \hline
 \hline
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 (3.) \text{£}35.7.4)13403.19.4 \\
 \begin{array}{r}
 20 \qquad \qquad 20 \\
 \hline
 707 \qquad \qquad 268079 \\
 3 \qquad \qquad \qquad 3 \\
 \hline
 2122 \qquad \qquad)804238(379 \text{ Ans.} \\
 \underline{6366} \cdot \cdot \\
 16763 \\
 14854 \\
 \hline
 19098 \\
 \underline{19098} \\
 \hline
 \hline
 \end{array}
 \end{array}
 \quad
 \begin{array}{r}
 (4.) \text{£}25.2.9)1055.15.6 \\
 \begin{array}{r}
 20 \qquad \qquad 20 \\
 \hline
 502 \qquad \qquad 21115 \\
 4 \qquad \qquad \qquad 4 \\
 \hline
 2011 \qquad \qquad)84462(42 \text{ Ans.} \\
 \underline{8044} \cdot \\
 4022 \\
 \underline{4022} \\
 \hline
 \hline
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 (5.) \text{£}8.11.7)182.10.9 \\
 \begin{array}{r}
 20 \qquad \qquad 20 \\
 \hline
 171 \qquad \qquad 3650 \\
 12 \qquad \qquad \qquad 12 \\
 \hline
 2059 \qquad \qquad)43809(21 \frac{570}{2059} \\
 \underline{4118} \cdot \text{ Ans.} \\
 2629 \\
 2059 \\
 \hline
 570 \\
 \hline
 \hline
 \end{array}
 \end{array}
 \quad
 \begin{array}{r}
 (6.) \text{£}9.7.11)902.0.0 \\
 \begin{array}{r}
 20 \qquad \qquad 20 \\
 \hline
 187 \qquad \qquad 18040 \\
 12 \qquad \qquad \qquad 12 \\
 \hline
 2255 \qquad \qquad)216480(96 \text{ Ans.} \\
 \underline{20295} \\
 13530 \\
 \underline{13530} \\
 \hline
 \hline
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 (7.) \begin{array}{r}
 s. \quad d. \quad \text{£} \quad s. \quad d. \\
 17 \quad 8\frac{1}{2} \quad)42.10.0 \\
 12 \qquad \qquad \qquad 20 \\
 \hline
 212 \qquad \qquad \qquad 850 \\
 2 \qquad \qquad \qquad \qquad 12 \\
 \hline
 425 \qquad \qquad \qquad 10200 \\
 \qquad \qquad \qquad \qquad \qquad 2 \\
 \hline
 425)20400(48 \text{ Ans.} \\
 \underline{1700} \cdot \\
 3400 \\
 \underline{3400} \\
 \hline
 \hline
 \end{array}
 \end{array}
 \quad
 \begin{array}{r}
 (8.) \text{£}6.15.5\frac{1}{4})318.5.6\frac{3}{4} \\
 \begin{array}{r}
 20 \qquad \qquad 20 \\
 \hline
 135 \qquad \qquad 6365 \\
 12 \qquad \qquad \qquad 12 \\
 \hline
 1625 \qquad \qquad 76386 \\
 4 \qquad \qquad \qquad \qquad 4 \\
 \hline
 6521 \qquad \qquad)305547(47 \text{ Ans.} \\
 \underline{26004} \cdot \\
 45507 \\
 \underline{45507} \\
 \hline
 \hline
 \end{array}
 \end{array}$$

$$\begin{array}{r} \text{¶(9.) } \begin{array}{l} \text{cwt. qr. lb.} \\ 3 \cdot 2 \cdot 14 \end{array} \overline{)364 \cdot 1 \cdot 7} \\ \begin{array}{l} 4 \\ 14 \\ 4 \\ 58 \end{array} \\ \hline \begin{array}{l} 4 \\ 1457 \\ 4 \\ 5829 \end{array} \text{(100}\frac{1}{2}\text{ Ans.} \\ \begin{array}{l} 58 \cdot \cdot \\ 29 \end{array} \end{array}$$

$$\begin{array}{r} \text{(11.) } \begin{array}{l} \text{ac. ro. per.} \\ 5 \cdot 3 \cdot 7 \end{array} \overline{)162 \cdot 0 \cdot 36} \\ \begin{array}{l} 4 \\ 23 \\ 40 \\ 927 \end{array} \\ \hline \begin{array}{l} 4 \\ 648 \\ 40 \\ 25956 \end{array} \text{(28 Ans.} \\ \begin{array}{l} 1854 \cdot \\ 7416 \\ 7416 \end{array} \end{array}$$

$$\begin{array}{r} \text{(10.) } \begin{array}{l} \text{cwt. qr. lb. tons. cwt. qr. lb.} \\ 3 \cdot 2 \cdot 7 \end{array} \overline{)45 \cdot 4 \cdot 3 \cdot 14} \\ \begin{array}{l} 4 \\ 14 \\ 4 \\ 57 \end{array} \\ \hline \begin{array}{l} 20 \\ 904 \\ 4 \\ 3619 \\ 4 \\ 14478 \end{array} \text{(254 Ans.} \\ \begin{array}{l} 114 \cdot \cdot \\ 307 \\ 285 \\ 228 \\ 228 \end{array} \end{array}$$

$$\begin{array}{r} \text{(12.) } \begin{array}{l} \text{mil. fur. po.} \\ 17 \cdot 3 \cdot 14 \end{array} \overline{)975 \cdot 3 \cdot 24} \\ \begin{array}{l} 8 \\ 139 \\ 40 \\ 5574 \end{array} \\ \hline \begin{array}{l} 8 \\ 7803 \\ 40 \\ 312144 \end{array} \text{(56} \\ \begin{array}{l} 27870 \cdot \text{ Ans.} \\ 33444 \\ 33444 \end{array} \end{array}$$

APPLICATION OF DIVISION.

EXERCISES, pages 53—55.

$$\begin{array}{r} \text{(1.)..... } \begin{array}{l} \text{£.} \\ 21 \\ 20 \end{array} \\ \hline 36)420 \text{(11s. 8d. Ans.} \\ \begin{array}{l} 396 \\ 24 \\ 12 \\ 288 \end{array} \end{array}$$

$$\begin{array}{r} \text{(3.)... } \begin{array}{l} \text{£. s. d.} \\ 12,0)4000,0 \cdot 0 \cdot 0 \end{array} \\ \hline \text{Ans. } \text{£ } \begin{array}{l} 333 \cdot 6 \cdot 8 \end{array} \end{array}$$

$$\begin{array}{r} \text{(2.)..... } \begin{array}{l} 21 \\ 20 \end{array} \\ \hline 11/8)420 \\ \begin{array}{l} 3 \quad 3 \\ 35 \end{array} \overline{)1260} \text{(36 persons. Ans.} \\ \begin{array}{l} 105 \\ 210 \\ 210 \end{array} \end{array}$$

$$\begin{array}{r} \text{(4.)... } \begin{array}{l} \text{lb. oz. lb. oz.} \\ 38)332 \cdot 8 \end{array} \text{(8 \cdot 12 Ans.} \\ \begin{array}{l} 304 \\ 28 \\ 16 \\ 176 \\ 28 \\ 456 \end{array} \text{(12 oz.} \\ \begin{array}{l} 38 \cdot \\ 76 \\ 76 \end{array} \end{array}$$

(5.)... $\begin{array}{r} \text{lb. lb.} \\ 3\frac{1}{2})112 = \text{an cwt.} \\ \underline{2 \quad 2} \\ 7 \overline{)224} \\ \text{Ans. } \underline{\underline{32}} \text{ parcels.} \end{array}$

(6.) $28 \left\{ \begin{array}{l} 4 \overline{)31/6} \\ 7 \overline{)7/10\frac{1}{2}} \end{array} \right.$
 Ans. $\underline{\underline{1/1\frac{1}{2}}}$ yard.

(7.) $40 \left\{ \begin{array}{l} \text{cwt. gr. lb.} \\ 4 \overline{)52 . 3 . 12} \\ 10 \overline{)13 . 0 . 24} \\ \underline{1 . 1 . 8} \end{array} \right.$ Ans.

(8.) $50 \left\{ \begin{array}{l} \text{yds. gr.} \\ 10 \overline{)1437 . 2} \\ 5 \overline{)143 . 3} \\ \text{Ans. } \underline{\underline{28 . 3}} \end{array} \right.$

(9.)..... $\begin{array}{r} \text{cwt. gr. lb.} \\ 41 . 2 . 14 \\ \underline{4} \\ 166 \\ \underline{28} \\ \text{lb.} \\ 112 \quad 1332 \\ 14 \quad 333 \\ \underline{126} \quad \underline{)4662} (37 \text{ chests.} \\ \underline{378} \cdot \text{Ans.} \\ \underline{882} \\ \underline{882} \end{array}$

(10.)... $\begin{array}{r} \text{lb. oz. dwt.} \\ 5 . 4 . 10 \\ \underline{12} \\ 64 \\ \underline{20} \\ 1290 \\ \underline{24} \\ \text{dwt. gr.} \\ 5 . 9 \quad 5160 \\ 24 \quad 2580 \\ \underline{129} \quad \underline{)30960} (240 \text{ guineas.} \\ \underline{258} \cdot \cdot \text{Ans.} \\ \underline{516} \\ \underline{516} \end{array}$

(11.)... $\begin{array}{r} \text{rods. feet.} \\ 6 \overline{)180 . 270} \\ \text{1st Ans. } \underline{\underline{30 . 45}} \text{ } \wp \text{ week.} \end{array}$

(12.)... $\begin{array}{r} * \text{acr. ro. per.} \\ 12 . 2 . 30 \\ \underline{4} \\ \text{ro. per.} \\ 2 . 18 \quad 50 \\ \underline{40} \quad 40 \\ 98 \quad \underline{)2030} (20 \text{ reapers.} \\ \underline{196} \cdot \text{Ans.} \\ \underline{70} \end{array}$

$30 \left\{ \begin{array}{l} \text{rods. feet.} \\ 10 \overline{)180 . 270} \\ 3 \overline{)18 . 27} \\ \text{2d Ans. } \underline{\underline{6 . 9}} \text{ } \wp \text{ man.} \end{array} \right.$

(14.)... $\begin{array}{r} \text{hhd. gal. pt.} \\ 2559 . 20 . 2 \\ \underline{54} \\ 10236 \end{array}$

(13.) $\begin{array}{r} \text{cwt.} \\ 45 \\ \underline{112} \\ 540 \\ \underline{45} \\ 48 \overline{)5040} \\ 5 \overline{)105} \text{ lb. } \wp \text{ man.} \\ 4 \overline{)21} \text{ lb. } \wp \text{ month.} \\ 7 \overline{)5 \text{ lb. } 4 \text{ oz.}} \wp \text{ week.} \\ \underline{\underline{12 \text{ oz.}}} \wp \text{ day.} \end{array} \left. \vphantom{\begin{array}{r} 45 \\ 112 \\ 540 \\ 45 \\ 48 \overline{)5040} \\ 5 \overline{)105} \\ 4 \overline{)21} \\ 7 \overline{)5} \end{array}} \right\} \text{Ans.}$

$\begin{array}{r} \text{mcn.} \\ 1350 \quad 138206 \text{ gals.} \\ 675 \quad \quad 8 \text{ pints.} \\ \underline{2025} \quad \underline{)1105650} (546 \text{ days=} \\ \underline{10125} \cdot \cdot 78 \text{ weeks.} \\ \underline{9315} \text{ Ans.} \\ \underline{8100} \\ \underline{12150} \\ \underline{12150} \end{array}$

(15.)
$$\begin{array}{r} \text{£} \quad \text{s.} \quad \text{d.} \\ 12 \overline{) 250 \cdot 18 \cdot 9} \\ \text{1st Ans. } \underline{\underline{20 \cdot 18 \cdot 2\frac{3}{4}}} \text{ } \frac{3}{4} \text{ month.} \end{array}$$

$$\begin{array}{r} \text{£} 215 \cdot 18 \cdot 9 \\ \quad \quad 20 \\ 365 \overline{) 5018 \cdot 9} \\ \text{2d Ans. } \underline{\underline{13 \cdot 9}} \frac{3}{4} \text{ day.} \end{array}$$

(16.)
$$\begin{array}{r} \text{£} \quad \text{s.} \quad \text{£} \\ 91 \cdot 5 \quad \overline{) 730} \\ \quad \quad 20 \quad \quad \quad 20 \\ \underline{1825} \quad \quad \underline{) 14600} \text{ (8 years.} \\ \quad \quad \quad \underline{14600} \quad \text{Ans.} \end{array}$$

(17.)
$$\begin{array}{r} 4 \ 4532769 \text{ farthings.} \\ 12 \overline{) 1133192\frac{1}{4}} \text{ pence.} \\ 2,0 \overline{) 9443,2 \cdot 8} \\ \underline{\text{£} 4721 \cdot 12 \cdot 8\frac{1}{4}} \text{ Ans.} \end{array}$$

(18.)
$$\begin{array}{r} 2 \ 525873 \text{ half-pence.} \\ 12 \overline{) 262936\frac{1}{2}} \text{ pence.} \\ 2,0 \overline{) 2191,1 \cdot 4} \\ \underline{\text{£} 1095 \cdot 11 \cdot 4\frac{1}{2}} \text{ Ans.} \end{array}$$

(19.)
$$\begin{array}{r} 12 \overline{) 1689000} \text{ pence.} \\ 2,0 \overline{) 14075,0} \text{ shillings.} \\ \underline{\text{£} 7037 \cdot 10} \text{ Ans.} \end{array}$$

(20.)
$$\begin{array}{r} 6 \ 3166546 \text{ two-pences.} \\ 2,0 \overline{) 52775,7 \cdot 8} \\ \underline{\text{£} 26387 \cdot 17 \cdot 8} \text{ Ans.} \end{array}$$

(21.)
$$\begin{array}{r} 4 \ 98760 \text{ three-pences.} \\ 2,0 \overline{) 2469,0} \text{ shillings.} \\ \underline{\text{£} 1234 \cdot 10} \text{ Ans.} \end{array}$$

(22.)
$$\begin{array}{r} 3 \ 126090 \text{ four-pences.} \\ 2,0 \overline{) 4203,0} \text{ shillings.} \\ \underline{\text{£} 2101 \cdot 10} \text{ Ans.} \end{array}$$

(23.)
$$\begin{array}{r} 2 \ 54325 \text{ sixpences.} \\ 2,0 \overline{) 2716,2 \cdot 6} \\ \underline{\text{£} 1358 \cdot 2 \cdot 6} \text{ Ans.} \end{array}$$

(24.)
$$\begin{array}{r} 2,0 \overline{) 1818,1} \text{ shillings.} \\ \underline{\text{£} 909 \cdot 1} \text{ Ans.} \end{array}$$

(25.)
$$\begin{array}{r} 8 \ 80915 \text{ half-crowns.} \\ \underline{\text{£} 10114 \cdot 7 \cdot 6} \text{ Ans.} \end{array}$$

(26.)
$$\begin{array}{r} 2 \ 22428 \text{ half-pence.} \\ 12 \overline{) 11214} \text{ pence.} \\ 21 \overline{) 934 \cdot 6} \\ \underline{44 \text{ gs. \& } 10\frac{6}{6}} \text{ Ans.} \end{array}$$

(27.)
$$\begin{array}{r} 2 \ 56050 \text{ grains.} \\ 12 \overline{) 28025} \\ 2,0 \overline{) 233,5 \cdot 10} \text{ gr.} \\ 12 \overline{) 116 \cdot 15 \cdot 10} \\ \text{Ans. } \underline{\underline{9 \text{ lb. } 8 \text{ oz. } 15 \text{ dwt. } 10 \text{ gr.}}} \end{array}$$

(28.)
$$\begin{array}{r} 2,0 \overline{) 4500,0} \text{ dwt.} \\ 12 \overline{) 2250} \text{ ounces.} \\ \underline{187 \text{ lb. } 6 \text{ oz.}} \text{ Ans.} \end{array}$$

(29.)
$$\begin{array}{r} 16 \left\{ \begin{array}{l} 2 \overline{) 24960} \text{ drams.} \\ 8 \overline{) 12480} \\ 2 \overline{) 1560} \\ 8 \overline{) 780} \end{array} \right. \\ \underline{97 \text{ lb. } 8 \text{ oz.}} \text{ Ans.} \end{array}$$

(30.)
$$\begin{array}{r} 16 \left\{ \begin{array}{l} 2 \overline{) 132160} \text{ ounces.} \\ 8 \overline{) 66080} \\ 8260 \text{ lb.} \end{array} \right. \text{ Ans.} \end{array}$$

(31.)
$$\begin{array}{r} 14 \left\{ \begin{array}{l} 2 \overline{) 48790} \text{ lb.} \\ 7 \overline{) 24395} \\ 3485 \text{ stones.} \end{array} \right. \text{ Ans.} \end{array}$$

(32.) $8 \overline{)15780}$ stones.
Ans. $\underline{\underline{1972}}$ *cwt. 2 qrs.*

(33.) $2 \overline{)10596}$ half nails.
 $4 \overline{)5298}$ nails.
 $4 \overline{)1324}$ qrs. 2 nails.
Ans. $\underline{\underline{331}}$ *yds. 2 nails.*

(34.) $4 \overline{)21692}$ nails.
 $4 \overline{)5423}$ qrs.
Ans. $\underline{\underline{1355}}$ *yds. 3 qrs.*

(35.) $3 \overline{)6865400}$ bar. corns.
 $12 \overline{)2288466}$ in. 3 bar.
 $3 \overline{)190705}$ ft. 6 in. 2 b. c.
Ans. $\underline{\underline{63568}}$ *yd. 1 f. 6 in. 2 b. c.*

(36.) $12 \overline{)180360}$ inches.
 $3 \overline{)15030}$ feet.
 $5\frac{1}{2} \overline{)5010}$ yards.
 $2 \overline{)2}$
 $11 \overline{)10020}$
Ans. $\underline{\underline{910}}$ *poles 5 yds.*

(37.) $3 \overline{)17056}$ feet.
 $220 \overline{)5685}$ yds. 1 ft.
Ans. $\underline{\underline{25}}$ *fur. 185 yd. 1 ft.*

(38.) $22,0 \left\{ \begin{array}{l} 2 \overline{)6270,0} \text{ yards.} \\ 11 \overline{)3135} \\ 8 \overline{)285} \text{ fur.} \end{array} \right.$
Ans. $\underline{\underline{35}}$ *mil. 5 fur.*

(39.) $30\frac{1}{4} \overline{)36590}$ sq. yds.
 $4 \overline{)4}$
 $121 \overline{)146360}$
 $40 \overline{)1209}$ sq. po. $17\frac{1}{4}$ yd.
 $4 \overline{)30}$ ro. 9 po.
Ans. $\underline{\underline{7a. 2r. 9p. 17\frac{1}{4} yd.}}$

(40.) $8 \overline{)98650}$ furlongs.
 $3 \overline{)12331}$ miles, 2 fur.
Ans. $\underline{\underline{4110}}$ *lea. 1 m. 2 fur.*

(41.) $4,0 \overline{)3219,6}$ sq. perches.
 $4 \overline{)804}$ ro. 36 sq. per.
Ans. $\underline{\underline{201}}$ *acres 36 per.*

(42.) $277\frac{1}{4} \overline{)740355}$
 $4 \overline{)4}$ 4
 $1109 \overline{)2961420}$ *wine gals.* $(2670\frac{390}{1109})$
 2218 *Ans.*
 7434
 6654
 7802
 7763
 390

(43.) $8 \overline{)89616}$ pints.
Ans. $\underline{\underline{11202}}$ *wine gallons.*

(44.) $63 \overline{)56740}$ gals.
 $4 \overline{)900}$ hhd. 40 gal. } *Ans.*
 225 *tuns 40 gals.*

(45.) $277\frac{1}{4} \overline{)1100646}$
 $4 \overline{)4}$ 4
 $1109 \overline{)4402584}$ *ale gals.* $(3969\frac{963}{1109})$
 3327 *Ans.*
 10755
 9981
 7748
 6654
 10944
 9981
 963

(46.) $8 \overline{)98765}$ pints.
 $36 \left\{ \begin{array}{l} 3 \overline{)12345} \text{ gals. 5 pints.} \\ 12 \overline{)4115} \end{array} \right.$
Ans. $\underline{\underline{342}}$ *bar. 33 gals. 5 pts.*

(47.) $\overset{\text{cubic in.}}{2218)924500} \left(416\frac{1}{2}\frac{81}{2}\frac{1}{8} \text{ bus.} \right) \dots$
 $\begin{array}{r} 8872 \\ \hline 3730 \\ 2218 \\ \hline 15120 \\ 13308 \\ \hline 1812 \end{array}$
Ans.

(4.)... $7/7 \text{ } \text{p} \text{ stone.}$
 $\begin{array}{r} 12 \\ 14 \left\{ \begin{array}{l} 2 \overline{)91} \\ .7 \overline{)45\frac{1}{2}} \end{array} \right. \\ \hline \text{Ans. } 6\frac{1}{2} \text{ } \text{p} \text{ lb.} \end{array}$

(48.) $4 \overline{)136840} \text{ pecks.}$
 $8 \overline{)34210} \text{ bushels.}$
Ans. $4276 \text{ qrs. } 2 \text{ bus.}$

(5.)... $12)47/6 \text{ per dozen.}$
Ans. $3/11\frac{1}{2} \text{ } \text{p} \text{ bottle.}$

(6.)... $12)90/ \text{ } \text{p} \text{ gross.}$
Ans. $7/6 \text{ } \text{p} \text{ dozen.}$

(49.) $6,0840960,0 \text{ minutes.}$
 $24 \left\{ \begin{array}{l} 4 \overline{)140160} \text{ hours.} \\ 6 \overline{)35040} \\ \hline 5840 \text{ days.} \end{array} \right\} \text{Ans.}$

(7.)... $\text{£}9 \text{ per barrel.}$
 $\begin{array}{r} 20 \\ 144 \left\{ \begin{array}{l} 12 \overline{)180} \\ 12 \overline{)15} \end{array} \right. \\ \hline \text{Ans. } 1.3 \end{array}$

(50.) $24 \left\{ \begin{array}{l} 4 \overline{)9465740} \text{ hours.} \\ 6 \overline{)2366435} \\ \hline 365 \overline{)394405} \text{ da. } 20 \text{ hrs.} \end{array} \right\}$
Ans. $1080 \text{ y. } 205 \text{ d. } 20 \text{ h.}$

(8.)... $\begin{array}{r} \text{s.} \quad \text{d.} \\ 12.6 \quad \text{£}15 \\ \hline 2 \quad 40 \\ \hline 25 \quad \left\{ \begin{array}{l} 5 \overline{)600} \\ 5 \overline{)120} \end{array} \right. \\ \hline \text{Ans. } 24 \text{ weeks.} \end{array}$

PROMISCUOUS EXERCISES,
page 55.

$21 \text{ s. } \text{p} \text{ qr.}$
 $\begin{array}{r} 12 \\ 28 \overline{)252} (9 \text{ d } \text{p} \text{ lb. } \text{Ans.} \\ \hline 252 \end{array}$

(9.) $\begin{array}{r} \text{£} \quad \text{£} \quad \text{s.} \quad \text{d.} \\ 52)80(1.10.9 \text{ } \text{p} \text{ week.} \\ \hline 52 \quad \text{Ans.} \\ \hline 28 \\ 20 \\ 52)560(10 \text{ s.} \\ \hline 520 \\ \hline 40 \\ 12 \\ 52)480(9 \text{ d.} \\ \hline 468 \\ \hline 12 \end{array}$

(2.)... $28 \left\{ \begin{array}{l} \text{£} \quad \text{s.} \\ 4 \overline{)25.4} \\ 7 \overline{)6.6} \\ \hline 4 \overline{)18} \end{array} \right\}$
Ans. $4.6 \text{ } \text{p} \text{ lb.}$

(3.)... $\text{£}5.5 \text{ } \text{p} \text{ sack.}$
 $\begin{array}{r} 20 \\ \text{A stone} = 14 \overline{)105} \\ \hline \text{Ans. } 7.6 \text{ } \text{p} \text{ stone.} \end{array}$

(10.) $\begin{array}{r} \text{d.} \quad \text{£} \\ 15\frac{3}{4} \quad)100 \\ \hline 4 \quad 960 \text{ far.} = \text{£}1 \\ 63 \left\{ \begin{array}{l} 7 \overline{)96000} \\ 9 \overline{)13714-2} \end{array} \right. \\ \hline \text{Ans. } 1523\frac{5}{8} \text{ or } 1\frac{7}{2} \text{ lb.} \end{array}$

(11.)... £6
 20 s. d.
 112)120(1.0 $\frac{3}{4}$ lb.
 112
 —
 8
 12
 —
 96
 4
 —
 112)384(3q.
 336
 —
 48
 —
 —

(12.) 16)£10000
 £625 = $\frac{1}{16}$ sh.
 3
 Ans. £1875

(13.)... 42/.
 12
 10 $\frac{1}{2}$ d.)504
 2 2
 21)1008(48 lb. Ans.
 84
 —
 168
 168
 —
 —

(14.) 50 £105
 12 20
 6,00)21,00(3 $\frac{1}{6}$ bot.
 18
 3
 12
 6)36(6d.
 36
 —
 —

(15.)... A hhd. = 63 gal.
 8
 1 $\frac{3}{4}$)504 pints.
 4 4
 7)2016
 Ans. 288 bottles.

(16.)... £84 . 7 . 6
 20
 11.3)1687
 4 4 25)
 —
 45)6750(150 yards.
 45... 6 pieces.
 —
 225
 225
 —
 —

(17.)... A lb. = 12 ounces.
 20 dwt.
 44 $\frac{1}{2}$)240
 2 2
 89) 480(5 dwt. 9 grs.
 445 Ans.
 —
 35
 24
 —
 140
 70
 89)840(9gr.
 801
 —
 39
 —
 —

(18.)..... £46 . 14 . 6
 20
 —
 934
 12
 5760)11214(1 $\frac{3}{4}$ d. grain.
 5760
 —
 5454
 4
 5760)21816(3q.
 17280
 —
 4536
 —
 —

(19.) 12) £22082 . 10 . 0
 ̄ mo. £ 1840 . 4 . 2 = 1st Ans.

(21.) 27 { 9 | £18 . 18
 3 | 2 . 2
 Ans. 0 . 14 each.

da.

313) 22082 . 10 (£70 . 11 . 0 $\frac{1}{4}$)
 2191 ̄ day.
 172 2d Ans.
 20

313) 3450 (11s.
 3443
 7
 12
 84
 4

313) 336 (1q.
 313
 23

(22.) 70 yds. at a guinea
 is £73 . 10 . 0
 Discount $\frac{1}{20}$ th is 3 . 13 . 6
 Ans. £ 69 . 16 . 6

(23.) 72 { 6 ^{qr. bu.} 337 . 4 produce.
 12 | 56 . 2
 1st Ans. 4 . 5 . 2 pks. ̄ ac.

(20.) ^{Acres.} 630 $\frac{1}{4}$ [£] 1543 . 10 ^{s.}
 4 4
 2521) 6174 (£2 . 8 . 11 $\frac{3}{4}$)
 5042 ̄ acre.
 1132 Ans.
 20

2521) 22640 (8s.
 20168
 2472
 12

2521) 29664 (11d.
 27731
 1933
 4

2521) 7732 (3q.
 7563
 169

72 acres.
 4 roods.
 288
 40 perches.
 337 $\frac{1}{2}$) 11520 perches.
 2 2
 675) 23040 (34 per. 4 $\frac{1}{30}$ yds. 2d Ans.
 2025 . to produce a qr.
 2790
 2700
 90
 30 $\frac{1}{4}$ multiply.
 2700
 22 $\frac{1}{5}$
 675) 2722 $\frac{1}{2}$ (4 perches.
 2700
 .. 22 $\frac{1}{5}$ × 2 = 45
 675 × 2 = 1350 = $\frac{1}{30}$ yd.

(24.) ^{days} 365) 41000000 (£ 112328 . 15 . 4
 365 Int. $\frac{p}{d}$ day.
450 1st Ans.
 365
850
 730
1200
 1095
1050
 730
3200
 2920
280
 20
 365) 5600 (15s.
365
 1950
1825
 125
12
 365) 1500 (4d.
1460
40

da. ho. min.
 365 \times 24 \times 60 = 525600 min.
 5256,00) £410000,00 (£78 . 0 . 1 $\frac{1}{4}$
 36792 Int. $\frac{p}{d}$ min.
42080 2nd Ans.
 42048
32
 20
640
 12
 5256) 7680 (1d.
5256
2424
 4
 5256) 9696 (1q.
5256
4440

(25.) Fortune..... £2985 . 10 . 0
 Deduct..... 590 . 15 . 0
Divide by... 2) 2394 . 15 . 0
 Younger gets 1197 . 7 . 6
 Add 590 . 15 . 0
 Elder's share £1788 . 2 . 6

(26.)... A. 21 shil. £1050
 B. 20 21 shil.
 Divide by 41) 22050
 A's share... £537 . 16 . 1
 £1050
 20 sh.
 Divide by... 41) 2100
 B's share..... £512 . 3 . 11

A. £537 . 16 . 1
 B. 512 . 3 . 11
 A. receives more by £ 25 . 12 . 2

(27.)... £39
 20
 16.3) 780 shil.
 4 4 three-pences.
 65) 3120 (48 yards.
 260 . 1st Ans.
520
520
 Cost... £39 . 0 . 0
 Gain... 3 . 5 . 0
 yds. { 442 . 5 . 0
 48 { 12 | 10 . 11 . 3
 2d Ans. 17 . 7 $\frac{1}{4}$ $\frac{p}{d}$ yd.

(28.)	<i>casks.</i>	<i>cwt.</i>	<i>qr.</i>	<i>lb</i>	<i>cwt</i>	<i>qr.</i>	<i>lb.</i>	<i>cwt.</i>	<i>£</i>	<i>s.</i>	<i>d.</i>
	329)	4490	.3	.14	(13	.2	.16	4490 $\frac{7}{8}$	17346	.13	.4
		329	·		<i>wt. ⚡</i>	<i>hhd.</i>		8			8
		<u>1200</u>			<i>1st Ans.</i>			35927)	138773	.6	.8
		987							107781		(3 . 17 . 3
		<u>213</u>							30992		<i>pr. ⚡ cwt.</i>
		4							20		<i>3d Ans.</i>
	329)	855	(2	<i>qr.</i>				35927)	619846	(17s.	
		<u>658</u>							35927		
		197							260576		
		<u>28</u>							251489		
		1590							9087		
		<u>394</u>							12		
	329)	5530	(16	<i>lb.</i>				35927)	109044	(3d.	
		<u>329</u>							107781		
		2240							1263		
		<u>1974</u>									
		266									

<i>casks.</i>	<i>£</i>	<i>s.</i>	<i>d</i>	<i>£.</i>	<i>s.</i>	<i>d.</i>
329)	17346	.13	.4	(52	.14	.6
	<u>1645</u>			<i>price ⚡</i>	<i>ask.</i>	
	896			<i>2d Ans.</i>		
	<u>658</u>					
	238					
	<u>20</u>					
	4773					
	<u>329</u>					
	1483					
	<u>1316</u>					
	169					
	<u>12</u>					
	2008					
	<u>1974</u>					
	34					

(29.)	<i>gal.</i>	<i>£</i>	<i>s.</i>	<i>d.</i>	<i>£</i>	<i>s.</i>	<i>d.</i>
	105				89)	79	.12 . 6
	<u>16</u>					20	(0 . 17 . 10 $\frac{1}{2}$
							<i>⚡ gal.</i>
					89)	1592	(17s. <i>Ans.</i>
						89	
						<u>702</u>	
						623	
						<u>79</u>	
						12	
					89)	954	(10d.
						890	
						<u>64</u>	
						4	
					89)	256	(2 q.
						178	
						<u>78</u>	

(30.) Daughter... 1 share.
 Mother..... 2
 Son..... 6

		<i>£</i>
	9)	1260
<i>Ans.</i>	{	Daughter gets $\text{£}140 \times 2 \times 6$
		Mother..... 280
		Son..... 840
		<i>Proof</i> <u><u>£960</u></u>

REDUCTION.

EXERCISES, page 58.

- (1.) $\frac{1}{21} \left| \begin{array}{r} 37254 \text{ pounds.} \\ 1774 \end{array} \right.$
Sub. $\underline{\underline{Ans. 35480 \text{ guineas.}}}$
- (2.) $\frac{1}{20} \left| \begin{array}{r} 8870 \text{ guineas.} \\ 443 . 10 \end{array} \right.$
Ans. $\underline{\underline{9313 . 10}}$
- (3.) $\begin{array}{r} 5095 \text{ guineas.} \\ 21 \\ \hline 5095 \\ 10190 \\ 5)106995 \\ \hline \text{Ans. } \underline{\underline{21399 \text{ crowns.}}} \end{array}$
- (4.) $\begin{array}{r} 8763 \text{ crowns.} \\ 5 \\ \hline 21 \left\{ \begin{array}{l} 3)43815 \\ 7)14605 \end{array} \right. \\ \hline \text{Ans. } \underline{\underline{2086 \frac{9}{7} \text{ or } \frac{3}{7}.}} \end{array}$
- (5.) $\begin{array}{r} 3040 \text{ pounds.} \\ 9 \text{ sixpences.} \\ \hline 4,0)2754,0 \\ \hline \text{Ans. } \underline{\underline{£ 688 . 10}} \end{array}$
- (6.)... $\begin{array}{r} 1818 \text{ pounds.} \\ 40 \text{ sixpences.} \\ \hline 9)72720 \\ \hline \text{Ans. } \underline{\underline{8080 \text{ dollars.}}} \end{array}$
- (7.) $\text{Sub. } \frac{1}{10} \left| \begin{array}{r} 1620 \text{ dollars.} \\ 162 \end{array} \right.$
Ans. $\underline{\underline{1458 \text{ crowns.}}}$
- (8.)... $\text{Add } \frac{1}{9} \left| \begin{array}{r} 2025 \text{ crowns.} \\ 225 \end{array} \right.$
Ans. $\underline{\underline{2250 \text{ dollars.}}}$
- (9.) $\text{Add } \frac{1}{2} \left| \begin{array}{r} 5427 \text{ half-guineas} \\ 2713 \frac{1}{2} \end{array} \right.$
Ans. $\underline{\underline{8140 \frac{1}{2} \text{ seven-shillings.}}}$
- (10.) $\text{Sub. } \frac{1}{3} \left| \begin{array}{r} 9045 \text{ seven-shill.} \\ 3015 \end{array} \right.$
Ans. $\underline{\underline{6030 \text{ half-guineas.}}}$
- (11.) $\begin{array}{r} 3375 \\ 5 \text{ sixpences.} \\ \hline 6)16875 \\ \hline \text{Ans. } \underline{\underline{2812 \frac{1}{2} \text{ tokens.}}} \end{array}$
- (12.)... $\begin{array}{r} 4050 \text{ tokens.} \\ 6 \text{ sixpences.} \\ \hline 5)24300 \\ \hline \text{Ans. } \underline{\underline{4860 \text{ half-crowns.}}} \end{array}$
- (13.) $\begin{array}{r} 18146 \text{ three-shill.} \\ 3 \\ \hline 2,0)5443,8 \\ \hline \text{Ans. } \underline{\underline{£2721 . 18}} \end{array}$
- (14.)... $\begin{array}{r} 76540 \text{ eighteen pen.} \\ 3 \text{ sixpences.} \\ \hline 4,0)22962,0 \\ \hline \text{Ans. } \underline{\underline{£ 5740 . 10}} \end{array}$

(25.)... 6450 *Imp. bush.* ¶(27.)..... £291 . 4

$$\begin{array}{r}
 6450 \\
 \underline{1109} \\
 58050 \\
 70950 \\
 \hline
 1075)7153050(6654 \text{ Win.} \\
 \underline{6450 \dots \text{ bushels.}} \\
 7030 \\
 \underline{6450} \\
 5805 \\
 \underline{5375} \\
 4300 \\
 \underline{4300} \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 20 \\
 \hline
 22 . 9 \overline{)5824} \\
 \underline{4 \quad \quad 4} \\
 91)23296(256 \text{ guin.} \\
 \underline{182 \dots \text{ Ans.}} \\
 509 \\
 \underline{455} \\
 546 \\
 \underline{546} \\
 \hline
 \hline
 \end{array}$$

(26.) A beer *hhd.* 54 gallons.
 A wine *hhd.* 63 gallons.
 186 *wine hhd.*
 63 *gallons.*

$$\begin{array}{r}
 \underline{558} \\
 1116 \\
 54 \left\{ \begin{array}{l} 6 \overline{)11718} \\ 9 \overline{)1953} \end{array} \right. \\
 \text{Ans. } \underline{\underline{217}} \text{ beer hhd.}
 \end{array}$$

(28.) 21/. a guinea.
 10/6 a half do.
 7/. seven shill.

$$\begin{array}{r}
 38/6 \overline{) \text{ £}385} \\
 \underline{2 \quad \quad 40} \\
 77 \overline{)15400(200 \text{ of each.}} \\
 \underline{154 \dots \text{ Ans.}} \\
 \hline
 \hline
 \end{array}$$

Or, as 6 *wine hhd.* are equal
 to 7 *beer hhd.*

$$\begin{array}{r}
 186 \\
 \underline{7} \\
 6 \overline{)1302} \\
 \text{Ans. } \underline{\underline{217}} \text{ beer hhd.}
 \end{array}$$

(29.) An *oz. avoird.* = 437½ grains.
 A guinea ... = 129 *dwt. gr.*

$$\begin{array}{r}
 24)308\frac{1}{2}(12 . 20\frac{1}{2} \\
 \underline{288} \text{ Ans.} \\
 20\frac{1}{2} \\
 \hline
 \hline
 \end{array}$$

(30.) 1000 Guineas, each 5 *dwt.* 5 *grs.* is 129000 *grs. troy*, which,
 at 437½ *grs. ¶ oz.* is 294⅞ ounces *Avoirdupois*.

1000 Guineas value in penny-pieces, each 252 pence,
 is 252000 *oz. Avoird.*

Deduct the weight of 1000 guineas 294⅞

$$\begin{array}{r}
 \underline{252000} \\
 \text{Difference } \underline{\underline{251705\frac{1}{7} \text{ oz.}}}
 \end{array}$$

Equal to 140 *cwt.* 1 *qr.* 23 *lb.* 9¼ *oz.* *Ans.*

(31.) A Wine Tun is 252 gallons × 39 tuns = 9828 gallons.
 A Beer Butt is 108 gallons × 87 butts = 9396

$$\text{Ans. } \underline{\underline{432}} \text{ gallons.}$$

(32.)... 3 lb.

$$\begin{array}{r} 4 \quad \text{st.} \quad \text{lb.} \\ 6 \quad 12 \quad . \quad 12 \\ 7 \quad 14 \\ \hline 20 \quad) \quad 180 \\ \hline \end{array}$$
Ans. 9 shares of each.

(33.)..... 24 casks.
 30 quarts.

$$\begin{array}{r} 720 \text{ quarts.} \\ 8 \text{ quarters.} \\ \hline 6)5760 \\ \hline \end{array}$$
Ans. 960 bottles.

(34.) $5+6+7=18$ 63 gals.
 A gal. contains 32 quarters.

$$\begin{array}{r} 126 \\ 189 \\ \hline 18 \left\{ \begin{array}{l} 3 \mid 2016 \text{ quarters.} \\ 6 \mid 672 \end{array} \right. \\ \hline \end{array}$$
Ans. 112 bottles of each.

(35.)..... $8/10 \frac{5}{16}$

$$\begin{array}{r} 12 \\ \hline 106 \\ 16 \\ \hline 1701 \text{ sixteenths.} \\ 600000 \text{ chequins.} \\ \hline 16 \left\{ \begin{array}{l} 2 \mid 1020600000 \\ 8 \mid 510300000 \\ \hline 12 \mid 63787500 \text{ pence.} \\ 2,0 \mid 531562,5 \\ \hline \end{array} \right. \\ \hline \end{array}$$
Ans. £265781.5

PROMISCUOUS QUESTIONS, page 59.

(1.) A.'s Claim.....£313 . 7 . 3
 Dividend 147 . 14 . 11½
 A. loses..... £165 . 12 . 3½ = 1st Ans.
 B.'s Claim.....£290 . 4 . 6
 Dividend 136 . 16 . 9¼
 B. loses..... £153 . 7 . 8¾ = 2d Ans.
 C.'s Claim.....£700 . 0 . 0
 Dividend 330 . 0 . 10
 C. loses £369 . 19 . 2 = 3rd Ans.
 D.'s Claim£486 . 13 . 8
 Dividend 229 . 9 . 3¾
 D. loses..... £257 . 4 . 4¼ = 4th Ans.
 E.'s Claim.....£500 . 0 . 0
 Dividend 235 . 14 . 10½
 E. loses..... £264 . 5 . 1½ = 5th Ans.
 F.'s Claim.....£381 . 10 . 0
 Dividend 179 . 17 . 5½
 F. loses..... £201 . 12 . 6½ = 6th Ans.
 His deficiency is £1412 . 1 . 2½ = 7th Ans.

(2.) 100 guineas =	£105 . 0 . 0
B.....	31 . 10 . 0
D.....	42 . 0 . 0
E.....	73 . 10 . 0
Debt.....	95 . 10 . 0
He received...	347 . 10 . 0
paid	308 . 10 . 3
<u>Balance</u>	<u>£138 . 19 . 9</u>

A.....	£ 50 . 0 . 0
C.....	20 . 0 . 0
Bill	120 . 15 . 6
Expenses	17 . 14 . 9
He paid	<u>£208 . 10 . 3</u>
In pocket.....	<u>£230 . 10 . 6</u>
Ded. balance ...	138 . 19 . 9
<u>Ans.</u>	<u>£91 . 10 . 9</u>

(3.).....	£135 . 18 . 9	
	20	
2/1½	2718	
12	12	
25	32625	
2	2	
51)65250	(1279½ lb. 1st Ans.
	61200	
	405	
	357	
	480	
	459	
	21	

Cost	£135 . 18 . 9	
Gain	18 . 2 . 6	
	<u>154 . 1 . 3</u>	
	20	
1279)	3081	(2/4¾ lb.
	2558	2d Ans.
	523	
	12	
1279)	6276	(4
	5116	
	1160	
	4	
1279)	4640	(3
	3837	
	803	

(4.)... 10	£12 . 13 . 4
10	1 . 5 . 4
1st Ans.	<u>2/6¼</u> — ¾ ell.
12	16/6¼ dozen.
2d Ans.	<u>1/4½</u> napkin.

15½)£12 . 13 . 4	
3	3	
46)38 . 0 . 0	
	20	
46)	760	(16/6¼ dozen.
	46	3d Ans.
	300	
	276	
	24	
	12	
46)	288	(6
	276	
	12	
	4	
46)	48	(1
	46	
	2	

<p>(10.).....</p> <p>An acre = $4\frac{1}{2}$ <i>qr.</i></p> <p style="padding-left: 2em;">8</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">36 <i>bu.</i></p> <p style="padding-left: 2em;">4</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">144 <i>pecks.</i></p> <p style="padding-left: 2em;">20</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;"><u>288,0 <i>lb.</i></u></p>	<p>4800 families.</p> <p style="padding-left: 2em;">12 <i>lb.</i> each.</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">57600 <i>lb.</i> used $\text{\textcircled{p}}$ day.</p> <p style="padding-left: 2em;">365 days = 1 year.</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">288000</p> <p style="padding-left: 2em;">345600</p> <p style="padding-left: 2em;">172800</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">)2102400,0(7300 <i>acres.</i> <i>Ans.</i></p> <p style="padding-left: 2em;">2016 ···</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">864</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">864</p> <hr style="width: 10%; margin-left: 0;"/>
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<p>(11.)... London contains</p>	<p style="text-align: center;"><i>inhabitants.</i></p> <p>1050000 each $1\frac{1}{2}$ <i>lb.</i> $\text{\textcircled{p}}$ day.</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">525000</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">1575000 <i>lb.</i> used $\text{\textcircled{p}}$ day.</p> <p style="padding-left: 2em;">365 days = 1 year.</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">7875</p> <p style="padding-left: 2em;">9450</p> <p style="padding-left: 2em;">4725</p>
<p>An acre = 288,0</p>	<p style="text-align: center;"><i>lb. bread.</i> <i>acres.</i> <i>ro.</i> <i>per.</i></p> <p>)57487500,0(199609 . 1 . 20 <i>Ans.</i></p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">288 ·····</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">2868</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">2592</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">2767</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">2592</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">1755</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">1728</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">2700</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">2592</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">108</p> <p style="padding-left: 2em;">4 roods. ?</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">288)432(1 <i>ro.</i></p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">288</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">144</p> <p style="padding-left: 2em;">40 perch.</p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;">288)5760(20 <i>per.</i></p> <hr style="width: 10%; margin-left: 0;"/> <p style="padding-left: 2em;"><u>5760</u></p>

(12.)... A second = 1142 feet.
 30 seconds = $\frac{1}{2}$ minute.

3 $\overline{)34260}$ feet.
 176,0 $\overline{)1142,0}$ yards (6 miles 3 fur. 200 yards. *Ans.*
 1056
 A fur. 22,0) $\overline{86,0}$ (3 fur.
 66
200 yards.

(13.)... A mile = 1760 yards.
 $6\frac{1}{2}$ miles.

$\overline{)10560}$
 880
11440 yards in $6\frac{1}{2}$ miles.
 3
 1142) $\overline{34320}$ feet (30 $\frac{30}{571}$ seconds. *Ans.*
 3426
60 = $\frac{30}{571}$
1142 = $\frac{30}{571}$

(14.)... $\frac{1}{2}$ second 1142 feet.
 10 seconds.

3) $\overline{11420}$ feet.
 1760) $\overline{3806}$ yds. 2 feet, (2 miles 1 fur. 66 yds. 2 feet.
 3520 *Ans.*
 220) $\overline{286}$ (1 fur.
 220
66 yards over.

(15.)... Farms. 19 $\frac{1}{2}$) 1252 . 2 . 12
 2)
 39) 2505 . 0 . 24 (64 . 0 . 37 $\frac{7}{13}$ to each farmer. *Ans.*
 234 .

$\overline{)165}$
 156
9
 4
36
 40
 39) $\overline{1464}$ (37 per.
 117 .
294
273
21 = 7
39 = $\frac{7}{13}$

(16.)... 108 1760 yards = a mile.
 $\frac{2\frac{1}{2}}$ 10 miles.
 $\frac{216}{54}$ 17600 yards.
 $\frac{27,0}{27,0}$ $\frac{3}{3}$ 6,0)
 5280,0 feet (19,5
 27 · 3 ho. 15 $\frac{5}{8}$ min. *Ans.*
 258
 243
 150
 135
 15 5
 27 = 9

(17.)... A mile = 1760 yards.
 3 miles.
 5280
 3 feet.
 $\frac{2\frac{1}{2}}$ 15840 feet in 3 miles.
 $\frac{2}{5}$ $\frac{2}{5}$
 5) 31680
 6,0) 633,6
 105 $\frac{2}{3}$ steps φ minute. *Ans.*

(18.)... φ minute 140 steps.
 $2\frac{1}{2}$ feet each.
 280
 70
 350 feet φ minute.
 60 minutes.
 3) 21000 feet φ hour.
 A mile = 176,0) 700,0 (3 mil. 7 fur. 180 yd. *Ans.*
 528
 22,0) 172,0 (7 fur.
 154
 180

(23.)... $10,0 \overline{) 3612708,0}$ shillings.
 $6,0 \overline{) 36127,0\frac{4}{5}}$ min. *da. ho. min.*
 $24 \overline{) 6021 \cdot 10\frac{4}{5}}$ min. (250 . 21 . $10\frac{4}{5}$ Ans.
48
122
120
21

(24.)..... A hhd. qt. $23\frac{1}{2}$ doz. porter, @ $4/6$ £5 . 5 . 9
Deduct the cost..... 3 . 3 . 0
Ans. Gain 2 . 2 . 9

(25.) An estate of £450, @ 25 years' purchase, is £11250
A. has one-third, or..... 3750 1st Ans.
Remainder £ 7500
B. has more than C..... 1500
2)6000
One-half, or C.'s share + £ 3000 2d Ans.
Add 1500
B.'s share + £ 4500 3rd Ans.
A.'s share..... + 3750
Proof..... £ 11250

(26.)... A. more than B... £200 From..... £1600
B. more than C... 100 Deduct... 400
A. more than C... 300 3)1200
B. more than C... 100 C.'s share + £ 400 1st Ans.
Sum..... £400 Add..... 100
B.'s share... + 500 2d Ans.
Add..... 200
A.'s share... + 700 3rd Ans.
Proof £1600

(27.)..... A pound..... 20/0
 A guinea..... 21/0
 A half-guinea..... 10/6
 A seven-shilling... 7/0

£	
58/6	147
2	40
117)5880(50 of each, and 15s.
	585 over. Ans.
	<u>30</u> sixpences.

(28.)..... 350 guineas.

£8 . 10	21	£6 . 12
20	350	20
17,0	700	132)7350(55 heifers, and
)735,0(43 cows and 40s.	660· 90s. over=4th
	68· over=2d Ans.	750 Ans.
	55	660
	51	<u>90 shil. over.</u>
	<u>40 shil. over.</u>	

£7 . 7	£5 . 5
20	20
147)7350(50 bulls=3rd	105)7350(70 steers=
735 Ans.	735 5th Ans.
	<u>0</u>

Cows @.....	£8 . 10 . 0	
Bulls @.....	7 . 7 . 0	
Heifers @.....	6 . 12 . 0	
Steers @.....	5 . 5 . 0	
	<u>27 . 14 . 0</u>	350 guineas.
	20	21 shillings.
	554)7350(13 of each kind, and
		554· £7 . 8 over=1st Ans.
		1810
		1662
		<u>148s. or £7 . 8 over.</u>

(29.)..... The step-daughter..... 1 share.

A step-son $2 \times 2 = 4$

A daughter..... $4 \times 4 = 16$

A son $8 \times 6 = 48$

$\overline{69}) \text{£}13800$

Ans. $\left\{ \begin{array}{l} \text{The step-daughter} \text{£} 200 \times 2 \times 4 \times 8 \\ \text{A step-son} 400 \\ \text{A daughter} 800 \\ \text{A son} \underline{1600} \end{array} \right.$

(30.)..... From..... 10800 men.

Sent off..... 7200

$\frac{2}{3}) 3600$ remainder.

2400

Ans. 1200 men left.

(31.)..... Youngest and eldest £6000

Eldest more 1000

$\frac{1}{2}) 5000$

Youngest's fortune.. 2500 £2500 1st Ans.

Add... 1000

3500 2d Ans.

Proof... £6000

B., C., and D., together£6000

Each $\frac{1}{3}$, or£2000 each. 3d Ans.

(32.).....

$4,0) \underline{1789920,0}$ sixpences.

..... = £447480

$2,0) \underline{3612708,0}$ shillings.

..... = 1806354

$8) \underline{3934656}$ half-cr.

..... = 491832

£2745666 Ans

(33.)	73 Guineas	= £76 . 13 . 0
		153 Half ditto.....	80 . 6 . 6
		147 Seven-shilling pieces.....	51 . 9 . 0
		11 Dollars, @ 4/6	2 . 9 . 6
		202 Three-shilling pieces	30 . 6 . 0
		26 Half-crowns	3 . 5 . 0
		22 One-shilling and sixpenny pieces	1 . 13 . 0
		234 Shillings	11 . 14 . 0
		26 Sixpences.....	0 . 13 . 0
		<i>Ans.</i>	<u>£258 . 9 . 0</u>

(34.)	A merchant left his widow	£ 900
	Each of his 3 sons.....	£751 . 6 . 8 is... 2254
	———— 6 daughters.....	500 . 3 . 4 is... 3001
	———— 10 relations.....	30 . 0 . 0 is... 300
	To a public charity	145
	The sum which he left is	<u>£6600</u>
	18 Years' profit, at £300 p annum, is.....	5400
	His original stock	<u>£1200</u> <i>Ans.</i>

(35.)	An estate sold for.....	£17800 . 16 . 9
	The widow has $\frac{1}{5}$, or.....	<u>1977 . 17 . 5</u>
	Sum to be divided among the children.....	<u>£15822 . 19 . 4</u>
	Of this sum, the eldest son has 3 shares, or	£ 2966 . 16 . $1\frac{1}{2}$
	His 3 brothers, 2 shares, ea.	£1977 . 17 . 5 is 5923 . 12 . 3
	His 7 sisters, 1 share.....	988 . 18 . $8\frac{1}{2}$ is 6922 . 10 . $11\frac{1}{2}$
	<i>Proof</i>	<u>£15812 . 19 . 4</u>

(36.)	Required to divide a prize of...	£3375 . 9 . 0
	His Majesty $\frac{1}{8}$	<u>562 . 11 . 6</u>
	To be divided into 180 shares, ea.	£ 15 . 12 . $6\frac{1}{2}$
	146 Shares to the sailors, or...	£2281 . 11 . 1
	10 do. to the captain.....	516 . 5 . 5
	6 do. 1st mate	93 . 15 . 3
	4 do. 2d mate	62 . 10 . 2
	8 do. surgeon	125 . 0 . 4
	6 do. carpenter	93 . 15 . 3
	<i>Proof</i>	<u>£2812 . 17 . 6</u>

(37.)..... The first field measures.... $\begin{matrix} ac. & ro. & pe. \\ 4 & 0 & 28 \end{matrix}$
 second do..... $\begin{matrix} 3 & 2 & 12 \end{matrix}$
 third do..... $\begin{matrix} 2 & 2 & 0 \end{matrix}$
 $\underline{10 \ . \ 1 \ . \ 0}$ or 49610 sq. yards.

Then $49610 \div 300 = 165$ lots, and 110 yards over = 1st Ans.

and $\frac{(49610 - 110) \times 7\frac{1}{2}s.}{20} = 18612l. 10s.$, the value of the shares = 2nd Ans.

(38.)... A capital of 10,000,000 dollars, @ $\frac{4}{6}$ is.....£2250000
 Consists of 25,000 shares, or 400 dollars each
 share, which is£ 90

(39.) A tract of land contains 7495 ac. 3 ro. 32 per. to be divided into 826 shares, each 9 ac. 12 per. at 3 dollars $\text{\textcircled{p}}$ acre.

shares.	ac.	ro.	pe.	value	£	s.	d.	frac.
450 to the soldiers each..	9	0	12	value	£	6	2	$6\frac{3}{20}$
40 to 20 serjeants.....	18	0	24	—		12	5	$0\frac{3}{17}$
48 to 6 ensigns	72	2	16	—		49	0	$1\frac{1}{5}$
108 to 9 lieutenants.....	108	3	24	—		73	10	$1\frac{1}{2}$
100 to 5 captains	181	2	0	—		122	10	3
30 to the major.....	272	1	0	—		183	15	$4\frac{1}{5}$
50 to the colonel.....	458	3	0	—		306	5	$7\frac{11}{20}$
<u>826 shares.</u>								

SIMPLE PROPORTION.

EXERCISES, pages 64—68.

(1.)... If $\frac{28}{4} : \text{£}3 \ . \ 15 :: \frac{21}{3}$
 $\begin{array}{r} 4 \overline{) 11 \ . \ 5} \\ \underline{4} \\ 7 \\ \underline{7} \\ 0 \end{array}$
 Ans. £2 . 16 . 3

(2.).... If $\frac{21}{3} : \text{£}3 \ . \ 5 :: \frac{28}{4}$
 $\begin{array}{r} 3 \overline{) 13 \ . \ 0} \\ \underline{9} \\ 4 \\ \underline{4} \\ 0 \end{array}$
 Ans. £4 . 6 . 8

(3.)... If $75/ : \frac{28}{15} :: \frac{65}{13}$
 $\begin{array}{r} 15 \overline{) 364} \\ \underline{150} \\ 214 \\ \underline{210} \\ 4 \\ \underline{4} \\ 0 \end{array}$ (24 yd. $1\frac{1}{15}$ qr.
 Ans.
 $\begin{array}{r} 64 \\ 60 \\ \underline{4} \\ 4 \\ \underline{4} \\ 0 \end{array}$
 15)16(1 qr.
 $\begin{array}{r} 15 \\ \underline{15} \\ 0 \end{array}$
 $1 = \frac{1}{15}$ q. over.

(4.) If $\frac{65}{13} \text{ yd.} : \frac{21}{15} :: \frac{75}{15}$
 $13 \overline{) 315} (24 \text{ yd. } 3 \frac{2}{3} \text{ na.}$
 $\underline{26 \cdot}$
 55
 $\underline{52}$
 3
 16 nails.
 $13 \overline{) 48} (3 \text{ na.}$
 $\underline{39}$
 9

(8.) If $\frac{1,00}{12} \text{ lb.} : \frac{16}{8} :: \frac{165}{4} \text{ cwt. } 2 \text{ qr. } 19 \text{ lb.}$
 $2,00 \overline{) 662}$
 $\underline{28}$
 5305
 $\underline{1325}$
 18555 lbs.
 2
 $12 \overline{) 37110d.}$
 $2,0 \overline{) 309,2} \cdot 6d.$
Ans. £154 . 12 . 6

(5.) If $\frac{138}{1} \text{ gal.} : £65 \cdot 10 :: \frac{1932}{14} \text{ gal.}$
 $\underline{131}$
 7
£917 Ans.

(9.) If $\frac{240}{80} \text{ lb.} : \frac{21}{7} \text{ £} :: \frac{10}{15} \text{ b. } 9 \text{ st. } 12 \text{ lb.}$
 $15 = 1 \text{ pa.}$
 159 stones.
 16 lb.
 956
 160
 2556 lb.
 7

(6.) If $\frac{236}{4} \text{ gal.} : £68 \cdot 15 :: \frac{885}{15} \text{ gal.}$
 $\underline{206 \cdot 5}$
 5
 $4 \overline{) 1031 \cdot 5}$
Ans. £ 257 . 16 . 3

$8,0 \overline{) 1789,2}$
Ans. £ 223 . 13

(7.) If $\frac{252}{12} \text{ gal.} : £44 \cdot 10 :: \frac{1281}{61} \text{ gal.}$
 $\underline{445}$
 6
 2670
 $44 \cdot 10$
 $12 \overline{) 2714 \cdot 10}$
Ans. £ 226 . 4 . 2

(10.) If $\frac{112}{16} \text{ lb.} : \frac{77}{6} :: \frac{30}{3} \text{ cwt. } 3 \text{ qr. } 7 \text{ lb.}$
 930
 $\underline{3451 \text{ lb.}}$
 493
 $930d.$
 14790
 4437
 $16 \left\{ \begin{array}{l} 2 \overline{) 458490} \\ 8 \overline{) 229245} \end{array} \right.$
 $12 \overline{) 28655 \frac{1}{2} - \frac{1}{8}}$
 $2,0 \overline{) 238,7 \cdot 11 \frac{1}{2}}$
Ans. £ 119 . 7 . 11 $\frac{1}{2}$

(11.) If $\overset{cwt.}{20} : \pounds 67.10 :: \overset{to.}{6} . \overset{ct.}{4} . \overset{qr.}{3} . \overset{lb.}{21}$

$$\begin{array}{r} \frac{112}{2240} \\ \hline 320 \end{array}$$

$$\begin{array}{r} \frac{13993 \text{ lb.}}{1999} \\ \hline 67\frac{1}{2} \pounds \\ \hline 13993 \\ 11994 \\ \hline 999.10 \end{array}$$

$$320 \left\{ \begin{array}{l} 4,0 \overline{13493,2.10} \\ 8 \overline{3373.6.3} \end{array} \right.$$

Ans. \pounds 421.13.3

(15.) If $\overset{qr.}{1} : 37/6 :: \overset{qr.}{136} . \overset{bu.}{5} . \overset{pe.}{2}$

$$\begin{array}{r} \frac{32 \text{ pecks.}}{1093 \text{ bush.}} \\ \hline 4374 \text{ pecks.} \\ 37\frac{1}{2} \text{ shill.} \\ \hline 30618 \\ 13122 \\ \hline 2187 \end{array}$$

$$32 \left\{ \begin{array}{l} 4 \overline{164025 \text{ shill.}} \\ 8 \overline{41006-1} \\ 2,0 \overline{512,5.9} \end{array} \right.$$

Ans. \pounds 256.5.9\frac{1}{4}

(12.) If $\overset{lb.}{30} : 47/6 :: \overset{cwt.}{123} : \overset{qr.}{2} . \overset{lb.}{16}$

$$\begin{array}{r} \frac{5}{7/11} \quad 123 \\ \hline 123 \\ , 12372 \\ \hline 13848 \\ \hline 95d. = 7/11 \\ \hline 69240 \\ 124632 \\ \hline 5 \overline{1315560} \\ 12 \overline{263112} \\ \hline 2,0 \overline{2192,6} \\ \hline \pounds 1096.6 \text{ Ans.} \end{array}$$

(16.) If $5/3 : 5 :: \overset{\pounds}{52} . \overset{s.}{10}$

$$\begin{array}{r} \frac{4}{21} \quad \frac{\pounds}{20} \\ \hline 1050 \\ 4 \\ \hline 4200 \\ \hline 5 \text{ qr.} \end{array}$$

$$21 \left\{ \begin{array}{l} 7 \overline{21000} \\ 3 \overline{3000} \\ 4 \overline{1000 \text{ qr.}} \end{array} \right.$$

Ans. 250 yd.

(13.) ... $\overset{yd.}{28} : \pounds 21 :: \overset{yd.}{10\frac{1}{2}}$

$$\begin{array}{r} \frac{56}{8} \quad \frac{3}{8)63} \quad \frac{21}{3} \\ \hline \text{Ans. } \pounds \underline{\underline{7.17.6}} \end{array}$$

(17.) If $\overset{cwt.}{15} . \overset{qr.}{1} . \overset{lb.}{17} : 52.10 :: 112$

$$\begin{array}{r} \frac{1725 \text{ lb.}}{20} \\ \hline 1050 \\ 112 \\ \hline 12600 \\ 1050 \\ \hline 1725 \overline{117600} (68/2\frac{2}{3} \text{ } \overline{10350} \cdot \text{cwt. Ans.} \end{array}$$

$$\begin{array}{r} 14100 \\ 13800 \\ \hline 300 \\ 12 \\ \hline 1725 \overline{3600} (2d. \\ \hline 3450 \\ \hline 150 = 2 \\ \hline 1725 \overline{23} \end{array}$$

(14.) If $1,00 : \pounds 3.10 :: 1275$

$$\begin{array}{r} \frac{12}{42.0.0} \\ \hline \frac{1}{2} \dots 1.15.0 = 50 \text{ st.} \\ 0.17.6 = 25 \\ \hline \text{Ans. } \pounds \underline{\underline{44.12.6}} \end{array}$$

$$\begin{array}{r} 1725 \overline{117600} (68/2\frac{2}{3} \text{ } \overline{10350} \cdot \text{cwt. Ans.} \\ \hline 14100 \\ 13800 \\ \hline 300 \\ 12 \\ \hline 1725 \overline{3600} (2d. \\ \hline 3450 \\ \hline 150 = 2 \\ \hline 1725 \overline{23} \end{array}$$

(18.)... If $\frac{8}{4} : \frac{1}{9} :: 100$ £
 $\frac{100}{21}$
 $\frac{100}{100)2100}$
£21 Ans.

(19.)... If $\frac{bus. hor. bus.}{1} : 8 :: \frac{343}{49}$
 $\frac{8}{49}$
Ans. 392 horses.

(20.)... If £5070 . 16 . 8 : £405 . 13 . 4 :: £45 . 12 . 9

$$\begin{array}{r} 20 \\ \hline 101416 \\ 3 \\ \hline 304250 \\ 25 \end{array}$$

$$\begin{array}{r} 20 \\ \hline 8113 \\ 3 \\ \hline 24340 \\ 2 \end{array}$$

$$\begin{array}{r} 20 \\ \hline 912 \\ 12 \\ \hline 10953 \text{ pence.} \\ 2 \end{array}$$

$$25 \left\{ \begin{array}{l} 5 \overline{)21906} \\ 5 \overline{)4381-1} \\ 12 \overline{)876\frac{6}{25}} \text{ pence.} \\ 2,0 \overline{)7,3} \\ \hline \text{Ans. } \underline{\underline{£3 . 13 . 0\frac{6}{25}}} \end{array} \right.$$

(21.)..... If $\frac{da. reap. da.}{10} : 6 :: 6$
 $\frac{6}{10}$
 $6 \overline{)60}$
Ans. 10 reapers.

(24.)..... If $\frac{men. da. men.}{5} : 21 :: \frac{12}{2}$
 $\frac{12}{5}$
 $2 \overline{)105}$
Ans. 52½ days.

(22.)..... If $\frac{men. da. men.}{4} : 12 : 9$
 $\frac{4}{9}$
 $9 \overline{)48}$
Ans. 5½ days.

(25.)..... If $\frac{qr. yd. qr.}{4} : 32 :: 3$
 $\frac{3}{4}$
 $3 \overline{)128}$
Ans. 42⅔ yards.

(23.)..... If $\frac{da. men. da.}{5} : 30 :: \frac{10}{2}$
 $\frac{10}{5}$
 $2 \overline{)150}$
Ans. 75 men.

(26.)..... $\frac{yd.}{28 \text{ round.}} : 3 \text{ high.} :: 9 \text{ na.}$
 $\frac{3}{28}$
 $9 \overline{)1344}$
Ans. 149⅛ yards.

$$(27.) \dots \dots \dots \begin{array}{l} \text{qr.} \quad \text{yd.} \quad \text{qr.} \\ 3 : 54 :: 5 \\ \quad \quad \quad 3 \\ \hline 5 \overline{)162} \\ \text{Ans. } \underline{\underline{32\frac{2}{5} \text{ yards.}}} \end{array}$$

$$(33.) \dots \quad \text{If } \begin{array}{l} \text{£} \quad \text{da.} \quad \text{£} \\ 30,0 : 270 :: 45,0 \\ \quad \quad \quad 2 \quad \quad \quad 2 \quad \quad \quad 3 \\ \hline 3 \overline{)540} \\ \text{Ans. } \underline{\underline{180 \text{ days.}}} \end{array}$$

$$(28.) \dots \quad \text{Length... } 6 \text{ yards.}$$

$$\begin{array}{l} 5\frac{1}{2} \\ \hline 11\frac{1}{2} \times 2 \\ \hline \text{If } 8\frac{1}{8} \text{ ft} : 23 :: \frac{2}{8} \text{ ft.} \\ \quad \quad \quad 25 \quad \quad \quad 25 \\ \hline \quad \quad \quad 115 \\ \quad \quad \quad 46 \\ \hline 6 \overline{)575} \\ \text{Ans. } \underline{\underline{95\frac{5}{8} \text{ yards.}}} \end{array}$$

$$(34.) \dots \quad \text{If } \begin{array}{l} \text{d.} \quad \text{yds.} \quad \text{d.} \\ 4,0 : 150 :: 3,0 \\ \quad \quad \quad 4 \\ \hline 3 \overline{)600} \\ \text{Ans. } \underline{\underline{200 \text{ yards.}}} \end{array}$$

$$(29.) \dots \quad \text{If } \begin{array}{l} \text{men.} \quad \text{da.} \quad \text{men.} \\ 860 : 270 :: 645 \\ \quad \quad \quad 4 \quad \quad \quad 4 \quad \quad \quad 3 \\ \hline 3 \overline{)1080} \\ \text{Ans. } \underline{\underline{360 \text{ days.}}} \end{array}$$

$$(35.) \dots \quad \text{If } \begin{array}{l} \text{lb.} \\ 8/4 : 140 :: 6/8 \\ \hline 10,0\text{d.} \quad 10 \quad 8,0\text{d.} \\ \hline 8 \overline{)1400} \\ \text{Ans. } \underline{\underline{175 \text{ lb.}}} \end{array}$$

$$(30.) \dots \quad \text{If } \begin{array}{l} \text{weeks.} \quad \text{oz.} \quad \text{weeks.} \\ 12 : 18 :: 16 \\ \quad \quad \quad 3 \quad \quad \quad 3 \quad \quad \quad 4 \\ \hline 4 \overline{)54} \\ \text{Ans. } \underline{\underline{13\frac{1}{2} \text{ oz.}}} \end{array}$$

$$(36.) \dots \quad \text{If } \begin{array}{l} \text{doz.} \quad \text{doz.} \\ 10,0 : 5/3 :: 15,0 \\ \quad \quad \quad 2 \quad \quad \quad 2 \quad \quad \quad 3 \\ \hline 3 \overline{)10/6} \\ \text{Ans. } \underline{\underline{3/6 \text{ doz.}}} \end{array}$$

$$(31.) \dots \quad \text{If } \begin{array}{l} \text{¢ ct.} \quad \text{£} \quad \text{¢ ct.} \\ 5 : 1475 :: 4 \\ \quad \quad \quad 5 \\ \hline 4 \overline{)7375} \\ \text{Ans. } \underline{\underline{£1843. 15}} \end{array}$$

$$(37.) \dots \quad \text{If } \begin{array}{l} \text{gal.} \quad \text{£.} \quad \text{s.} \quad \text{gal.} \\ 13,0 : 87. 10 :: 5,0 \\ \quad \quad \quad 5 \\ \hline 13 \overline{)437. 10} \\ \text{Ans. } \underline{\underline{£33. 13. 0\frac{3}{4} - \frac{9}{18}}} \end{array}$$

$$(32.) \dots \quad \text{If } \begin{array}{l} \text{£} \quad \text{da.} \quad \text{£} \\ 28,0 : 365 :: 70,0 \\ \quad \quad \quad 2 \quad \quad \quad 2 \quad \quad \quad 5 \\ \hline 5 \overline{)730} \\ \text{Ans. } \underline{\underline{146 \text{ days.}}} \end{array}$$

$$(38.) \quad \text{If } \begin{array}{l} \text{per.} \quad \text{die.} \quad \text{persons.} \\ 1,00 : 3 :: 10500,00 \\ \quad \quad \quad 3 \\ \hline \text{Ans. } \underline{\underline{31500 \text{ funer.}}} \end{array}$$

$$(39.) \quad \text{If } \begin{array}{l} \text{oz.} \quad \text{£.} \quad \text{s.} \quad \text{d.} \quad \text{oz.} \\ 11 : 46. 14. 6 :: 12 \\ \quad \quad \quad 12 \\ \hline 11 \overline{)560. 14. 0} \\ \text{Ans. } \underline{\underline{£50. 19. 5\frac{1}{4} - \frac{9}{11}}} \end{array}$$

$$(40.)... \text{ If } \frac{16}{4} \text{ ho. } : \frac{27}{4} \text{ da.} :: \frac{12}{3} \text{ ho.}$$

$$\quad \quad \quad 3)108$$

$$\text{Ans. } \underline{\underline{36 \text{ days.}}}$$

$$(46.) \text{ 3 weeks} = 18 \text{ da.}$$

$$\text{ If } \frac{9}{9} \text{ car. } : \frac{9}{9} \text{ days.} :: \frac{4}{4} \text{ car.}$$

$$\quad \quad \quad 9$$

$$\quad \quad \quad 4)81$$

$$\text{Ans. } \underline{\underline{20\frac{1}{4} \text{ days.}}}$$

$$(41.)... \frac{16}{4} \text{ pints. } : \frac{20}{4} :: \frac{20}{5}$$

$$\quad \quad \quad 5)80$$

$$\text{Ans. } \underline{\underline{16 \text{ pints.}}}$$

$$(47) \text{ If } \frac{25,0}{5} \text{ £ } : \frac{90}{5} \text{ da.} :: \frac{30,0}{6} \text{ £}$$

$$\quad \quad \quad 6)450$$

$$\text{Ans. } \underline{\underline{75 \text{ days after 4th}}}$$

$$\quad \quad \quad \text{May, or till}$$

$$\quad \quad \quad \text{18th July.}$$

$$(42.)... \text{ If } \frac{42}{6} \text{ sirp. } : \frac{100}{5} \text{ gal.} :: \frac{35}{5} \text{ sirp.}$$

$$\quad \quad \quad 6)500$$

$$\text{Sub. } \underline{83\frac{1}{3}}$$

$$\text{From } 100$$

$$\text{Ans. } \underline{\underline{16\frac{2}{3} \text{ gal. water.}}}$$

$$(48.)... \text{ If } \frac{9}{9} \text{ ret. acres.} : \frac{40}{9} \text{ ret.} :: \frac{12}{12}$$

$$\quad \quad \quad 12)360$$

$$\text{Ans. } \underline{\underline{30 \text{ acres.}}}$$

$$(43.)... \frac{35}{5} \text{ sirp. } : \frac{100}{6} \text{ gal.} :: \frac{42}{6} \text{ sirp.}$$

$$\quad \quad \quad 5)600$$

$$\text{From } 120 \text{ gal.}$$

$$\text{Sub. } \underline{100}$$

$$\text{Ans. } \underline{\underline{20 \text{ gal. water.}}}$$

$$(49.)... \text{ If } \frac{18}{9} \text{ da.} : \frac{15}{9} \text{ reap.} :: \frac{14}{7} \text{ da.}$$

$$\quad \quad \quad 7)135$$

$$\text{Ans. } \underline{\underline{19\frac{2}{7} \text{ reapers.}}}$$

$$(44.)... \text{ If } \frac{4}{4} \text{ bth.} : \frac{40}{4} \text{ len.} :: \frac{9}{9} \text{ bth.}$$

$$\quad \quad \quad 9)160$$

$$\text{Ans. } \underline{\underline{17\frac{7}{9} \text{ perches.}}}$$

$$(50.)... \text{ If } \frac{7}{1} \text{ da.} : \frac{21}{3} \text{ / } :: \frac{90}{2}$$

$$\quad \quad \quad 2,0)27,0$$

$$\text{Ans. } \underline{\underline{£13 . 10}}$$

$$(45.)... \text{ If } \frac{365}{1} \text{ da.} : \frac{730}{2} \text{ £ } :: \frac{181}{2} \text{ da.}$$

$$\quad \quad \quad \underline{\underline{£362 . 0}}$$

$$181 \text{ Guineas} = \underline{\underline{190 . 1}}$$

$$\text{Ans. } \underline{\underline{171 . 19}}$$

(51.)... $\begin{array}{r} \text{da.} \quad \pounds \quad \text{da.} \\ 365 : 400 :: 189 \\ \hline 189 \\ 365 \overline{)75600} (\pounds 207.2.5\frac{1}{2} \\ \underline{7300} \quad \text{Ans.} \\ \underline{2600} \\ \underline{2555} \\ \underline{45} \\ \underline{20} \end{array}$

$\begin{array}{r} 365 \overline{)900} (2s. \\ \underline{730} \\ \underline{170} \\ \underline{12} \end{array}$

$\begin{array}{r} 365 \overline{)2040} (5d. \\ \underline{1825} \\ \underline{215} \\ \underline{4} \end{array}$

$\begin{array}{r} 365 \overline{)860} (2q. \\ \underline{730} \\ \underline{130} \end{array}$

(52.) If $\begin{array}{r} \text{qrs.} \quad \pounds \quad s. \quad \text{qrs.} \\ 360 : 4 \quad . \quad 8 :: 45,0 \\ \hline 4 \quad \quad \quad 4 \quad 5 \\ 5 \overline{)17.12} \\ \text{Ans. } \underline{\underline{3.10.4\frac{1}{4} - \frac{1}{5}}} \end{array}$

(53) $\frac{1}{4}$ quarter, $\pounds 19.19$
 $\begin{array}{r} \pounds \quad \pounds \quad \quad \quad 4 \text{ qr.} \\ \hline \end{array}$

If $4\frac{1}{2} : 100 :: 79.16$
 $\begin{array}{r} 9 \quad 200 \quad \quad \quad 200 \\ \hline 9 \overline{)15960} \\ \text{Ans. } \underline{\underline{\pounds 1773.6.8}} \end{array}$

(54).. If $\begin{array}{r} \text{lb.} \quad \text{loaves.} \quad \text{lb.} \\ 28,0 : 8,0 :: 336 \\ \hline 7 \quad 2 \\ \underline{336} \\ 7 \overline{)672} \\ \text{Ans. } \underline{\underline{96 \text{ loaves.}}} \end{array}$

(55.)... If $\begin{array}{r} \text{da.} \quad \pounds \quad \text{d.} \\ 365 : 146 :: 182 \\ \hline 5 \quad 2 \\ \underline{182} \\ 5 \overline{)364} \\ \text{Ans. } \underline{\underline{\pounds 72.16}} \end{array}$

(56.)... If $\begin{array}{r} 70/. : 13 :: 84/. \\ \hline 5 \quad 6 \quad 6 \\ 5 \overline{)78} \\ \text{Ans. } \underline{\underline{15\frac{2}{5}d. \text{ } \cancel{\text{p}} \text{ loaf.}}} \end{array}$

(57.)... $365 \times 56 = 20440 \text{ lb.}$

If $\begin{array}{r} \text{lb.} \quad \text{oz.} \quad \text{lb.} \quad \text{lb.} \\ 17.6 : 14 :: 20440 \\ \hline 16 \quad 16 \quad 224 \\ 278 \text{ oz.} \quad 224 \quad 8176 \\ \hline 4088 \\ 4088 \\ 278 \overline{)4578560} \\ 112 \overline{)16469\frac{178}{78}} \text{ lb.} \\ \text{Ans. } \underline{\underline{\text{cwt. } 147.5\frac{89}{139} \text{ lb.}}} \end{array}$

(58.)... 32 miles.
 $\begin{array}{r} 24 \text{ da. miles.} \\ \hline \end{array}$
 If $8 : 1 :: 84$
 Ans. $\underline{\underline{10\frac{1}{2} \text{ days.}}}$

(59.)... If $\begin{array}{r} \text{ho.} \quad \text{da.} \quad \text{ho.} \\ 12 : 4\frac{1}{2} :: 9 \\ \hline 4 \quad 4 \quad 3 \\ 3 \overline{)18} \\ \text{Ans. } \underline{\underline{6 \text{ days.}}} \end{array}$

(60.) If $\begin{array}{r} \text{miles.} \quad \text{min.} \quad \text{miles.} \\ 30 : 7\frac{1}{2} :: 25 \\ \hline 6 \quad 6 \quad 5 \\ 5 \overline{)45} \\ \text{Ans. } \underline{\underline{9 \text{ minutes.}}} \end{array}$

(61.)... If $\overset{d.}{7} : \overset{d.}{8} :: \frac{15}{9}$
 $\quad\quad\quad 8$
 $\quad\quad\quad \underline{7)126/}$
Ans. $\underline{\underline{18/}}$

(65.)... As $\frac{100}{200} : \frac{74\frac{1}{2}}{149} :: \frac{42}{/}$
 $\quad\quad\quad \underline{42}$
 $\quad\quad\quad \underline{298}$
 $\quad\quad\quad 596$
 $2,00 \overline{)62,58}$
Ans. $\underline{\underline{31\frac{3}{4}}}$ $\frac{87}{100}$ ¢ bo.

(62.)... If $\overset{gal.}{4} : \overset{gal.}{15/} :: 6$
 $\quad\quad\quad 6$
 $\quad\quad\quad \underline{4)90}$
Ans. $\underline{\underline{22\frac{6}{6}}}$ ¢ gal.

(66.)... $\overset{yd.}{\frac{7}{8}} : 2/11 :: \overset{yd.}{\frac{9}{8}}$
 $\quad\quad\quad 9$
 $\quad\quad\quad \underline{7)26/3}$
1st Ans. $\underline{\underline{3/9}}$ ¢ yard.

(63.)... If $\overset{gal.}{4} : \overset{gal.}{16/6} :: 5$
 $\quad\quad\quad 5$
 $\quad\quad\quad \underline{4)82/6}$
Ans. $\underline{\underline{20/7\frac{1}{2}}}$ $- 19/ = 1/7\frac{1}{2}$

And,
 If $\overset{d.}{45} : \overset{yd.}{140} :: \overset{d.}{35}$
 $\quad\quad\quad \underline{9} \quad \underline{9} \quad \underline{7}$
 $\quad\quad\quad \underline{7)1260}$
2d Ans. $\underline{\underline{180}}$ *yards.*

The double rum is the cheapest by $1/7\frac{1}{2}d.$ ¢ gallon.

(64.)... $\overset{sixp.}{21} : \overset{sixp.}{24} :: \frac{17}{6}$
 $\quad\quad\quad \underline{7} \quad \underline{8} \quad \underline{8}$
 $\quad\quad\quad \underline{7)140}$
From 21 sub. $\underline{\underline{20/}}$ $= 1/.$
Ans. B. by 1/.

(67.)... If $\overset{sixp.}{15} : \overset{oz.}{7} . \overset{dr.}{14} :: \overset{sixp.}{42}$
 $\quad\quad\quad \underline{5} \quad \underline{5} \quad \underline{14}$
 $14 \left\{ \begin{array}{l} \underline{2} \overline{)39.6} \\ \underline{7} \overline{)19.11} \end{array} \right.$
Ans. $\underline{\underline{2\text{ oz. } 13\text{ dr.}}}$

(68.)... 10 miles.
 $\quad\quad\quad \underline{8}$ *ho. miles.*
 If $2 : 1 :: 18$
1st Ans. $\underline{\underline{9}}$ *hours.*
 and $9 \times 8 = 72$ miles. *2d Ans.*

(69.)..... 38
 $\quad\quad\quad 35$
 If $\frac{73}{2} : \overset{in.}{36\frac{1}{2}} :: 38$
 $\quad\quad\quad \underline{2} \quad \underline{1} \quad \underline{19}$ *in. longer end. 1st Ans.*
And $17\frac{1}{2}$ *shorter. 2d Ans.*
Proof, $\underline{\underline{36\frac{1}{2}}}$ *inches.*

(70.).....

$$\begin{array}{r}
 \text{If } \overset{\text{men.}}{12,00} : \overset{\text{mo.}}{10} :: \overset{\text{men.}}{15,00} \\
 \underline{12} \\
 15 \overline{)120} \\
 \underline{120} \\
 8 \text{ months.} \\
 \text{Ded. } \overset{\text{men.}}{2} \\
 \overset{\text{men.}}{15,00} : \overset{\text{Ded.}}{6} :: \overset{\text{men.}}{18,00} \\
 \underline{15} \\
 18 \overline{)90} \\
 \underline{90} \\
 5 \text{ months.} \\
 \underline{\underline{2+1=3-12=9 \text{ months.}}} \quad \text{Ans.}
 \end{array}$$

COMPOUND PROPORTION.

EXERCISES, *pages 70 and 71.*

(1.).....

$$\begin{array}{r}
 \text{If } 9 \text{ men} : 36 \text{ sq.} :: 12 \text{ men.} \\
 \underline{12 \text{ days}} \quad \underline{120} \quad \underline{10 \text{ days.}} \\
 108 \quad)4320(40 \quad 120 \\
 \underline{432 \cdot} \\
 \underline{\underline{}} \quad \text{Ans. 40 squares}
 \end{array}$$

(2.)

$$\begin{array}{r}
 \text{If } 36 \text{ squares} : 9 \text{ men} :: 42 \text{ squares.} \\
 \underline{7 \text{ days}} \quad \underline{12 \text{ days.}} \\
 252 \quad \underline{504} \\
 \underline{9} \\
 252 \overline{)4536}(18 \text{ men.} \text{ Ans.} \\
 \underline{252 \cdot} \\
 \underline{2016} \\
 \underline{2016} \\
 \underline{\underline{}}
 \end{array}$$

(3.).....

$$\begin{array}{r}
 \text{If } \frac{12}{1} \text{ men} : \frac{12}{1} \text{ days} :: 9 \text{ men.} \\
 \underline{36} \quad \underline{42} \\
 \underline{36} \quad 36 \overline{)378}(10\frac{1}{2} \text{ days.} \text{ Ans.} \\
 \underline{\underline{36}} \quad \underline{36 \cdot} \\
 \underline{18} \quad \underline{1} \\
 \underline{\underline{36}} \quad \underline{\underline{2}}
 \end{array}$$

(4.) If $\frac{25}{1}$ reapers : $\frac{50}{2}$ acres :: 16 reapers.
 $\frac{6}{6}$ days. $\frac{14}{64}$ days.
 $\frac{16}{224}$
 $\frac{2}{6)448}$
Ans. $74\frac{2}{3}$ acres.

(5.) If $\frac{21}{3}$ acres : $\frac{14}{2}$ reapers :: 150 acres.
 $\frac{10}{30}$ days. $\frac{6}{900}$ days.
 $\frac{2}{3,0)180,0}$
Ans. 60 reapers.

(6.) If 5,0 reapers : 5 days :: 2,0 reapers.
 $\frac{36}{180}$ acres. $\frac{180}{360}$ acres.
 $\frac{5}{18,0)180,0}$ days.
10 days. Ans.

(7.) If 3,0 tons : £175 :: 5,0 tons.
 $\frac{7}{21}$ months. $\frac{20}{20}$ 4 months.
 $21 \left\{ \begin{array}{l} 7 \overline{)3500} \\ 3 \overline{)500} \end{array} \right.$
£166 . 13 . 4 Ans.

(8.) If 7,00 : 219 days :: £5,00
 $\frac{4}{28}$ p cent. $\frac{25}{1095}$ 5 p cent.
 $\frac{438}{28 \left\{ \begin{array}{l} 7 \overline{)5475} \\ 4 \overline{)782-1} \end{array} \right.}$
 $195\frac{5}{8}$ days. Ans.

(13.)... 150 feet \times 3 st. = 450; and 54 feet \times 8 = 432 stone.

If 450 st. : 70/. $::$ 432 st.

$$\begin{array}{r} 40 \text{ mil.} \\ \hline 180,00 \end{array} \quad \begin{array}{r} 25 \\ \hline 108,00 \\ 70 \end{array}$$

18,0)756,0(42/ or £2 . 2. *Ans.*

$$\begin{array}{r} 72 \\ \hline 36 \\ \hline 36 \\ \hline \hline \end{array}$$

(14.)... If 4,0 men : 4 months $::$ 3,0 men.

$$\begin{array}{r} 8 \text{ hours.} \\ \hline 32 \end{array} \quad \begin{array}{r} 10 \text{ hours.} \\ \hline 30 \end{array}$$

4 months.

32)120(3 $\frac{3}{4}$ months. *Ans.*

$$\begin{array}{r} 96 \\ \hline 24 \quad 3 \\ \hline 32 \quad 4 \\ \hline \hline \end{array}$$

(15.)..... If 20 weeks : 1500 men $::$ 12 weeks.

$$\begin{array}{r} 8 \text{ oz.} \\ \hline 16,0 \\ \hline 2 \end{array} \quad \begin{array}{r} 3 \\ \hline 2)4500 \\ \hline 2250 \end{array} \quad \begin{array}{r} 20 \text{ oz.} \\ \hline 24,0 \\ \hline 3 \end{array}$$

Ans. 2250 men.

(16.)..... If $\frac{60}{1}$ yd. : 30 men $::$ $\frac{180}{3}$ yd.

$$\begin{array}{r} 16 \text{ days.} \\ \hline 16 \end{array} \quad \begin{array}{r} 8 \text{ days.} \\ \hline 24 \\ \hline 30 \end{array}$$

$$16)720$$

45 men, required.

Deduct 30 men, hired already.

Ans. 15 men additional.

(17.)..... If 9 men : 60 days $::$ 15 lads.

$$\begin{array}{r} 24 \text{ yrs.} \\ \hline 216 \\ \hline 4 \end{array} \quad \begin{array}{r} 5 \\ \hline 4)300 \\ \hline 75 \end{array} \quad \begin{array}{r} 18 \\ \hline 270 \\ \hline 5 \end{array}$$

Ans. 75 days.

(18.)... £11 . 5 = 225/. : 9 horses :: 1080/. = £54.

6 mo. 32/. 3/4 qr. <hr style="width: 50%; margin: 0 auto;"/> 432,00	4 1/2 mo. 36 2/3/. 3/4 qr. <hr style="width: 50%; margin: 0 auto;"/> 1782,00 9
---	---

432)16038(37 1/8 horses. *Ans.*

1296 ·
<hr style="width: 50%; margin: 0 auto;"/>
3078
<hr style="width: 50%; margin: 0 auto;"/>
3024
<hr style="width: 50%; margin: 0 auto;"/>
54
<hr style="width: 50%; margin: 0 auto;"/>
432 = 1/8
<hr style="width: 50%; margin: 0 auto;"/>

(19.)... If 30 men : 80 cub. yd. :: 80 men.

40 hours. 4 strength. 9 hardness. <hr style="width: 50%; margin: 0 auto;"/> 432,00	90 hours. 5 strength 8 hardness. <hr style="width: 50%; margin: 0 auto;"/> 2880,00 80
---	---

432)230400(533 1/3 yd. *Ans.*

2160 ··
<hr style="width: 50%; margin: 0 auto;"/>
1440
<hr style="width: 50%; margin: 0 auto;"/>
1296
<hr style="width: 50%; margin: 0 auto;"/>
1440
<hr style="width: 50%; margin: 0 auto;"/>
1296
<hr style="width: 50%; margin: 0 auto;"/>
144
<hr style="width: 50%; margin: 0 auto;"/>
432 = 1/3
<hr style="width: 50%; margin: 0 auto;"/>

(20.).....

If 35,0 men : $\frac{14}{7}$ <hr style="width: 50%; margin: 0 auto;"/> 16 hours. <hr style="width: 50%; margin: 0 auto;"/> 112	60 days. $\frac{14}{46}$:: $\frac{20,0}{4}$ men. <hr style="width: 50%; margin: 0 auto;"/> 14 hours. <hr style="width: 50%; margin: 0 auto;"/> 56 46 <hr style="width: 50%; margin: 0 auto;"/> 336 224 <hr style="width: 50%; margin: 0 auto;"/> 112)2576(23 days. <i>Ans.</i> 224 · <hr style="width: 50%; margin: 0 auto;"/> 336 <hr style="width: 50%; margin: 0 auto;"/> 336 <hr style="width: 50%; margin: 0 auto;"/>
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DISTRIBUTIVE PROPORTION.

EXERCISES, page 72.

<i>Legacies.</i>	<i>Net Sum.</i>	
(1) If $\frac{735,0}{+15 \quad 49}$: $\frac{£6520 \cdot 10}{5}$:: $\frac{£75,0}{5}$
	$\left. \begin{array}{l} 7 \\ 7 \end{array} \right\} \begin{array}{l} 32602 \cdot 10 \\ 4657 \cdot 10 \end{array}$	
<i>A. receives</i>	<u><u>£665 . 7 . 1$\frac{3}{4}$</u></u>	<i>1st Ans.</i>

$\frac{£7350}{+25 \quad 294}$:	$\frac{£6520 \cdot 10}{12}$::	$\frac{£575}{23}$	
		78246 . 0			
		71725 . 10			
		294)149971 . 10	($\frac{£510 \cdot 2 \cdot 1\frac{1}{2}}$	<i>B.'s share.</i>	
		1470 ..		<u>2nd Ans.</u>	
		297			
		294			
		31			
		20			
		294)630(2			
		588			
		42			
		12			
		294)504(1			
		294			
		210			
		4			
		294)840(2			
		588			
		rem. 252			

If £735,0 : £6520 . 10 :: £40,0

$$\begin{array}{r} \div 5 \quad \frac{147}{147} \overline{)52164} \cdot 0 \left(\frac{8}{8} \right) \frac{8}{8} \text{ C.'s share.} \\ \underline{441} \cdot \cdot \quad \underline{\underline{£354 . 17 . 1\frac{1}{2}}} \quad \text{3rd Ans.} \\ \quad \quad \quad 806 \\ \quad \quad \quad \underline{735} \\ \quad \quad \quad \quad 714 \\ \quad \quad \quad \quad \underline{588} \\ \quad \quad \quad \quad \quad 126 \\ \quad \quad \quad \quad \quad \underline{20} \\ 147 \overline{)2520} (17 \\ \quad \quad \quad \underline{147} \cdot \\ \quad \quad \quad \quad 1050 \\ \quad \quad \quad \quad \underline{1029} \\ \quad \quad \quad \quad \quad 21 \\ \quad \quad \quad \quad \quad \underline{12} \\ 147 \overline{)252} (1 \\ \quad \quad \quad \underline{147} \\ \quad \quad \quad \quad 105 \\ \quad \quad \quad \quad \underline{4} \\ 147 \overline{)420} (2 \\ \quad \quad \quad \underline{294} \\ \text{rem. } \underline{\underline{126}} \end{array}$$

(2.) A... £180
 B... 120
 C... 60

$$\begin{array}{l} \frac{£36,0}{2} : \frac{\text{acres. } 270}{135 \text{ A.'s}} : : \frac{£ 18,0}{1} \quad \text{1st Ans.} \\ \\ \frac{£36,0}{3} : \frac{\text{acres. } 270}{90 \text{ B.'s}} : : \frac{£ 12,0}{1} \quad \text{2nd Ans.} \\ \\ \text{If } \frac{\text{rents. } £36,0}{4} : \frac{\text{acres. } 27,0}{3} : : \frac{£}{60} \\ \quad \quad \quad \underline{4} \quad \quad \quad \underline{3} \\ \quad \quad \quad \quad 60 \\ \quad \quad \quad \underline{4)180} \\ \quad \quad \quad \quad \underline{45} \text{ C.'s share. 3rd Ans.} \end{array}$$

A.'s share 135 acres.
 B.'s 90
 C.'s 45
 Proof 270 sum.

(3.)	<i>catt. da. prod.</i> A ... $28 \times 35 = 980$ B ... $21 \times 28 = 588$ C ... $14 \times 35 = 490$ D ... $7 \times 42 = 294$ Sum of the Prod. <u>2352</u>	<i>Prod.</i> If 2352 : £29 . 8 :: 980	<i>prod.</i> $\begin{array}{r} 20 \\ \hline 588 \\ \hline 980 \\ \hline 4704 \\ 5292 \ 20) \\ \hline 2352)576240(245 \\ 4704 \cdot \cdot \cdot \\ \hline 10584 \\ 9408 \\ \hline 11760 \\ 11760 \\ \hline \hline \end{array}$	£12 . 5 <i>A. pays.</i> 1st <i>Ans.</i>
------	---	--	--	--

Prod.
 If $\frac{2352}{4} : \frac{£29 . 8}{4} : : \frac{588}{1} \text{ B.'s prod.}$ *2nd Ans.*
 $\frac{£7 . 7}{4} \text{ B. pays.}$

Prod.
 If $\frac{2352}{4} : \frac{£29 . 8}{4} : : 490 \text{ C.'s prod.}$
 $\frac{+588}{4}$

$$\begin{array}{r} 20 \\ \hline 588 \\ \hline 1 \\ \hline 490 \\ 4)490 \\ \hline 2,0)12,2 . 6 \\ \hline \underline{£6 . 2 . 6} \text{ C. pays. } \end{array}$$

3rd Ans.

Prod.
 If $\frac{2352}{4} : \frac{£29 . 8}{4} : : 294 \text{ D.'s prod.}$

$$\begin{array}{r} 20 \\ \hline 588 \\ \hline 1 \\ \hline 294 \\ 4)294 \\ \hline 2,0)7,3 . 6 \\ \hline \underline{£3 . 13 . 6} \text{ D. pays. } \end{array}$$

4th Ans.

(4.)	1st village...	350	<i>Persons.</i>	If 212,0 : £1000 :: 35,0	<i>Persons.</i>
	2d do.	420		35	
	3d do.	630		212)35000(£165 . 1 . 10½	
	4th do.	720		212 ·· 1st Vill. pays.	
	In all	<u>2120</u>	<i>Persons.</i>	1380	1st Ans.

1272
1080
1060
20
20
212)400(1
212
188
12
212)2256(10
2120
136
4
212)544(2
424
120

<i>Persons.</i>	If 212,0 : £1000 :: 42,0	<i>Persons.</i>
	42	
	212)42000(£198 . 2 . 3	
	212 ·· 2d Vill. pays. 2nd Ans.	

2080
1908
1720
1696
24
20
212)480(2
424
56
12
212)672(2
636
36
4
<u>144</u>

Ans. The first Village pays.....£165 . 1 . 10½—120 rem.
Second ditto 198 . 2 . 3 —144
Third ditto 297 . 3 . 4¾— 4
Fourth ditto 339 . 12 . 5¼—156
Proof...£1000 . 0 . 0

Persons.
 If 212,0 : £1000 :: 63,0
 63

212)63000 (£297 . 3 . 4 $\frac{3}{4}$
 424 *3d Village pays. 3rd Ans.*
 2060
 1908
 1520
 1484
 36
 20
 212)720(3
 636
 84
 12
 212)1008(4
 848
 160
 4
 212)640(3
 636
 rem. 4

If 212,0 : £1000 :: 72,0
 72

212)72000 (£339 . 12 . 5 $\frac{1}{4}$
 636 *4th Village pays. 4th Ans.*
 840
 636
 2040
 1908
 132
 20
 212)2640(12
 2544
 96
 12
 212)1152(5
 1060
 92
 4
 212)368(1
 212
 156

In the four Villages	$\begin{array}{r} \pounds \\ 212,0)100,0 \\ \underline{20} \\)2000(9/5\frac{11}{58} \text{ to each person.} \\ \underline{1908} \qquad \qquad \qquad 5th \text{ Ans.} \\ 92 \\ \underline{12} \\ 1104(5 \\ \underline{1060} \\ 44 \underline{=} 11 \\ \underline{212} \underline{=} 53 \end{array}$
----------------------	--

(5.)	A booty of 810 guineas	=	£850 . 10
	Deduct $\frac{1}{3}$ for the officers,		<u>283 . 10</u>
	To be divided among the men		<u>£567 . 0</u>

A.....	36 men		
B.....	27		
C.....	18		
	<u>81 men</u>	:	$\frac{\pounds 283 . 10}{4} :: \frac{36 \text{ men.}}{4}$
			<u>9)1134 . 0</u>
			<u>£ 126 . 0</u> A's share. 1st Ans.

If $\frac{81}{3}$ men	:	$\frac{\pounds 283 . 10}{4}$::	$\frac{27 \text{ men.}}{1}$
		<u>£ 94 . 10</u>		
				B's share £94 . 10 2nd Ans.

If $\frac{81}{9}$ men	:	$\frac{\pounds 283 . 10}{2}$::	$\frac{18 \text{ men.}}{2}$
		<u>9)567 . 0</u>		
				<u>£ 63 . 0</u> C's share. 3rd Ans.

<i>men.</i>	81(£567(£7 to each man. 4th Ans.
	<u>567</u>

(6.)... Two persons hire a chaise, &c.*
 42 miles for 2½ guineas, is 1/3 ~~per~~ mile.
 The whole hire is £2 . 12 . 6
 Deduct 16 miles @ 1/3 1 . 0 . 0
 Persons 3) 1 . 12 . 6
 He has to pay. . 0 . 10 . 10 Ans.

(7.)... His Butler..... 12 years @ £40 = £ 480
 Coachman.... 10 30 = 300
 Footman..... 7 16 = 112
 Errand Boy 5 6 = 30
 Sum of the products 922

If 922 : 300 :: $\left\{ \begin{array}{l} 480 : £156 . 3 . 7\frac{1}{2} \text{ Butler.} \\ 300 : 97 . 12 . 3\frac{1}{4} \text{ Coachman.} \\ 112 : 36 . 8 . 10 \text{ Footman.} \\ 30 : 9 . 15 . 2\frac{1}{2} \text{ Errand Boy.} \end{array} \right\}$ Ans.
 Lost with remainders £300 . 0 . 0

(8.)... His Eldest Son..... £2000
 Second Son..... 1600
 Third Son 1200
 Elder Daughter..... 1000
 Younger Daughter.. 800
£6600

* Questions of a similar nature to the above are solved by some authors upon the supposition that the word *proportionally* means that the Huddersfield gentleman was to pay at the same rate, or proportion $\frac{1}{3}$ mile, from Leeds, as the other two, which is manifestly unjust. We shall, however, give a solution of the question according to this supposition.

$$\begin{array}{r} 42 \text{ miles} \times 2 \text{ per.} = 84 \\ 26 \quad \times 1 \quad = 26 \end{array} \quad \begin{array}{l} \text{miles.} \\ 110 : 52/6 :: 84 : 40\frac{1}{11} \\ 110 : 52/6 :: 26 : 12\frac{4}{11} \end{array}$$

The two first have to pay *each*..... 20/0 $\frac{6}{11}$
 The Huddersfield gentleman 12/4 $\frac{10}{11}$

Then,	$\begin{matrix} \text{£} & \text{£} & \text{s.} & \text{d.} \\ \text{£} & & & \end{matrix}$	{	$2000 : 1363 . 12 . 8\frac{3}{4}$	Eldest Son.	}	Ans.	
			$1600 : 1090 . 18 . 2\frac{1}{4}$	Second Son.			
			$1200 : 818 . 3 . 7\frac{1}{4}$	Third Son.			
			$1000 : 681 . 16 . 4\frac{1}{4}$	Elder Daughter.			
			$800 : 545 . 9 . 1$	Younger Do.			
If 66,00 : 45,00							
Sum to be divided.....		<u>£4500 . 0 . 0</u>					

(9.)..... If 400,00 : 35,00 : 100

100
400)3500
Rate <u>8$\frac{3}{4}$ p cent.</u> 1st Ans.

3 Shares of £ 50 is	£150	
2 Ditto of 100 is	200	
5 p cent = $\frac{1}{20}$		350 @ 8 $\frac{3}{4}$ p cent.
2 $\frac{1}{2}$ do. = $\frac{1}{2}$		17 . 10 . 0
1 $\frac{1}{4}$ do. = $\frac{1}{2}$		8 . 15 . 0
		<u>4 . 7 . 6</u>
A. B. will receive.....		<u>£30 . 12 . 6</u> 2nd Ans.

RULES OF PRACTICE.

CASE I.

EXERCISES, page 74.

(1.)... 4|9876 articles @ $\frac{1}{4}$

12	2469
2,0	<u>20,5 . 9</u>
Ans. £	<u>10 . 5 . 9</u>

(3.) 12|9876 @ 1d.

2,0	82,3
Ans. £	<u>41 . 3</u>

(2.) ... 2|9876 @ $\frac{1}{2}$

12	4938
2,0	<u>41,1 . 6</u>
Ans. £	<u>20 . 11 . 6</u>

(4.) $\frac{1}{8}$ |9876 @ 1 $\frac{1}{2}$ d.

2,0	123,4 . 6
Ans. £	<u>61 . 14 . 6</u>

- | | |
|--|---|
| <p>(5.) ... $\frac{1}{8}$ 8765 articles @ 2d.
 $2,0 \overline{) 146,0 . 10}$
 <i>Ans.</i> £ <u>73 . 0 . 10</u></p> <p>(6.) ... $\frac{1}{4}$ 8765 @ 3d.
 $2,0 \overline{) 219,1 . 3}$
 <i>Ans.</i> £ <u>109 . 11 . 3</u></p> <p>(7.) ... $\frac{1}{3}$ 8765 @ 4d.
 $2,0 \overline{) 292,1 . 8}$
 <i>Ans.</i> £ <u>146 . 1 . 8</u></p> <p>(8.) ... 2 8765 @ 6d.
 $2,0 \overline{) 438,2 . 6}$
 <i>Ans.</i> £ <u>219 . 2 . 6</u></p> <p>(9.) ... $\frac{1}{30}$ 7654 articles @ 8d.
 <i>Ans.</i> £ <u>255 . 2 . 8</u></p> <p>(10.) ... 2 7654 @ 10d.
 $12 \overline{) 3827}$
 <i>Ans.</i> £ <u>318 . 18 . 4</u></p> <p>(11.) ... 2,0 765,4 @ 1/.
 <i>Ans.</i> £ <u>382 . 14</u></p> | <p>(12.) ... $\frac{1}{12}$ 7654 @ 1/8
 <i>Ans.</i> £ <u>637 . 16 . 8</u></p> <p>(13.) ... $\frac{1}{10}$ 7654 @ 2/.
 <i>Ans.</i> £ <u>765 . 8</u></p> <p>(14.) ... $\frac{1}{8}$ 6543 articles @ 2/6
 <i>Ans.</i> £ <u>817 . 17 . 6</u></p> <p>(15.) ... $\frac{1}{6}$ 6543 @ 3/4
 <i>Ans.</i> £ <u>1090 . 10</u></p> <p>(16.) ... $\frac{1}{5}$ 6543 @ 4/.
 <i>Ans.</i> £ <u>1308 . 12</u></p> <p>(17.) ... $\frac{1}{4}$ 6543 @ 5/.
 <i>Ans.</i> £ <u>1635 . 5</u></p> <p>(18.) ... $\frac{1}{3}$ 6543 @ 6/8
 <i>Ans.</i> £ <u>2181</u></p> <p>(19.) ... $\frac{1}{2}$ 6543 @ 10/.
 <i>Ans.</i> £ <u>3271 . 10</u></p> |
|--|---|

CASE II.

EXERCISES, page 75.

- | | |
|---|--|
| <p>(1.) $\frac{1}{5}$ 16789 yards @ 5d.
 $12 \overline{) 83845}$
 $2,0 \overline{) 698,7 . 1}$
 <i>Ans.</i> £ <u>349 . 7 . 1</u></p> | <p>(2.) 6d. = $\frac{1}{2}$ 16789 @ 7d.
 1d. = $\frac{1}{6}$ 8394 . 6
 $1399 . 1$
 $2,0 \overline{) 979,3 . 7}$
 <i>Ans.</i> £ <u>489 . 13 . 7</u></p> |
|---|--|

$$(3.) \quad 3d. = \frac{1}{4} | 16789 \text{ @ } 9d. \\ \text{off} \quad \underline{4197 \text{ . } 3} \\ 2,0 \underline{1259,1 \text{ . } 9} \\ \text{Ans. } \underline{\underline{\pounds 629 \text{ . } 11 \text{ . } 9}}$$

$$(4.) \quad 2d. = \frac{1}{6} | 16789 \text{ @ } 10d. \\ \text{off} \quad \underline{2798 \text{ . } 2} \\ 2,0 \underline{1399,0 \text{ . } 10} \\ \text{Ans. } \underline{\underline{\pounds 699 \text{ . } 10 \text{ . } 10}}$$

$$(5.) \quad 1d. = \frac{1}{7} | 16789 \text{ @ } 11d. \\ \text{off} \quad \underline{1399 \text{ . } 1} \\ 2,0 \underline{1538,9 \text{ . } 11} \\ \text{Ans. } \underline{\underline{\pounds 769 \text{ . } 9 \text{ . } 11}}$$

$$(6.) \quad 2/. = \frac{1}{10} | 4596 \text{ yards @ } 3/. \\ 1/. = \frac{1}{2} | \underline{459 \text{ . } 12} \\ \underline{229 \text{ . } 16} \\ \text{Ans. } \underline{\underline{\pounds 689 \text{ . } 8}}$$

$$(7.) \quad \dots\dots 4596 \text{ @ } 7/. \\ \underline{7} \\ 2,0 \underline{3217,2} \\ \text{Ans. } \underline{\underline{\pounds 1608 \text{ . } 12}}$$

$$(8.) \quad \dots\dots 4596 \text{ @ } 8/. \\ \underline{4} \\ \text{Ans. } \underline{\underline{\pounds 1838 \text{ . } 8}}$$

$$(9.) \quad \dots\dots 4596 \text{ @ } 9/. \\ \underline{9} \\ 2,0 \underline{4136,4} \\ \text{Ans. } \underline{\underline{\pounds 2068 \text{ . } 4}}$$

$$(10.) \quad 10/. = \frac{1}{2} | 4596 \text{ @ } 11/. \\ 1/. = \frac{1}{10} | \underline{2298} \\ \underline{229 \text{ . } 16} \\ \text{Ans. } \underline{\underline{\pounds 2527 \text{ . } 16}}$$

$$(11.) \quad \dots\dots 4596 \text{ @ } 12/. \\ \underline{6} \\ \text{Ans. } \underline{\underline{\pounds 2757 \text{ . } 12}}$$

$$(12.) \quad 1/. = \frac{1}{20} | 4596 \text{ @ } 13/. \\ \underline{6} \\ \underline{2757 \text{ . } 12} \\ \underline{229 \text{ . } 16} \\ \text{Ans. } \underline{\underline{\pounds 2987 \text{ . } 8}}$$

$$(13.) \quad \dots\dots 3218 \text{ yards @ } 14/. \\ \underline{7} \\ \text{Ans. } \underline{\underline{\pounds 2252 \text{ . } 12}}$$

$$(14.) \quad 5/. = \frac{1}{4} | 3218 \text{ @ } 15/. \\ \text{off} \quad \underline{804 \text{ . } 10} \\ \text{Ans. } \underline{\underline{2413 \text{ . } 10}}$$

$$(15.) \quad 4/. = \frac{1}{5} | 3218 \text{ @ } 16/. \\ \text{off} \quad \underline{643 \text{ . } 12} \\ \text{Ans. } \underline{\underline{\pounds 2574 \text{ . } 8}}$$

$$(16.) \quad 1/. = \frac{1}{20} | 3218 \text{ @ } 17/. \\ \underline{8} \\ \underline{2574 \text{ . } 8 = 16/.} \\ \underline{160 \text{ . } 18} \\ \text{Ans. } \underline{\underline{\pounds 2735 \text{ . } 6}}$$

$$(17.) \quad 2/. = \frac{1}{10} | 3218 \text{ @ } 18/. \\ \text{off} \quad \underline{321 \text{ . } 16} \\ \text{Ans. } \underline{\underline{\pounds 2896 \text{ . } 4}}$$

$$(18.) \quad 1/. = \frac{1}{20} | 3218 \text{ @ } 19/. \\ \text{off} \quad \underline{160 \text{ . } 18} \\ \text{Ans. } \underline{\underline{\pounds 3057 \text{ . } 2}}$$

$$(19.) \quad 1/. = \frac{1}{20} | 5673 \text{ yards @ } 21/. \\ \underline{283 \text{ . } 13} \\ \text{Ans. } \underline{\underline{\pounds 5956 \text{ . } 13}}$$

(20.) $2/. = \frac{1}{10} | 5673 \text{ @ } 22/.$
 $\quad \quad \quad 567 \ . \ 6$
Ans. $\underline{\underline{\pounds 6240 \ . \ 6}}$

(21.) $2/. = \frac{1}{10} | 5673 \text{ @ } 23/.$
 $1/. = \frac{1}{2} | 567 \ . \ 6$
 $\quad \quad \quad 283 \ . \ 13$
Ans. $\underline{\underline{\pounds 6523 \ . \ 19}}$

(22.) $4/. = \frac{1}{5} | 5673 \text{ @ } 24/.$
 $\quad \quad \quad 1134 \ . \ 12$
Ans. $\underline{\underline{\pounds 6807 \ . \ 12}}$

(23.) $5/. = \frac{1}{4} | 5673 \text{ @ } 25/.$
 $\quad \quad \quad 1418 \ . \ 5$
Ans. $\underline{\underline{\pounds 7091 \ . \ 5}}$

(24.) $5/. = \frac{1}{4} | 5673 \text{ @ } 26/.$
 $1/. = \frac{1}{5} | 1418 \ . \ 5$
 $\quad \quad \quad 283 \ . \ 13$
Ans. $\underline{\underline{\pounds 7374 \ . \ 18}}$

(25.) $5/. = \left\{ \begin{array}{l} \frac{1}{4} | 2345 \text{ cwt. @ } 27/. \\ \frac{1}{10} | 586 \ . \ 5 \\ \quad \quad \quad 234 \ . \ 10 \end{array} \right.$
Ans. $\underline{\underline{\pounds 3165 \ . \ 15}}$

(26.) $8/. = \frac{2}{5} | 2345 \text{ @ } 28/.$
 $\quad \quad \quad 469$
 $\quad \quad \quad 469$
Ans. $\underline{\underline{\pounds 3283}}$

(27.) $10/. = \frac{1}{2} | 2345 \text{ @ } 30/.$
 $\quad \quad \quad 1172 \ . \ 10$
Ans. $\underline{\underline{\pounds 3517 \ . \ 10}}$

(28.) $10/. = \frac{1}{2} | 2345 \text{ @ } 35/.$
 $5/. = \frac{1}{2} | 1172 \ . \ 10$
 $\quad \quad \quad 586 \ . \ 5$
Ans. $\underline{\underline{\pounds 4103 \ . \ 15}}$

(29.) $2345 \text{ @ } 43/.$
 $\quad \quad \quad 43/.$
 $\quad \quad \quad 7035$
 $\quad \quad \quad 9380$

$2,0 | 10083,5$
Ans. $\underline{\underline{\pounds 5041 \ . \ 15}}$

(30.) $10/. = \left\{ \begin{array}{l} \frac{1}{2} | 2345 \text{ @ } 54/. \\ \frac{1}{3} | 2345 \\ \quad \quad \quad 1172 \ . \ 10 \\ \quad \quad \quad 469 \ . \ 0 \end{array} \right.$
Ans. $\underline{\underline{\pounds 6331 \ . \ 10}}$

(31.) $5/. = \frac{1}{4} | 1814 \text{ cwt. @ } 65/.$
 $\quad \quad \quad 3\pounds$
 $\quad \quad \quad 5442$
 $\quad \quad \quad 453 \ . \ 10$
Ans. $\underline{\underline{\pounds 5895 \ . \ 10}}$

(32.) $4/. = \frac{1}{5} | 1814 \text{ @ } 76/.$
 $\quad \quad \quad 4\pounds$
 $\quad \quad \quad 7256$
 $\quad \quad \quad \text{off } 362 \ . \ 16$
Ans. $\underline{\underline{\pounds 6893 \ . \ 4}}$

(33.) $5/. = \left\{ \begin{array}{l} \frac{1}{4} | 1814 \text{ @ } 87/. \\ \frac{1}{10} | 4\pounds \\ \quad \quad \quad 7256 = 80/. \\ \quad \quad \quad 453 \ . \ 10 \\ \quad \quad \quad 181 \ . \ 8 \end{array} \right.$
Ans. $\underline{\underline{\pounds 7890 \ . \ 18}}$

(34.) $2 = \frac{1}{10} | 1814 \text{ @ } 98/.$
 $\quad \quad \quad 5\pounds$
 $\quad \quad \quad 9070$
 $\quad \quad \quad \text{off } 181 \ . \ 8$
Ans. $\underline{\underline{\pounds 8888 \ . \ 12}}$

(35.) $5/. = \frac{1}{4} | 1814 \text{ @ } 105/.$
 $\quad \quad \quad 5\pounds$
 $\quad \quad \quad 9070$
 $\quad \quad \quad 453 \ . \ 10$
Ans. $\underline{\underline{\pounds 9523 \ . \ 10}}$

$$\begin{array}{r}
 (36.) \dots\dots \left| \begin{array}{r} 1814 \text{ @ } 126/. \\ 6\text{£} \\ \hline 6/. = \frac{1}{20} \overline{)10884} \\ \phantom{6/. = \frac{1}{20}} \underline{544} \text{ . } 4 \\ \hline \text{Ans. } \underline{\underline{\text{£}11428 \text{ . } 4}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (37.) 10/. = \frac{1}{2} \left| \begin{array}{r} 1814 \text{ @ } 130/. \\ 6\text{£} \\ \hline 10884 \\ \underline{907} \\ \hline \text{Ans. } \underline{\underline{\text{£}11791}} \end{array} \right.
 \end{array}$$

CASE III.

EXERCISES, page 76.

$$\begin{array}{r}
 (1.) \dots 1d. = \frac{1}{12} \left| \begin{array}{r} 12345 \text{ lb. @ } 1\frac{1}{4}d. \\ \frac{1}{4}d. = \frac{1}{4} \overline{)1028 \text{ . } 9} \\ \phantom{\frac{1}{4}d. = \frac{1}{4}} \underline{257} \text{ . } 2\frac{1}{4} \\ \hline 2,0 \overline{)128,5 \text{ . } 11\frac{1}{4}} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}64.5 \text{ . } 11\frac{1}{4}}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (6.) 3d. = \frac{1}{4} \left| \begin{array}{r} 12345 \text{ lb. @ } 3\frac{1}{4}d. \\ \frac{1}{4}d. = \frac{1}{12} \overline{)3085 \text{ . } 0} \\ \phantom{\frac{1}{4}d. = \frac{1}{12}} \underline{257} \text{ . } 2\frac{1}{4} \\ \hline 2,0 \overline{)334,3 \text{ . } 5\frac{1}{4}} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}167.3 \text{ . } 5\frac{1}{4}}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (2.) 1\frac{1}{2}d. = \frac{1}{8} \left| \begin{array}{r} 12345 \text{ lb. @ } 1\frac{3}{4}d. \\ \frac{1}{4}d. = \frac{1}{8} \overline{)1543 \text{ . } 1\frac{1}{2}} \\ \phantom{\frac{1}{4}d. = \frac{1}{8}} \underline{257} \text{ . } 2\frac{1}{4} \\ \hline 2,0 \overline{)180,0 \text{ . } 3\frac{3}{4}} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}90.0 \text{ . } 3\frac{3}{4}}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (7.) 3d. = \frac{1}{4} \left| \begin{array}{r} 9876 \text{ lb. @ } 3\frac{1}{2}d. \\ \frac{1}{2}d. = \frac{1}{8} \overline{)2469} \\ \phantom{\frac{1}{2}d. = \frac{1}{8}} \underline{411} \text{ . } 6 \\ \hline 2,0 \overline{)288,0 \text{ . } 6} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}144.0 \text{ . } 6}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (3.) 2d. = \frac{1}{6} \left| \begin{array}{r} 12345 \text{ lb. @ } 2\frac{1}{4}d. \\ \frac{1}{4}d. = \frac{1}{8} \overline{)2057 \text{ . } 6} \\ \phantom{\frac{1}{4}d. = \frac{1}{8}} \underline{257} \text{ . } 2\frac{1}{4} \\ \hline 2,0 \overline{)231,4 \text{ . } 8\frac{1}{4}} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}115.14 \text{ . } 8\frac{1}{4}}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (8.) \frac{1}{84} \left\{ \begin{array}{r} 8 \overline{)9876 \text{ lb. @ } 3\frac{3}{4}d.} \\ 8 \overline{)1234 \text{ . } 10} \\ \hline \text{Ans. } \underline{\underline{\text{£}154 \text{ . } 6 \text{ . } 3}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (4.) 2d. = \frac{1}{6} \left| \begin{array}{r} 12345 \text{ lb. @ } 2\frac{1}{2}d. \\ \frac{1}{2}d. = \frac{1}{4} \overline{)2057 \text{ . } 6} \\ \phantom{\frac{1}{2}d. = \frac{1}{4}} \underline{514} \text{ . } 4\frac{1}{2} \\ \hline 2,0 \overline{)257,1 \text{ . } 10\frac{1}{2}} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}128.11 \text{ . } 10\frac{1}{2}}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (9.) 4d. = \frac{1}{8} \left| \begin{array}{r} 9876 \text{ lb. @ } 4\frac{1}{2}d. \\ \frac{1}{4}d. = \frac{1}{16} \overline{)3292} \\ \phantom{\frac{1}{4}d. = \frac{1}{16}} \underline{205} \text{ . } 9 \\ \hline 2,0 \overline{)349,7 \text{ . } 9} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}174 \text{ . } 17 \text{ . } 9}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (5.) 2d. = \frac{1}{6} \left| \begin{array}{r} 12345 \text{ lb. @ } 2\frac{3}{4}d. \\ \frac{1}{4}d. = \frac{1}{4} \overline{)2057 \text{ . } 6} \\ \frac{1}{4}d. = \frac{1}{2} \overline{)514 \text{ . } 4\frac{1}{2}} \\ \phantom{\frac{1}{4}d. = \frac{1}{2}} \underline{257} \text{ . } 2\frac{1}{4} \\ \hline 2,0 \overline{)282,9 \text{ . } 0\frac{3}{4}} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}141.9 \text{ . } 0\frac{3}{4}}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (10.) 4d. = \frac{1}{8} \left| \begin{array}{r} 9876 \text{ lb. @ } 4\frac{1}{2}d. \\ \frac{1}{2}d. = \frac{1}{8} \overline{)3292} \\ \phantom{\frac{1}{2}d. = \frac{1}{8}} \underline{411} \text{ . } 6 \\ \hline 2,0 \overline{)370,3 \text{ . } 6} \\ \underline{} \\ \hline \text{Ans. } \underline{\underline{\text{£}185 \text{ . } 3 \text{ . } 6}} \end{array} \right.
 \end{array}$$

$$\begin{array}{r}
 (11.) \quad 4d. = \frac{1}{8} 9876 \text{ lb. } @ \ 4\frac{3}{4}d. \\
 \frac{1}{2}d. = \frac{1}{8} 3292 \\
 \frac{1}{4}d. = \frac{1}{2} 411 . 6 \\
 \quad \quad 205 . 9 \\
 \hline
 2,0 \overline{390,9 . 3} \\
 \text{Ans. } \underline{\underline{\pounds 195 . 9 . 3}}
 \end{array}$$

$$\begin{array}{r}
 (12.) \quad \frac{1}{48} \left\{ \begin{array}{l} 12 \overline{9876 \text{ lb. } @ \ 5\frac{1}{4}d.} \\ 4 \overline{823} \end{array} \right. \\
 \frac{1}{4}d. = \frac{1}{20} \begin{array}{r} 205 . 15 \\ 10 . 5 . 9 \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 216 . 0 . 9}}
 \end{array}$$

$$\begin{array}{r}
 (13.) \quad \frac{1}{48} \left\{ \begin{array}{l} 12 \overline{8765 \text{ lb. } @ \ 5\frac{1}{2}d.} \\ 4 \overline{730 . 8 . 4} \end{array} \right. \\
 \frac{1}{2}d. = \frac{1}{10} \begin{array}{r} 182 . 12 . 1 \\ 18 . 5 . 2\frac{1}{2} \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 200 . 17 . 3\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (14.) \quad \frac{1}{48} \left\{ \begin{array}{l} 6 \overline{8765 \text{ lb. } @ \ 5\frac{3}{4}d.} \\ 8 \overline{1460 . 16 . 8} \end{array} \right. \\
 \frac{1}{2}d. = \frac{1}{10} \begin{array}{r} 182 . 12 . 1 \\ 18 . 5 . 2\frac{1}{2} \end{array} \\
 \frac{1}{4}d. = \frac{1}{2} \begin{array}{r} 9 . 2 . 7\frac{1}{4} \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 209 . 19 . 10\frac{3}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (15.) \quad 6d. = \frac{1}{2} 8765 \text{ lb. } @ \ 6\frac{1}{4}d. \\
 \frac{1}{2}d. = \frac{1}{24} \begin{array}{r} 4382 . 6 \\ 182 . 7\frac{1}{4} \end{array} \\
 \quad \quad 2,0 \overline{456,5 . 1\frac{1}{4}} \\
 \text{Ans. } \underline{\underline{\pounds 228 . 5 . 1\frac{1}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (16.) \quad 6d. = \frac{1}{40} 8765 \text{ lb. } @ \ 6\frac{1}{2}d. \\
 \frac{1}{2}d. = \frac{1}{12} \begin{array}{r} 219 . 2 . 6 \\ 18 . 5 . 2\frac{1}{2} \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 237 . 7 . 8\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (17.) \quad 6d. = \frac{1}{40} 8765 \text{ lb. } @ \ 6\frac{3}{4}d. \\
 \frac{3}{4}d. = \frac{1}{8} \begin{array}{r} 219 . 2 . 6 \\ 27 . 7 . 9\frac{3}{4} \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 246 . 10 . 3\frac{3}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (18.) \quad \frac{1}{4}d. = \frac{1}{4} 8765 \text{ lb. } @ \ 7\frac{1}{4}d. \\
 \quad \quad 7\frac{1}{4} \\
 \hline
 61355 \\
 2191\frac{1}{4} \\
 \hline
 12 \overline{63546\frac{1}{4} \text{ pence.}} \\
 2,0 \overline{529,5 . 6} \\
 \text{Ans. } \underline{\underline{\pounds 264 . 15 . 6\frac{1}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (19.) \quad \frac{1}{32} \left\{ \begin{array}{l} 4 \overline{7654 \text{ lb. } @ \ 7\frac{1}{2}d.} \\ 8 \overline{1913 . 10} \end{array} \right. \\
 \text{Ans. } \underline{\underline{\pounds 239 . 3 . 9}}
 \end{array}$$

$$\begin{array}{r}
 (20.) \quad 6d. = \frac{1}{2} 7654 \text{ lb. } @ \ 7\frac{3}{4}d. \\
 1\frac{1}{2}d. = \frac{1}{4} 3827 \\
 \frac{1}{2}d. = \frac{1}{8} \begin{array}{r} 956 . 9 \\ 159 . 5\frac{1}{2} \end{array} \\
 \quad \quad 2,0 \overline{494,3 . 2\frac{1}{2}} \\
 \text{Ans. } \underline{\underline{\pounds 247 . 3 . 2\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (21.) \quad 7\frac{1}{2}d. = \left\{ \begin{array}{l} 4 \overline{7654 \text{ lb. } @ \ 8\frac{1}{4}d.} \\ 8 \overline{1913 . 10} \end{array} \right. \\
 \frac{3}{4}d. = \frac{1}{10} \begin{array}{r} 239 . 3 . 9 \\ 23 . 18 . 4\frac{1}{2} \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 263 . 2 . 1\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (22.) \quad 6d. = \frac{1}{40} 7654 \text{ lb. } @ \ 8\frac{1}{2}d. \\
 2d. = \frac{1}{8} 191 . 7 \\
 \frac{1}{2}d. = \frac{1}{4} \begin{array}{r} 63 . 15 . 8 \\ 15 . 18 . 11 \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 271 . 1 . 7}}
 \end{array}$$

$$\begin{array}{r}
 (23.) \quad 7\frac{1}{2}d. \left\{ \begin{array}{l} 4 \overline{7654 \text{ lb. } @ \ 8\frac{3}{4}d.} \\ 8 \overline{1913 . 10} \end{array} \right. \\
 1\frac{1}{4}d. = \frac{1}{8} \begin{array}{r} 239 . 3 . 9 \\ 39 . 17 . 3\frac{1}{2} \end{array} \\
 \text{Ans. } \underline{\underline{\pounds 279 . 1 . 0\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (24.) \quad 6d. = \frac{1}{40} \overline{) 7654 \text{ lb. } @ 9\frac{1}{4}d.} \\
 3d. = \frac{1}{2} \quad 191. \quad 7 \\
 \frac{1}{4}d. = \frac{1}{12} \quad 95. \quad 13. \quad 6 \\
 \quad \quad \quad 7. \quad 19. \quad 5\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 294. 19. 11\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (25.) \quad 6d. = \frac{1}{40} \overline{) 6543 \text{ lb. } @ 9\frac{1}{2}d.} \\
 3d. = \frac{1}{2} \quad 163. 11. \quad 6 \\
 \frac{1}{2}d. = \frac{1}{6} \quad 81. 15. \quad 9 \\
 \quad \quad \quad 13. 12. \quad 7\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 258. 19. 10\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (26.) \quad 6d. = \frac{1}{40} \overline{) 6543 \text{ lb. } @ 9\frac{3}{4}d.} \\
 3d. = \frac{1}{2} \quad 163. 11. \quad 6 \\
 \frac{3}{4}d. = \frac{1}{4} \quad 81. 15. \quad 9 \\
 \quad \quad \quad 20. \quad 8. \quad 11\frac{1}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 265. 16. 2\frac{1}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (27.) \quad 10d. = \frac{1}{24} \overline{) 6543 \text{ lb. } @ 10\frac{1}{4}d.} \\
 \frac{1}{4}d. = \frac{1}{40} \quad 272. 12. \quad 6 \\
 \quad \quad \quad 6. 16. \quad 3\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 279. 8. 9\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (28.) \quad 1\frac{1}{2}d. = \frac{1}{8} \overline{) 6543 \text{ lb. } @ 10\frac{1}{2}d.} \\
 \text{off} \quad 817. 10\frac{1}{2} \\
 2,0 \quad 572,5. \quad 1\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 286. 5. 1\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (29.) \quad 10d. = \frac{1}{24} \overline{) 6543 \text{ lb. } @ 10\frac{3}{4}d.} \\
 \frac{1}{2}d. = \frac{1}{20} \quad 272. 12. \quad 6 \\
 \frac{1}{4}d. = \frac{1}{12} \quad 13. 12. \quad 7\frac{1}{2} \\
 \quad \quad \quad 6. 16. \quad 3\frac{3}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 293. 1. 5\frac{1}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (30.) \quad 10d. = \frac{1}{24} \overline{) 6543 \text{ lb. } @ 11\frac{1}{4}d.} \\
 1\frac{1}{4}d. = \frac{1}{8} \quad 272. 12. \quad 6 \\
 \quad \quad \quad 34. \quad 1. \quad 6\frac{3}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 306. 14. 0\frac{3}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (31.) \quad \frac{1}{2}d. = \frac{1}{2} \overline{) 5432 \text{ lb. } @ 11\frac{1}{2}d.} \\
 5432 \\
 2716 \\
 \hline
 12 \quad 62468 \text{ pence.} \\
 2,0 \quad 520,5. \quad 8 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 260. 5. 8}}
 \end{array}$$

$$\begin{array}{r}
 (32.) \quad \frac{1}{2}d. = \frac{1}{2} \overline{) 5432 \text{ lb. } @ 11\frac{3}{4}d.} \\
 5432 \\
 \frac{1}{4}d. = \frac{1}{2} \quad 2716 \\
 \quad \quad \quad 1358 \\
 \hline
 12 \quad 63826 \\
 2,0 \quad 531,8. \quad 10 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 265. 18. 10}}
 \end{array}$$

$$\begin{array}{r}
 (33.) \quad 12d. = \frac{1}{20} \overline{) 5432 \text{ lb. } @ 12\frac{1}{4}d.} \\
 \frac{1}{4}d. = \frac{1}{48} \quad 271. 12 \\
 \quad \quad \quad 5. 13. 2 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 277. 5. 2}}
 \end{array}$$

$$\begin{array}{r}
 (34.) \quad 12d. = \frac{1}{20} \overline{) 5432 \text{ lb. } @ 12\frac{1}{2}d.} \\
 \frac{1}{2}d. = \frac{1}{24} \quad 271. 12 \\
 \quad \quad \quad 11. 6. 4 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 282. 18. 4}}
 \end{array}$$

$$\begin{array}{r}
 (35.) \quad 12d. = \frac{1}{20} \overline{) 5432 \text{ lb. } @ 12\frac{3}{4}d.} \\
 \frac{3}{4}d. = \frac{1}{16} \quad 271. 12 \\
 \quad \quad \quad 16. 19. 6 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 288. 11. 6}}
 \end{array}$$

$$\begin{array}{r}
 (36.) \quad 1d. = \frac{1}{12} \overline{) 5432 \text{ lb. } @ 13\frac{1}{4}d.} \\
 \frac{1}{4}d. = \frac{1}{4} \quad 452. 8 \\
 \quad \quad \quad 113. 2 \\
 \hline
 2,0 \quad 599,7. 10 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 299. 17. 10}}
 \end{array}$$

$$\begin{array}{r}
 (37.) \quad 1\frac{1}{2}d. = \frac{1}{8} \overline{) 4321 \text{ lb. } @ 13\frac{1}{2}d.} \\
 540. 1\frac{1}{2} \\
 2,0 \quad 486,1. 1\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 243. 1. 1\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (38.) \quad 1\frac{1}{2}d. = \frac{1}{8} | 4321 \text{ lb. } @ 13\frac{3}{4}d. \\
 \frac{1}{4}d. = \frac{1}{8} \quad 540 . 1\frac{1}{2} \\
 \quad \quad \quad 90 . 0\frac{1}{4} \\
 \hline
 2,0 \quad 495,1 . 1\frac{3}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 247 . 11 . 1\frac{3}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (45.) \quad 6d. = \frac{1}{2} | 3219 \text{ lb. } @ 1/7\frac{1}{2} \\
 1\frac{1}{2}d. = \frac{1}{4} | 1609 . 6 \\
 \quad \quad \quad 402 . 4\frac{1}{2} \\
 \hline
 2,0 \quad 523,0 . 10\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 261 . 10 . 10\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (39.) \quad 2d. = \frac{1}{8} | 4321 \text{ lb. } @ 14\frac{1}{4}d. \\
 \frac{1}{4}d. = \frac{1}{8} \quad 720 . 2 \\
 \quad \quad \quad 90 . 0\frac{1}{4} \\
 \hline
 2,0 \quad 513,1 . 2\frac{1}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 256 . 11 . 2\frac{1}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (46.) \quad 1/8 = \frac{1}{12} | 3219 \text{ lb. } @ 1/9 \\
 1d. = \frac{1}{20} | 268 . 5 \\
 \quad \quad \quad 13 . 8 . 3 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 281 . 13 . 3}}
 \end{array}$$

$$\begin{array}{r}
 (40.) \quad 2d. = \frac{1}{8} | 4321 \text{ lb. } @ 14\frac{1}{2}d. \\
 \frac{1}{2}d. = \frac{1}{4} \quad 720 . 2 \\
 \quad \quad \quad 180 . 0\frac{1}{2} \\
 \hline
 2,0 \quad 522,1 . 2\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 261 . 1 . 2\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (47.) \quad 1/8 = \frac{1}{12} | 3219 \text{ lb. } @ 1/10\frac{1}{2} \\
 2\frac{1}{2}d. = \frac{1}{8} | 268 . 5 \\
 \quad \quad \quad 33 . 10 . 7\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 301 . 15 . 7\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (41.) \quad 2d. = \frac{1}{8} | 4321 \text{ lb. } @ 14\frac{3}{4}d. \\
 \frac{1}{2}d. = \frac{1}{4} \quad 720 . 2 \\
 \frac{1}{4}d. = \frac{1}{2} \quad 180 . 0\frac{1}{2} \\
 \quad \quad \quad 90 . 0\frac{1}{4} \\
 \hline
 2,0 \quad 531,1 . 2\frac{3}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 265 . 11 . 2\frac{3}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (48.) \quad 2/. = \frac{1}{10} | 3219 \text{ lb. } @ 2/1 \\
 1d. = \frac{1}{24} | 321 . 18 \\
 \quad \quad \quad 13 . 8 . 3 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 335 . 6 . 3}}
 \end{array}$$

$$\begin{array}{r}
 (42.) \quad 3d. = \frac{1}{4} | 4321 \text{ lb. } @ 15\frac{1}{4}d. \\
 \frac{1}{4}d. = \frac{1}{12} | 1080 . 3 \\
 \quad \quad \quad 90 . 0\frac{1}{4} \\
 \hline
 2,0 \quad 549,1 . 3\frac{1}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 274 . 11 . 3\frac{1}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (49.) \quad 2/. = \frac{1}{10} | 2109 \text{ lb. } @ 2/3 \\
 3d. = \frac{1}{8} | 210 . 18 \\
 \quad \quad \quad 26 . 7 . 3 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 237 . 5 . 3}}
 \end{array}$$

$$\begin{array}{r}
 (43.) \quad 1/. = \frac{1}{20} | 3219 \text{ lb. } @ 1/3\frac{1}{2} \\
 3d. = \frac{1}{4} | 160 . 19 \\
 \frac{1}{2}d. = \frac{1}{8} | 40 . 4 . 9 \\
 \quad \quad \quad 6 . 14 . 1\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 207 . 17 . 10\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (50.) \quad 2/6 = \frac{1}{8} | 2109 \text{ lb. } @ 2/5 \\
 1d. = \frac{1}{30} | 263 . 12 . 6 \\
 \quad \text{off} | 8 . 15 . 9 \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 254 . 16 . 9}}
 \end{array}$$

$$\begin{array}{r}
 (44.) \quad \frac{1}{15} \left\{ \begin{array}{l} 3 \quad 3219 \text{ lb. } @ 1/4 \\ 5 \quad 1075 \end{array} \right. \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 214 . 12}}
 \end{array}$$

$$\begin{array}{r}
 (51.) \quad 2/6 = \frac{1}{8} | 2109 \text{ lb. } @ 2/9\frac{3}{4} \\
 3\frac{3}{4}d. = \frac{1}{8} | 263 . 12 . 6 \\
 \quad \quad \quad 32 . 19 . 0\frac{3}{4} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 296 . 11 . 6\frac{3}{4}}}
 \end{array}$$

$$(52.) \dots\dots \begin{array}{r} 2109 \text{ lb. } @ \ 3/3 \\ \quad \quad \quad 3 \\ 3d. = \frac{1}{12} \overline{) 6327} \\ \quad \quad \quad 527 \ . \ 3 \\ \hline 2,0 \overline{) 685,4 \ . \ 3} \\ \hline \text{Ans. } \underline{\underline{\pounds 342 \ . \ 14 \ . \ 3}} \end{array}$$

$$(53.) \begin{array}{l} 3/4 = \int \frac{1}{8} \\ 4d. = \int \frac{1}{10} \end{array} \begin{array}{r} 2109 \text{ lb. } @ \ 3/8 \\ \quad \quad \quad 351 \ . \ 10 \\ \quad \quad \quad 35 \ . \ 3 \\ \hline \text{Ans. } \underline{\underline{\pounds 386 \ . \ 13}} \end{array}$$

$$(54.) \begin{array}{l} 4/ = \frac{1}{5} \\ 6d. = \frac{1}{8} \end{array} \begin{array}{r} 2109 \text{ lb. } @ \ 4/6 \\ \quad \quad \quad 421 \ . \ 16 \\ \quad \quad \quad 52 \ . \ 14 \ . \ 6 \\ \hline \text{Ans. } \underline{\underline{\pounds 474 \ . \ 10 \ . \ 6}} \end{array}$$

$$(55.) \begin{array}{l} 5/ = \frac{1}{4} \\ 10d. = \frac{1}{8} \end{array} \begin{array}{r} 1817 \text{ lb. } @ \ 5/10 \\ \quad \quad \quad 454 \ . \ 5 \\ \quad \quad \quad 75 \ . \ 14 \ . \ 2 \\ \hline \text{Ans. } \underline{\underline{\pounds 529 \ . \ 19 \ . \ 2}} \end{array}$$

$$(56.) \begin{array}{l} 6/8 = \frac{1}{3} \\ 4d. = \frac{1}{10} \\ \text{off} \end{array} \begin{array}{r} 1817 \text{ lb. } @ \ 6/4 \\ \quad \quad \quad 605 \ . \ 13 \ . \ 4 \\ \quad \quad \quad 30 \ . \ 5 \ . \ 8 \\ \hline \text{Ans. } \underline{\underline{\pounds 575 \ . \ 7 \ . \ 8}} \end{array}$$

$$(57.) \text{off } 1\frac{1}{2}d. = \frac{1}{8} \begin{array}{r} 1817 \text{ lb. } @ \ 7/10\frac{1}{2} \\ \quad \quad \quad 8/ \\ \quad \quad \quad 14536 \\ \text{off} \quad \quad \quad 227 \ . \ 1\frac{1}{2} \\ \hline 2,0 \overline{) 1430,8 \ . \ 10\frac{1}{2}} \\ \hline \text{Ans. } \underline{\underline{\pounds 715 \ . \ 8 \ . \ 10\frac{1}{2}}} \end{array}$$

$$(58.) \begin{array}{l} 5/ = \frac{1}{4} \\ 2/6 = \frac{1}{2} \\ 1/3 = \frac{1}{2} \end{array} \begin{array}{r} 1817 \text{ lb. } @ \ 8/9 \\ \quad \quad \quad 454 \ . \ 5 \\ \quad \quad \quad 227 \ . \ 2 \ . \ 6 \\ \quad \quad \quad 113 \ . \ 11 \ . \ 3 \\ \hline \text{Ans. } \underline{\underline{\pounds 794 \ . \ 18 \ . \ 9}} \end{array}$$

$$(59.) \begin{array}{l} 5/ = \int \frac{1}{4} \\ 4/ = \int \frac{1}{5} \\ 4d. = \frac{1}{12} \end{array} \begin{array}{r} 1817 \text{ lb. } @ \ 9/4 \\ \quad \quad \quad 454 \ . \ 5 \\ \quad \quad \quad 363 \ . \ 8 \\ \quad \quad \quad 30 \ . \ 5 \ . \ 8 \\ \hline \text{Ans. } \underline{\underline{\pounds 847 \ . \ 18 \ . \ 8}} \end{array}$$

$$(60.) \begin{array}{l} 10/ = \frac{1}{2} \\ 10d. = \frac{1}{12} \end{array} \begin{array}{r} 1817 \text{ lb. } @ \ 10/10 \\ \quad \quad \quad 908 \ . \ 10 \\ \quad \quad \quad 75 \ . \ 14 \ . \ 2 \\ \hline \text{Ans. } \underline{\underline{\pounds 984 \ . \ 4 \ . \ 2}} \end{array}$$

$$(61.) \begin{array}{l} 10/ = \frac{1}{2} \\ 1/8 = \frac{1}{8} \end{array} \begin{array}{r} 1650 \text{ lb. } @ \ 11/8 \\ \quad \quad \quad 825 \\ \quad \quad \quad 137 \ . \ 10 \\ \hline \text{Ans. } \underline{\underline{\pounds 962 \ . \ 10}} \end{array}$$

$$(62.) \begin{array}{l} 10/ = \frac{1}{2} \\ 2/6 = \frac{1}{4} \end{array} \begin{array}{r} 1650 \text{ lb. } @ \ 12/6 \\ \quad \quad \quad 825 \\ \quad \quad \quad 206 \ . \ 5 \\ \hline \text{Ans. } \underline{\underline{\pounds 1031 \ . \ 5}} \end{array}$$

$$(63.) \begin{array}{l} 6/8 = \frac{1}{3} \\ \text{off} \end{array} \begin{array}{r} 1650 \text{ lb. } @ \ 13/4 \\ \quad \quad \quad 550 \\ \hline \text{Ans. } \underline{\underline{\pounds 1100}} \end{array}$$

$$(64.) \begin{array}{l} 10/ = \int \frac{1}{2} \\ 4/ = \int \frac{1}{3} \\ 8d. = \frac{1}{6} \end{array} \begin{array}{r} 1650 \text{ lb. } @ \ 14/8 \\ \quad \quad \quad 825 \\ \quad \quad \quad 330 \\ \quad \quad \quad 55 \\ \hline \text{Ans. } \underline{\underline{\pounds 1210}} \end{array}$$

$$(65.) \begin{array}{l} 10/ = \frac{1}{2} \\ 5/ = \frac{1}{2} \\ 10d. = \frac{1}{6} \end{array} \begin{array}{r} 1650 \text{ lb. } @ \ 15/10 \\ \quad \quad \quad 825 \\ \quad \quad \quad 412 \ . \ 10 \\ \quad \quad \quad 68 \ . \ 15 \\ \hline \text{Ans. } \underline{\underline{\pounds 1306 \ . \ 5}} \end{array}$$

$$(66.) \quad 3/4 = \frac{1}{8} \left| \begin{array}{l} 1650 \text{ lb. @ } 16/8 \\ \text{off} \quad 275 \end{array} \right.$$

Ans. £1375

$$(67.) \dots \quad 2/6 = \frac{1}{8} \left| \begin{array}{l} 1208 \text{ lb. @ } 17/6 \\ \text{off} \quad 151 \end{array} \right.$$

Ans. £1057

$$(68.) \quad 1/8 = \frac{1}{12} \left| \begin{array}{l} 1208 \text{ lb. @ } 18/4 \\ \text{off} \quad 100.13.4 \end{array} \right.$$

Ans. £1107. 6. 8

$$(69.) \quad 8d. = \frac{1}{30} \left| \begin{array}{l} 1208 \text{ lb. @ } 19/4 \\ \text{off} \quad 40.5.4 \end{array} \right.$$

Ans. £1167. 14. 8

$$(70.) \quad 6d. = \frac{1}{40} \left| \begin{array}{l} 1208 \text{ lb. @ } 19/6 \\ \text{off} \quad 30.4 \end{array} \right.$$

Ans. £1177. 16

$$(71.) \quad 4d. = \frac{1}{60} \left| \begin{array}{l} 208 \text{ lb. @ } 19/8 \\ \text{off} \quad 20.2.8 \end{array} \right.$$

Ans. £1187. 17. 4

$$(72.) \quad 3d. = \frac{1}{80} \left| \begin{array}{l} 1208 \text{ lb. @ } 19/9 \\ \text{off} \quad 15.2 \end{array} \right.$$

Ans. £1192. 18

$$(73.) \quad 6d. = \frac{1}{40} \left| \begin{array}{l} 2107 \text{ cwt. @ } 20/6 \\ \quad \quad \quad 52.13.6 \end{array} \right.$$

Ans. £2159. 13. 6

$$(74.) \quad 1/8 = \frac{1}{12} \left| \begin{array}{l} 2107 \text{ cwt. @ } 21/8 \\ \quad \quad \quad 175.11.8 \end{array} \right.$$

Ans. £2282. 11. 8

$$(75.) \quad 2/6 = \frac{1}{8} \left| \begin{array}{l} 2107 \text{ cwt. @ } 22/6 \\ \quad \quad \quad 263.7.6 \end{array} \right.$$

Ans. £2370. 7. 6

$$(76.) \quad 3/4 = \frac{1}{8} \left| \begin{array}{l} 2107 \text{ cwt. @ } 23/4 \\ \quad \quad \quad 351.3.4 \end{array} \right.$$

Ans. £2458. 3. 4

$$(77.) \quad 5/. = \frac{1}{4} \left| \begin{array}{l} 2107 \text{ cwt. @ } 25/10 \\ 10d. = \frac{1}{8} \quad 526.15 \\ \quad \quad \quad 87.15.10 \end{array} \right.$$

Ans. £2721. 10. 10

$$(78.) \quad 6/8 = \frac{1}{8} \left| \begin{array}{l} 2107 \text{ cwt. @ } 26/8 \\ \quad \quad \quad 702.6.8 \end{array} \right.$$

Ans. £2809. 6. 8

$$(79.) \quad 5/. = \frac{1}{4} \left| \begin{array}{l} 1123 \text{ cwt. @ } 27/6 \\ 2/6 = \frac{1}{2} \quad 280.15 \\ \quad \quad \quad 140.7.6 \end{array} \right.$$

Ans. £1544. 2. 6

$$(80.) \quad 5/. = \left\{ \begin{array}{l} \frac{1}{4} \\ \frac{1}{8} \end{array} \right. \left| \begin{array}{l} 1123 \text{ cwt. @ } 28/4 \\ 280.15 \\ 187.3.4 \end{array} \right.$$

Ans. £1590. 18. 4

$$(81.) \quad 5/. = \left\{ \begin{array}{l} \frac{1}{4} \\ \frac{1}{5} \end{array} \right. \left| \begin{array}{l} 1123 \text{ cwt. @ } 29/9 \\ 280.15 \\ 224.12 \end{array} \right.$$

$$4/. = \left\{ \begin{array}{l} \frac{1}{5} \\ \frac{1}{8} \end{array} \right. \left| \begin{array}{l} 28.1.6 \\ 14.0.9 \end{array} \right.$$

Ans. £1670. 9. 3

$$(82.) \quad 10/. = \frac{1}{2} \left| \begin{array}{l} 1123 \text{ cwt. @ } 31/6 \\ 1/. = \frac{1}{10} \quad 561.10 \\ 6d. = \frac{1}{2} \quad 56.3 \\ \quad \quad \quad 28.1.6 \end{array} \right.$$

Ans. £1768. 14. 6

$$(83.) \quad 10/. = \frac{1}{2} \left| \begin{array}{l} 1123 \text{ cwt. @ } 33/4 \\ 3/4 = \frac{1}{8} \quad 561.10 \\ \quad \quad \quad 187.3.4 \end{array} \right.$$

Ans. £1871. 13. 4

(84.) $2/6 = \frac{1}{3} | 1123 \text{ cwt. @ } 37/6$
 $\quad \quad \quad 2 \text{ £}$
 $\quad \quad \quad \underline{2246 = 40/}$
 $\quad \text{off } \underline{140 . 7 . 6}$
Ans. $\underline{\underline{\text{£}2105 . 12 . 6}}$

(85.) $1/8 = \frac{1}{12} | 1050 \text{ cwt. @ } 41/8$
 $\quad \quad \quad 2 \text{ £}$
 $\quad \quad \quad \underline{2100}$
 $\quad \quad \quad \underline{87 . 10}$
Ans. $\underline{\underline{\text{£}2187 . 10}}$

(86.) $2/6 = \frac{1}{3} | 1050 \text{ cwt. @ } 42/6$
 $\quad \quad \quad 2 \text{ £}$
 $\quad \quad \quad \underline{2100}$
 $\quad \quad \quad \underline{131 . 5}$
Ans. $\underline{\underline{\text{£}2231 . 5}}$

(87.) $3/4 = \frac{1}{3} | 1050 \text{ cwt. @ } 56/8$
 $\quad \quad \quad 3 \text{ £}$
 $\quad \quad \quad \underline{3150}$
 $\quad \text{off } \underline{175}$
Ans. $\underline{\underline{\text{£}2975}}$

(88.) $\quad \quad \quad | 1050 \text{ cwt. @ } 67/6$
 $\quad \quad \quad 3 \text{ £}$
 $7/6 = \frac{1}{3} | \underline{3150}$
 $\quad \quad \quad \underline{393 . 15}$
Ans. $\underline{\underline{\text{£}3543 . 15}}$

(89.) $1/3 = \frac{1}{18} | 1050 \text{ cwt. @ } 78/9$
 $\quad \quad \quad 4 \text{ £}$
 $\quad \quad \quad \underline{4200}$
 $\quad \text{off } \underline{65 . 12 . 6}$
Ans. $\underline{\underline{\text{£}4134 . 7 . 6}}$

(90.) $5/ = \frac{1}{4} | 1050 \text{ cwt. @ } 87/3$
 $2/ = \frac{1}{10} | \quad \quad \quad 4 \text{ £}$
 $\quad \quad \quad \underline{4200}$
 $\quad \quad \quad \underline{262 . 10}$
 $3d. = \frac{1}{8} | \underline{105 . 0}$
 $\quad \quad \quad \underline{13 . 2 . 6}$
Ans. $\underline{\underline{\text{£}4580 . 12 . 6}}$

(91.) $4/ = \left\{ \frac{1}{5} \right. | 950 \text{ cwt. @ } 89/3$
 $5/ = \left\{ \frac{1}{4} \right. | \quad \quad \quad 4 \text{ £}$
 $\quad \quad \quad \underline{3800}$
 $\quad \quad \quad \underline{190}$
 $3d. = \frac{1}{20} | \underline{237 . 10}$
 $\quad \quad \quad \underline{11 . 17 . 6}$
Ans. $\underline{\underline{\text{£}4239 . 7 . 6}}$

(92.) $10/ = \frac{1}{2} | 950 \text{ cwt. @ } 92/6$
 $\quad \quad \quad 4 \text{ £}$
 $\quad \quad \quad \underline{3800}$
 $2/6 = \frac{1}{4} | \underline{475}$
 $\quad \quad \quad \underline{118 . 15}$
Ans. $\underline{\underline{\text{£}4393 . 15}}$

(93.) $6/8 = \frac{1}{3} | 950 \text{ cwt. @ } 93/4$
 $\quad \quad \quad 5 \text{ £} = 100/.$
 $\quad \quad \quad \underline{4750}$
 $\quad \text{off } \underline{316 . 13 . 4}$
Ans. $\underline{\underline{\text{£}4433 . 6 . 8}}$

(94.) $3/4 = \frac{1}{3} | 950 \text{ cwt. @ } 96/8$
 $\quad \quad \quad 5 \text{ £} = 100/.$
 $\quad \quad \quad \underline{4750}$
 $\quad \text{off } \underline{158 . 6 . 8}$
Ans. $\underline{\underline{\text{£}4591 . 13 . 4}}$

(95.) $\quad \quad \quad | 950 \text{ cwt. @ } 108/4$
 $\quad \quad \quad 5 \text{ £}$
 $8/4 = \frac{1}{12} | \underline{4750}$
 $\quad \quad \quad \underline{395 . 16 . 8}$
Ans. $\underline{\underline{\text{£}5145 . 16 . 8}}$

CASE IV.

EXERCISES, page 77.

(1.) ... $4d. = \frac{1}{80}$ 8760 yards @ $1\frac{2}{3}d.$
 $1d. = \frac{1}{4}$ $\begin{array}{r} 146 \\ 36 . 10 \\ \hline *3 \\ 182 . 10 \\ \hline \end{array}$ 3^* $5d.$
 Ans. £ 60 . 16 . 8

(2.) $6d. = \frac{1}{40}$ 8760 yards @ $2\frac{1}{3}d.$
 $1d. = \frac{1}{6}$ $\begin{array}{r} 219 \\ 36 . 10 \\ \hline 3 \\ 255 . 10 \\ \hline \end{array}$ $7d.$
 Ans. £ 85 . 3 . 4

(3.) $1d. = \frac{1}{12}$ 8760 yards @ $3\frac{2}{3}d.$
 off $\begin{array}{r} 730 \\ 2,0 \\ 803,0 \\ \hline \end{array}$ $11d.$
 Ans. £ 401 . 10

(4.) $4d. = \frac{1}{60}$ 8760 yards @ $4\frac{1}{3}d.$
 $\frac{1}{3}d. = \frac{1}{12}$ $\begin{array}{r} 146 \\ 12 . 3 . 4 \\ \hline \end{array}$
 Ans. £ 158 . 3 . 4

(5.) $4d. = \frac{1}{6}$ 8760 yards @ $5\frac{2}{3}d.$
 $1d. = \frac{1}{4}$ $\begin{array}{r} 2920 \\ 730 \\ \hline 2,0 \\ 1241,0 \\ \hline 3 \\ 620 . 10 \\ \hline \end{array}$ $17d.$
 Ans. £ 206 . 16 . 8

(6.) $20d. = \frac{1}{12}$ 7895 yards @ $6\frac{1}{3}d.$
 $1d. = \frac{1}{60}$ $\begin{array}{r} 657 . 18 . 4 \\ \text{off} \\ 32 . 17 . 11 \\ \hline 3 \\ 625 . 0 . 5 \\ \hline \end{array}$ $19d.$
 Ans. £ 208 . 6 . 9\frac{1}{2}

(7.) $3/4 = \frac{1}{6}$ 7895 yards @ $7\frac{1}{6}d.$
 $2d. = \frac{1}{30}$ $\begin{array}{r} 1315 . 16 . 8 \\ \hline 1d. = \frac{1}{2} \\ 65 . 15 . 10 \\ 32 . 17 . 11 \\ \hline \frac{1}{6} \\ 1414 . 10 . 5 \\ \hline \end{array}$ $43d. \text{ or } 3/7.$
 Ans. £ 235 . 15 . 0\frac{3}{4}

(8.) $4/. = \frac{1}{5}$ 7895 yards @ $8\frac{5}{8}d.$
 $4d. = \frac{1}{12}$ $\begin{array}{r} 1579 \\ \hline 1d. = \frac{1}{4} \\ 131 . 11 . 8 \\ 32 . 17 . 11 \\ \hline 6 \\ 1743 . 9 . 7 \\ \hline \end{array}$ $53d. \text{ or } 4/5$
 Ans. £ 290 . 11 . 7

(9.) $\frac{1}{8}$ 7895 yards @ $9\frac{1}{8}d.$
 $\begin{array}{r} 9\frac{1}{8} \\ \hline 71055 \\ 986\frac{3}{4} \\ \hline 12 \\ 72041\frac{3}{4} \text{ pence.} \\ 2,0 \\ 600,3 . 5 \\ \hline \end{array}$
 Ans. £ 300 . 3 . 5\frac{3}{4}

(10.) $\frac{2}{3} = \frac{1}{4}$ 7895 yards @ $10\frac{2}{3}d.$
 $\begin{array}{r} 78950 \\ \hline \frac{1}{3} = \frac{1}{2} \\ 1973\frac{3}{4} \\ 986\frac{3}{4} \\ \hline 12 \\ 81910\frac{1}{2} \text{ pence.} \\ 2,0 \\ 682,5 . 10 \\ \hline \end{array}$
 Ans. £ 341 . 5 . 10

(11.) $\frac{4}{8} = \frac{1}{2}$ | 5472 yards @ $11\frac{5}{8}d.$
 $\frac{1}{8} = \frac{1}{4}$ | 5472
 2736
 684
 12 63612 pence.
 2,0 530,1
 Ans. £ 265 . 1

(12.) $\frac{6}{8} = \frac{3}{4}$ | 5472 yards @ $12\frac{1}{8}d.$
 $\frac{1}{8} = \frac{1}{8}$ | 342
 57
 2,0 587,1 shillings.
 Ans. £ 293 . 11

(13.) $1d. = \frac{1}{12}$ | 5472 yards @ $13\frac{1}{12}d.$
 $\frac{1}{12}d. = \frac{1}{12}$ | 456
 38
 2,0 596,6
 Ans. £ 298 . 6

(14.) $2d. = \frac{1}{6}$ | 5472 yards @ $14\frac{5}{12}d.$
 $\frac{4}{12} = \frac{1}{3}$ | 912
 $\frac{1}{12} = \frac{1}{4}$ | 152
 38
 2,0 657,4
 Ans. £ 328 . 14

(15.) $3d. = \frac{1}{4}$ | 4321 yards @ $15\frac{7}{12}d.$
 $\frac{6}{12} = \frac{1}{2}$ | 1080 . 3
 $\frac{1}{12} = \frac{1}{6}$ | 180 . 0 $\frac{1}{2}$
 30 . 0
 2,0 566,1 . 3 $\frac{1}{2}$
 Ans. £ 280 . 11 . 3 $\frac{1}{2}$

(16.) $4d. = \frac{1}{3}$ | 4321 yards @ $16\frac{11}{12}d.$
 $\frac{8}{12} = \frac{2}{3}$ | 1440 . 4
 $\frac{3}{12} = \frac{1}{4}$ | 240 . 0 $\frac{1}{2}$
 $\frac{1}{12} = \frac{1}{12}$ | 60 . 0
 30 . 0
 2,0 609,1 . 4 $\frac{3}{4}$
 Ans. £ 304 . 11 . 4 $\frac{3}{4}$

(17.) $4d. = \frac{1}{3}$ | 4321 yards @ $17\frac{1}{18}d.$
 $1d. = \frac{1}{4}$ | 1440 . 4
 $\frac{1}{18}d. = \frac{1}{18}$ | 360 . 1
 22 . 6
 2,0 614,3 . 11
 Ans. £ 307 . 3 . 11

(18.) $6d. = \frac{1}{2}$ | 4321 yards @ $18\frac{3}{18}d.$
 $\frac{2}{18} = \frac{1}{9}$ | 2160 . 6
 67 . 6 $\frac{1}{2}$
 Ans. £ 327 . 9 . 0 $\frac{1}{2}$

(19.) $6d. = \frac{1}{2}$ | 1990 yards @ $1/7\frac{5}{18}$
 $1d. = \frac{1}{8}$ | 995
 $\frac{4}{18} = \frac{2}{9}$ | 165 . 10
 $\frac{1}{18} = \frac{1}{4}$ | 41 . 5 $\frac{1}{2}$
 10 . 4 $\frac{1}{4}$
 2,0 320,2 . 7 $\frac{3}{4}$
 Ans. £ 160 . 2 . 7 $\frac{3}{4}$

(20.) $2/6 = \frac{1}{3}$ | 1990 yards @ $2/10\frac{7}{18}$
 $3d. = \frac{1}{10}$ | 248 . 15
 $1d. = \frac{1}{8}$ | 24 . 17 . 6
 $\frac{4}{18} = \frac{2}{9}$ | 8 . 5 . 10
 $\frac{2}{18} = \frac{1}{9}$ | 2 . 1 . 5 $\frac{1}{2}$
 $\frac{1}{18} = \frac{1}{2}$ | 1 . 0 . 8 $\frac{3}{4}$
 0 . 10 . 4 $\frac{1}{4}$
 Ans. £ 285 . 10 . 10 $\frac{1}{2}$

(21.) $3/4 = \frac{3}{8}$ | 1990 yards @ $3/4\frac{9}{18}$
 $\frac{8}{18} = \frac{4}{9}$ | 331 . 13 . 4
 $\frac{1}{18} = \frac{1}{8}$ | 4 . 2 . 11
 0 . 10 . 4 $\frac{1}{4}$
 Ans. £ 336 . 6 . 7 $\frac{1}{4}$

(22.) $4/. = \frac{1}{5}$ | 1990 yards @ $4/3\frac{13}{18}$
 $3d. = \frac{1}{10}$ | 398
 $\frac{12}{18} = \frac{2}{3}$ | 24 . 17 . 6
 $\frac{1}{18} = \frac{1}{12}$ | 6 . 4 . 4 $\frac{1}{2}$
 0 . 10 . 4 $\frac{1}{4}$
 Ans. £ 429 . 12 . 2 $\frac{3}{4}$

CASE V.

EXERCISES, page 78.

$$\begin{array}{r}
 (1.) \dots 1/8 = \frac{1}{12} \overline{) 987\frac{1}{4} \text{ yards @ } 1/10} \\
 2d. = \frac{1}{10} \overline{) 82.5} \\
 \frac{1}{4} \text{ } 1s. \ 10d. \ \overline{) 8.4.6} \\
 \underline{5\frac{1}{2}} \quad \underline{0.0.5\frac{1}{2}} \\
 \text{Ans. } \underline{\underline{\pounds 90.9.11\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (2.) \ 2/ = \frac{1}{10} \overline{) 987\frac{1}{4} \text{ yards @ } 2/8} \\
 8d. = \frac{1}{8} \overline{) 98.14} \\
 \quad \quad \quad \overline{) 32.18} \\
 \frac{1}{4} \text{ yd.} = \overline{) 0.0.8} \\
 \text{Ans. } \underline{\underline{\pounds 131.12.8}}
 \end{array}$$

$$\begin{array}{r}
 (3.) \ 3/4 = \frac{1}{8} \overline{) 987\frac{1}{4} \text{ yards @ } 3/10} \\
 4d. = \frac{1}{10} \overline{) 164.10} \\
 2d. = \frac{1}{2} \overline{) 16.9} \\
 \quad \quad \quad \overline{) 8.4.6} \\
 \frac{1}{4} \text{ yd.} = \overline{) 0.0.11\frac{1}{2}} \\
 \text{Ans. } \underline{\underline{\pounds 189.4.5\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (4.) \ 4/ = \frac{1}{5} \overline{) 987\frac{1}{4} \text{ yards @ } 4/8} \\
 8d. = \frac{1}{8} \overline{) 197.8} \\
 \quad \quad \quad \overline{) 32.18} \\
 \frac{1}{4} \text{ yd.} = \overline{) 0.1.2} \\
 \text{Ans. } \underline{\underline{\pounds 230.7.2}}
 \end{array}$$

$$\begin{array}{r}
 (5.) \dots 5/ = \frac{1}{4} \overline{) 876\frac{1}{2} \text{ yards @ } 5/3} \\
 3d. = \frac{1}{20} \overline{) 219} \\
 \quad \quad \quad \overline{) 10.19} \\
 \frac{1}{2} \text{ yd.} = \overline{) 0.2.7\frac{1}{2}} \\
 \text{Ans. } \underline{\underline{230.1.7\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (6.) \ 4/ = \left. \begin{array}{l} \frac{1}{5} \overline{) 876\frac{1}{2} \text{ yards @ } 6/6} \\ \frac{1}{8} \overline{) 175.4} \end{array} \right\} \\
 2/6 = \left. \begin{array}{l} \frac{1}{8} \overline{) 109.10} \\ \frac{1}{8} \overline{) 0.3.3} \end{array} \right\} \\
 \frac{1}{2} \text{ yd.} = \overline{) 0.3.3} \\
 \text{Ans. } \underline{\underline{\pounds 284.17.3}}
 \end{array}$$

$$\begin{array}{r}
 (7.) \ 5/ = \frac{1}{4} \overline{) 876\frac{1}{2} \text{ yards @ } 7/9} \\
 2/6 = \frac{1}{2} \overline{) 219} \\
 3d. = \frac{1}{10} \overline{) 109.10} \\
 \quad \quad \quad \overline{) 10.19} \\
 \frac{1}{2} \text{ yd.} = \overline{) 0.3.10\frac{1}{2}} \\
 \text{Ans. } \underline{\underline{\pounds 339.12.10\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (8.) \ 6/8 = \frac{1}{3} \overline{) 876\frac{1}{2} \text{ yards @ } 8/10} \\
 2/ = \frac{1}{10} \overline{) 292} \\
 2d. = \frac{1}{12} \overline{) 87.12} \\
 \quad \quad \quad \overline{) 7.6} \\
 \frac{1}{2} \text{ yd.} = \overline{) 0.4.5} \\
 \text{Ans. } \underline{\underline{\pounds 387.2.5}}
 \end{array}$$

$$\begin{array}{r}
 (9.) \dots \overline{) 765\frac{3}{4} \text{ yards @ } 9/3} \\
 4/ = \left\{ \begin{array}{l} \frac{1}{5} \overline{) 765.15} \\ \frac{1}{4} \overline{) 153.3} \end{array} \right. \\
 3d. = \frac{1}{20} \overline{) 191.8.9} \\
 \quad \quad \quad \overline{) 9.11.5\frac{1}{4}} \\
 \text{Ans. } \underline{\underline{\pounds 354.3.2\frac{1}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (10.) \ 10/ = \frac{1}{2} \overline{) 765.15 \text{ @ } 10/6} \\
 6d. = \frac{1}{20} \overline{) 382.17.6} \\
 \quad \quad \quad \overline{) 19.2.10\frac{1}{2}} \\
 \text{Ans. } \underline{\underline{\pounds 402.0.4\frac{1}{2}}}
 \end{array}$$

$$\begin{array}{r}
 (11.) \ 10/ = \frac{1}{2} \overline{) 765.15 \text{ @ } 11/9} \\
 1/8 = \frac{1}{8} \overline{) 382.17.6} \\
 1d. = \frac{1}{20} \overline{) 63.16.3} \\
 \quad \quad \quad \overline{) 3.3.9\frac{3}{4}} \\
 \text{Ans. } \underline{\underline{\pounds 449.17.6\frac{3}{4}}}
 \end{array}$$

$$\begin{array}{r}
 (12.) \ 10/ = \frac{1}{2} \overline{) 765.15 \text{ @ } 12/11} \\
 2/6 = \frac{1}{4} \overline{) 382.17.6} \\
 5d. = \frac{1}{8} \overline{) 95.14.4\frac{1}{2}} \\
 \quad \quad \quad \overline{) 15.19.0\frac{7}{4}} \\
 \text{Ans. } \underline{\underline{\pounds 494.10.11\frac{1}{4}}}
 \end{array}$$

(13.) ... $10/. = \frac{1}{2} \left| \begin{array}{l} 612\frac{1}{8} \text{ yards @ } 13/9 \\ 3/4 = \frac{1}{8} 306 \\ 5d. = \frac{1}{8} 102 \\ 12. 15 \\ \frac{1}{8} \text{yd.} = 0. 1. 8\frac{1}{2} \end{array} \right.$
 Ans. £420 . 16 . 8 $\frac{1}{2}$

(14.) $10/. = \left\{ \begin{array}{l} \frac{1}{2} \left| \begin{array}{l} 612\frac{1}{8} \text{ yards a } 14/3 \\ 306 \\ 3d. = \frac{1}{40} 122. 8 \\ 7. 13 \\ \frac{1}{8} \text{yd.} = 0. 1. 9\frac{1}{4} \end{array} \right. \\ 4/. = \left\{ \begin{array}{l} \frac{1}{5} 306 \\ 3d. = \frac{1}{40} 122. 8 \\ 7. 13 \\ \frac{1}{8} \text{yd.} = 0. 1. 9\frac{1}{4} \end{array} \right. \end{array} \right.$
 Ans. £436 . 2 . 9 $\frac{1}{4}$

(15.) $10/. = \frac{1}{2} \left| \begin{array}{l} 612\frac{1}{8} \text{ yards @ } 15/6 \\ 5/. = \frac{1}{2} 306 \\ 6d. = \frac{1}{10} 153 \\ 15. 6 \\ \frac{1}{8} \text{yd.} = 0. 1. 11\frac{1}{4} \end{array} \right.$
 Ans. £474 . 7 . 11 $\frac{1}{4}$

(16.) $10/. = \left\{ \begin{array}{l} \frac{1}{2} \left| \begin{array}{l} 612\frac{1}{8} \text{ yards @ } 16/10 \\ 306 \\ 2d. = \frac{1}{40} 204 \\ 5. 2 \\ \frac{1}{8} \text{yd.} = 0. 2. 1\frac{1}{4} \end{array} \right. \\ 6/8 = \left\{ \begin{array}{l} \frac{1}{8} 306 \\ 2d. = \frac{1}{40} 204 \\ 5. 2 \\ \frac{1}{8} \text{yd.} = 0. 2. 1\frac{1}{4} \end{array} \right. \end{array} \right.$
 Ans. £515 . 4 . 1 $\frac{1}{4}$

(17.) $\left. \begin{array}{l} 549\frac{3}{8} \text{ yards @ } 17/8 \\ 6/8 = \frac{1}{8} \left\{ \begin{array}{l} 549. 7. 6 \\ 183. 2. 6 \\ 274. 13. 9 \\ 27. 9. 4\frac{1}{2} \end{array} \right. \\ 10/. = \frac{1}{2} \\ 1/. = \frac{1}{10} \end{array} \right\}$
 Ans. £485 . 5 . 7 $\frac{1}{2}$

(18.) $1/3 = \frac{1}{18} \left| \begin{array}{l} 549. 7. 6 @ 18/9 \\ \text{off} \left| \begin{array}{l} 34. 6. 8\frac{1}{2} \end{array} \right. \end{array} \right.$
 Ans. £515 . 0 . 9 $\frac{1}{2}$

(19.) $10d. = \frac{1}{4} \left| \begin{array}{l} 549. 7. 6 @ 19/2 \\ \text{off} \left| \begin{array}{l} 22. 17. 9\frac{3}{4} \end{array} \right. \end{array} \right.$
 Ans. £526 . 9 . 8 $\frac{1}{4}$

(20.) $8d. = \frac{1}{30} \left| \begin{array}{l} 549. 7. 6 @ 20/8 \\ 18. 6. 3 \end{array} \right.$
 Ans. £567 . 13 . 9

(21.) $\left. \begin{array}{l} 430\frac{5}{8} \text{ yards @ } 21/3 \\ 1/3 = \frac{1}{16} \left| \begin{array}{l} 430. 12. 6 \\ 26. 18. 3\frac{1}{4} \end{array} \right. \end{array} \right.$
 Ans. £457 . 10 . 9 $\frac{1}{4}$

(22.) $2/. = \frac{1}{10} \left| \begin{array}{l} 430. 12. 6 @ 22/4 \\ 4d. = \frac{1}{8} \left| \begin{array}{l} 43. 1. 3 \\ 7. 3. 6\frac{1}{2} \end{array} \right. \end{array} \right.$
 Ans. £480 . 17 . 3 $\frac{1}{2}$

(23.) $3/4 = \frac{1}{8} \left| \begin{array}{l} 430. 12. 6 @ 23/8 \\ 4d. = \frac{1}{10} \left| \begin{array}{l} 71. 15. 5 \\ 7. 3. 6\frac{1}{2} \end{array} \right. \end{array} \right.$
 Ans. £509 . 11 . 5 $\frac{1}{2}$

(24.) $4/. = \frac{1}{5} \left| \begin{array}{l} 430. 12. 6 @ 24/6 \\ 6d. = \frac{1}{8} \left| \begin{array}{l} 86. 2. 6 \\ 10. 15. 3\frac{3}{4} \end{array} \right. \end{array} \right.$
 Ans. £527 . 10 . 3 $\frac{3}{4}$

(25.) $\left. \begin{array}{l} 328\frac{7}{8} \text{ yards @ } 25/4 \\ 5/. = \frac{1}{4} \left| \begin{array}{l} 328. 17. 6 \\ 82. 4. 4\frac{1}{2} \\ 5. 9. 7\frac{1}{2} \end{array} \right. \\ 4d. = \frac{1}{15} \end{array} \right\}$
 Ans. £416 . 11 . 6

(26.) $6/8 = \frac{1}{8} \left| \begin{array}{l} 328. 17. 6 @ 26/8 \\ 109. 12. 6 \end{array} \right.$
 Ans. £438 . 10 . 0

(27.) $6/8 = \left\{ \begin{array}{l} \frac{1}{8} \left| \begin{array}{l} 328. 17. 6 @ 27/10 \\ 109. 12. 6 \\ 2d. = \frac{1}{8} \left| \begin{array}{l} 16. 8. 10\frac{1}{2} \\ 2. 14. 9\frac{3}{4} \end{array} \right. \end{array} \right. \end{array} \right.$
 Ans. £457 . 13 . 8 $\frac{1}{4}$

(28.) $8/ = \frac{2}{5}$ $\left| \begin{array}{r} 328 . 17 . 6 \text{ @ } 28/3 \\ 65 . 15 . 6 \\ 65 . 15 . 6 \\ 4 . 2 . 2\frac{1}{2} \end{array} \right.$
 $3d. = \frac{1}{10}$
 Ans. $\underline{\underline{\text{£}464 . 10 . 8\frac{1}{2}}}$

(35.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 219 . 11 . 8 \text{ @ } 35/7 \\ 109 . 15 . 10 \\ 54 . 17 . 11 \\ 5 . 9 . 9\frac{1}{2} \\ 0 . 18 . 3\frac{1}{2} \end{array} \right.$
 $5/ = \frac{1}{2}$
 $6d. = \frac{1}{10}$
 $1d. = \frac{1}{8}$
 Ans. $\underline{\underline{\text{£}390 . 13 . 6}}$

(29.) $\left| \begin{array}{r} 485\frac{5}{12} \text{ yards @ } 29/10 \\ 485 . 8 . 4 \\ 97 . 1 . 8 \\ 121 . 7 . 1 \\ 20 . 4 . 6 \end{array} \right.$
 $4/ = \frac{1}{5}$
 $5/ = \frac{1}{4}$
 $10d. = \frac{1}{8}$
 Ans. $\underline{\underline{\text{£}724 . 1 . 7}}$

(36.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 219 . 11 . 8 \text{ @ } 36/6 \\ 109 . 15 . 10 \\ 54 . 17 . 11 \\ 10 . 19 . 7 \\ 5 . 9 . 9\frac{1}{2} \end{array} \right.$
 $5/ = \frac{1}{2}$
 $1/ = \frac{1}{5}$
 $6d. = \frac{1}{2}$
 Ans. $\underline{\underline{\text{£}400 . 14 . 9\frac{1}{2}}}$

(30.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 485 . 8 . 4 \text{ @ } 30/6 \\ 242 . 14 . 2 \\ 12 . 2 . 8\frac{1}{2} \end{array} \right.$
 $6d. = \frac{1}{20}$
 Ans. $\underline{\underline{\text{£}740 . 5 . 2\frac{1}{2}}}$

(37.) ... $\left| \begin{array}{r} 360\frac{11}{12} \text{ yards @ } 37/3 \\ 360 . 18 . 4 \\ 180 . 9 . 2 \\ 90 . 4 . 7 \\ 36 . 1 . 10 \\ 4 . 10 . 2\frac{3}{4} \end{array} \right.$
 $10/ = \frac{1}{2}$
 $5/ = \frac{1}{2}$
 $2/ = \frac{1}{5}$
 $3d. = \frac{1}{8}$
 Ans. $\underline{\underline{\text{£}672 . 4 . 1\frac{3}{4}}}$

(31.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 485 . 8 . 4 \text{ @ } 31/3 \\ 242 . 14 . 2 \\ 30 . 6 . 9\frac{1}{4} \end{array} \right.$
 $1/3 = \frac{1}{8}$
 Ans. $\underline{\underline{\text{£}758 . 9 . 3\frac{1}{4}}}$

(38.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 360 . 18 . 4 \text{ @ } 38/4 \\ 180 . 9 . 2 \\ 90 . 4 . 7 \\ 60 . 3 . 0\frac{1}{2} \end{array} \right.$
 $5/ = \frac{1}{2}$
 $3/4 = \frac{1}{3}$
 Ans. $\underline{\underline{\text{£}691 . 15 . 1\frac{1}{2}}}$

(32.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 485 . 8 . 4 \text{ @ } 32/8 \\ 242 . 14 . 2 \\ 48 . 10 . 10 \\ 16 . 3 . 7\frac{1}{4} \end{array} \right.$
 $2/ = \frac{1}{5}$
 $8d. = \frac{1}{8}$
 Ans. $\underline{\underline{\text{£}792 . 16 . 11\frac{1}{4}}}$

(39.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 360 . 18 . 4 \text{ @ } 39/3 \\ 180 . 9 . 2 \\ 72 . 3 . 8 \\ 90 . 4 . 7 \\ 4 . 10 . 2\frac{3}{4} \end{array} \right.$
 $4/ = \frac{1}{5}$
 $5/ = \frac{1}{4}$
 $3d. = \frac{1}{20}$
 Ans. $\underline{\underline{\text{£}708 . 5 . 11\frac{3}{4}}}$

(33.) $\left| \begin{array}{r} 219\frac{7}{12} \text{ yards @ } 33/9 \\ 219 . 11 . 8 \\ 109 . 15 . 10 \\ 27 . 8 . 11\frac{1}{2} \\ 13 . 14 . 5\frac{3}{4} \end{array} \right.$
 $10/ = \frac{1}{2}$
 $2/6 = \frac{1}{4}$
 $1/3 = \frac{1}{2}$
 Ans. $\underline{\underline{\text{£}370 . 10 . 11\frac{1}{4}}}$

(40.) $\left| \begin{array}{r} 360 . 18 . 4 \text{ @ } 40/10 \\ 360 . 18 . 4 \\ 15 . 0 . 9 \end{array} \right.$
 $10d. = \frac{1}{24}$
 Ans. $\underline{\underline{\text{£}736 . 17 . 5}}$

(43.) $10/ = \frac{1}{2}$ $\left| \begin{array}{r} 219 . 11 . 8 \text{ @ } 34/2 \\ 109 . 15 . 10 \\ 36 . 11 . 11\frac{1}{4} \\ 9 . 2 . 11\frac{1}{4} \end{array} \right.$
 $3/4 = \frac{1}{8}$
 $10d. = \frac{1}{4}$
 Ans. $\underline{\underline{\text{£}375 . 2 . 5}}$

$$(41.) \dots \begin{array}{r} 430 \frac{7}{16} \text{ yards } @ 41/8 \\ 430 . 8 . 9 \\ 1/8 = \frac{1}{12} \begin{array}{r} 430 . 8 . 9 \\ 35 . 17 . 4 \frac{3}{4} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 896 . 14 . 10 \frac{1}{4}}} \end{array}$$

$$(42.) \dots \begin{array}{r} 430 . 8 . 9 @ 42/6 \\ 2/6 = \frac{1}{8} \begin{array}{r} 430 . 8 . 9 \\ 53 . 16 . 1 \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 914 . 13 . 7}} \end{array}$$

$$(43.) \dots \begin{array}{r} 430 . 8 . 9 @ 43/4 \\ 3/4 = \frac{1}{6} \begin{array}{r} 430 . 8 . 9 \\ 71 . 14 . 9 \frac{1}{2} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 932 . 12 . 3 \frac{1}{2}}} \end{array}$$

$$(44.) \dots \begin{array}{r} 430 . 8 . 9 @ 44/3 \\ 4/3 = \frac{1}{5} \begin{array}{r} 430 . 8 . 9 \\ 86 . 1 . 9 \end{array} \\ 3d. = \frac{1}{18} \begin{array}{r} 86 . 1 . 9 \\ 5 . 7 . 7 \frac{1}{4} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 952 . 6 . 10 \frac{1}{4}}} \end{array}$$

$$(45.) \dots \begin{array}{r} 235 \frac{9}{16} \text{ yards } @ 45/10 \\ 235 . 11 . 3 \\ 5/10 = \frac{1}{4} \begin{array}{r} 235 . 11 . 3 \\ 58 . 17 . 9 \frac{3}{4} \end{array} \\ 10d. = \frac{1}{8} \begin{array}{r} 58 . 17 . 9 \frac{3}{4} \\ 9 . 16 . 3 \frac{1}{2} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 539 . 16 . 7 \frac{1}{4}}} \end{array}$$

$$(46.) \begin{array}{r} 235 . 11 . 3 @ 46/8 \\ 6/8 = \frac{1}{8} \begin{array}{r} 235 . 11 . 3 \\ 78 . 10 . 5 \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 549 . 12 . 11}} \end{array}$$

$$(47.) \dots \left\{ \begin{array}{l} 235 . 11 . 3 @ 54/2 \\ 10/2 = \frac{1}{2} \left\{ \begin{array}{l} 235 . 11 . 3 \\ 117 . 15 . 7 \frac{1}{2} \end{array} \right. \\ 4/2 = \frac{1}{5} \left\{ \begin{array}{l} 117 . 15 . 7 \frac{1}{2} \\ 47 . 2 . 3 \end{array} \right. \\ 2d. = \frac{1}{24} \left\{ \begin{array}{l} 47 . 2 . 3 \\ 1 . 18 . 1 \frac{1}{2} \end{array} \right. \end{array} \right. \\ \hline \text{Ans. } \underline{\underline{\pounds 637 . 18 . 6}}$$

$$(48.) \dots \begin{array}{r} 235 . 11 . 3 @ 55/10 \\ 10/10 = \frac{1}{2} \begin{array}{r} 235 . 11 . 3 \\ 117 . 15 . 7 \frac{1}{2} \end{array} \\ 5/10 = \frac{1}{2} \begin{array}{r} 117 . 15 . 7 \frac{1}{2} \\ 58 . 17 . 9 \frac{3}{4} \end{array} \\ 10d. = \frac{1}{8} \begin{array}{r} 58 . 17 . 9 \frac{3}{4} \\ 9 . 16 . 3 \frac{1}{2} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 657 . 12 . 2 \frac{3}{4}}} \end{array}$$

CASE VI.

EXERCISES, page 80.

$$(1.) \dots \begin{array}{r} \text{cwt. qr. lb.} \\ 12 . 1 . 7 @ 17/6 \\ \text{off } 2/6 = \frac{1}{8} \begin{array}{r} 12 . 6 . 3 \\ 1 . 10 . 9 \frac{1}{4} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 10 . 15 . 5 \frac{3}{4}}} \end{array}$$

$$(2.) \begin{array}{r} 3/4 = \frac{1}{8} \begin{array}{r} \pounds 12 . 6 . 3 @ 23/4 \\ 2 . 1 . 0 \frac{1}{2} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 14 . 7 . 3 \frac{1}{2}}} \end{array}$$

$$(3.) \begin{array}{r} 1 \text{ qr.} = \frac{1}{4} \begin{array}{r} \pounds 1 . 15 . 9 \\ 12 \text{ cwt.} \\ 21 . 9 . 0 \\ 7 \text{ lb.} = \frac{1}{4} \begin{array}{r} 0 . 8 . 11 \frac{1}{4} \\ 0 . 2 . 2 \frac{3}{4} \end{array} \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 22 . 0 . 2}} \end{array}$$

$$(4.) \begin{array}{r} 6/8 = \frac{1}{8} \begin{array}{r} \pounds 18 . 12 . 6 @ 46/8 \\ 2l. = 40/ \\ 37 . 5 . 0 \\ 6 . 4 . 2 \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 43 . 9 . 2}} \end{array}$$

(5.) at 52/6
 $10/. = \frac{1}{2}$ } $\begin{array}{r} \text{£}18.12.6 \\ 18.12.6 \end{array}$ } = 40/.
 $2/6 = \frac{1}{4}$ } $\begin{array}{r} 9.6.3 \\ 2.6.6\frac{3}{4} \end{array}$
 Ans. £48.17.9 $\frac{3}{4}$

(6.) at 65/.
 $5/. = \frac{1}{4}$ } $\text{£}18.12.6 = 20/.$
 3£
 $\begin{array}{r} 55.17.6 \\ 4.13.1\frac{1}{2} \end{array}$
 Ans. £60.10.7 $\frac{1}{2}$

(7.) $\text{£}27.18.9 \text{ @ } 67/6.$
 $7/6 = \frac{1}{8}$ } $\begin{array}{r} 3\text{£} \\ \text{£}83.16.3 \\ 10.9.6\frac{3}{4} \end{array}$
 Ans. £94.5.9 $\frac{1}{4}$

(8.) $10/. = \frac{1}{2}$ } $\text{£}27.18.9 \text{ @ } 70/.$
 3£
 $\begin{array}{r} 83.16.3 \\ 13.19.4\frac{1}{2} \end{array}$
 Ans. £97.15.7 $\frac{1}{2}$

(9.) $5/. = \frac{1}{4}$ } $\text{£}27.18.9 \text{ @ } 75/.$
 4£
 $111.15.0 = 80/.$
 off $\begin{array}{r} 6.19.8\frac{1}{4} \end{array}$
 Ans. £104.15.3 $\frac{3}{4}$

(10.) $1 \text{ qr.} = \left\{ \begin{array}{l} \frac{1}{4} \\ \frac{1}{7} \end{array} \right.$ } $\begin{array}{r} \text{cwt. qr. lb.} \\ 39.1.16 \text{ @ } 77/6 \\ 77/6 \end{array}$
 $16 \text{ lb.} = \left\{ \begin{array}{l} \frac{1}{4} \\ \frac{1}{7} \end{array} \right.$
 $\begin{array}{r} 273 \\ 273 \\ 19.6 \\ 19.4\frac{1}{2} \\ 11.0\frac{3}{4} \end{array}$
 $2,0305,2.11\frac{1}{4}$
 Ans. £152.12.11 $\frac{1}{4}$

$1 \text{ qr.} = \frac{1}{4}$ } $\text{£}3.18.4$
 $16 \text{ lb.} = \frac{1}{7}$ } $\begin{array}{r} 12 \\ 47 \\ 3 \end{array}$

(11.) $\begin{array}{r} 141 \\ 11.15 \\ 0.19.7 \\ 0.11.2\frac{1}{4} \end{array}$
 Ans. £154.5.9 $\frac{1}{4}$

$1 \text{ qr.} = \left\{ \begin{array}{l} \frac{1}{4} \\ \frac{1}{7} \end{array} \right.$ } $\text{£}3.19.6 \times 3$
 $16 \text{ lb.} = \left\{ \begin{array}{l} \frac{1}{4} \\ \frac{1}{7} \end{array} \right.$ } $\begin{array}{r} 12 \\ 47.14 \\ 3 \end{array}$

(12.) $\begin{array}{r} 143.2 \\ 11.18.6 \\ 0.19.10\frac{1}{2} \\ 0.11.4\frac{1}{4} \end{array}$
 Ans. £156.11.8 $\frac{3}{4}$

$2 \text{ qr.} = \left\{ \begin{array}{l} \frac{1}{2} \\ \frac{1}{7} \end{array} \right.$ } $\begin{array}{r} \text{cwt. qr. lb.} \\ 45.2.24 * \text{ See} \\ 84/. \text{ note, p.} \end{array}$
 $16 \text{ lb.} = \left\{ \begin{array}{l} \frac{1}{2} \\ \frac{1}{7} \end{array} \right.$ } $\begin{array}{r} 180 \\ 360 \\ 42 \\ 12 \\ 6 \end{array}$ 122.

(13.) $8 \text{ lb.} = \frac{1}{2}$ } $\begin{array}{r} 2,0384,0 \\ 192 \end{array}$
 Ans. £192

$2 \text{ qr.} = \left\{ \begin{array}{l} \frac{1}{2} \\ \frac{1}{7} \end{array} \right.$ } $\text{£}4.6.8$ See note,
 $16 \text{ lb.} = \left\{ \begin{array}{l} \frac{1}{2} \\ \frac{1}{7} \end{array} \right.$ } $\begin{array}{r} 9 \\ 39 \\ 5 \end{array}$ p.122.

(14.) $8 \text{ lb.} = \frac{1}{2}$ } $\begin{array}{r} 195 \\ 2.3.4 \\ 0.12.4\frac{3}{4} \\ 0.6.2\frac{1}{4} \end{array}$
 Ans. £198.1.11

(15.)
$$\begin{array}{r} \text{cwt. qr. lb.} \\ 45.2.24 \\ 16 \text{ lb.} = \left. \begin{array}{l} \frac{1}{2} \\ \frac{1}{7} \end{array} \right\} \begin{array}{r} 87/6 \\ \hline 315 \\ 360 \\ 22.6 \\ 43.9 \\ 8 \text{ lb.} = \frac{1}{2} \begin{array}{r} 12.6 \\ 6.3 \end{array} \\ \hline 2,0400.0.0 \\ \text{Ans. } \underline{\underline{\pounds 200.0}} \end{array}$$

(16.)...
$$\begin{array}{r} \text{cwt. qr. lb.} \\ 76.3.10 \text{ @ } 88/. * \\ 5.2\frac{1}{4} \\ \hline 76.16.9\frac{3}{4} \\ 4\pounds \\ 8/ = \frac{1}{10} \begin{array}{r} 307.7.1\frac{3}{4} = 80/. \\ 30.14.8\frac{1}{5} = 8/. \end{array} \\ \hline \text{Ans. } \underline{\underline{\pounds 338.1.10\frac{1}{4}}} \end{array}$$

(17.)
$$\begin{array}{r} \text{@ } 90/. \\ 10/ = \frac{1}{2} \begin{array}{r} 76.16.9\frac{3}{4} = 1\pounds \\ 4\pounds \\ \hline 307.7.1\frac{3}{4} \\ 38.8.4\frac{1}{4} \\ \hline \text{Ans. } \underline{\underline{\pounds 345.15.6\frac{1}{4}}} \end{array} \end{array}$$

(18.)
$$\begin{array}{r} \text{@ } 93/4 \\ 6/8 = \frac{1}{3} \begin{array}{r} 76.16.9\frac{3}{4} = 1\pounds \\ 5\pounds \\ \hline 384.3.11\frac{1}{7} \\ \text{off } 25.12.3\frac{1}{7} \\ \hline \text{Ans. } \underline{\underline{\pounds 358.11.8}} \end{array} \end{array}$$

(19.)
$$\begin{array}{r} \text{@ } 95/. \\ 5/ = \frac{1}{4} \begin{array}{r} \pounds 87.3.9 = 20/. \\ 5\pounds \\ \hline 435.18.9 = 100/. \\ \text{off } 21.15.11\frac{1}{4} \\ \hline \text{Ans. } \underline{\underline{\pounds 414.2.9\frac{3}{4}}} \end{array} \end{array}$$

(20.)
$$\begin{array}{r} 3/4 = \frac{1}{8} \begin{array}{r} \pounds 87.3.9 \text{ @ } 96/8. \\ 5\pounds \\ \hline 435.18.9 = 100/. \\ 14.10.7\frac{1}{2} \\ \hline \text{Ans. } \underline{\underline{\pounds 421.8.1\frac{1}{2}}} \end{array} \end{array}$$

(21.)
$$\begin{array}{r} \frac{1}{8} \begin{array}{r} \pounds 87.3.9 \\ 5\pounds \\ \hline 435.18.9 = 100/. \\ \text{off } 10.17.11\frac{1}{5} = 2/6. \\ \hline \text{Ans. } \underline{\underline{\pounds 425.0.9\frac{1}{2}}} \end{array} \end{array}$$

* In the "Arithmetic," we have given several new and concise methods of operation : in addition to these, we shall subjoin the following :

When aliquot parts cannot readily be taken for the odd *qrs.* and *lbs.*, the operation may be facilitated by reducing the *cwts. qrs.* and *lbs.*, to the form of *pounds, shillings, and pence.* This is easily done, by multiplying the *qrs.* (mentally) by 5. and the *lbs.* by 2 $\frac{1}{2}$. In multiplying the *lbs.* divide the product by 12, set down the remainder as pence, and carry the quotients to the *qrs.* Thus in the two preceding exercises, Nos. 13. and 14.

(13.)
$$\begin{array}{r} \text{cwt. qr. lb.} \\ 45.2.24 \text{ @ } 84/. \\ 4/ = \frac{1}{5} \begin{array}{r} 5.2\frac{1}{4} \\ \hline 45.14.3\frac{1}{2} = 20/. \\ 4\pounds \\ \hline \pounds 182.17.2 = 80/. \\ 9.2.10 = 4/. \\ \hline \text{Ans. } \underline{\underline{\pounds 192.0.0}} \end{array} \end{array}$$

(14.)
$$\begin{array}{r} 6/8 = \frac{1}{3} \begin{array}{r} \pounds 45.14.3\frac{1}{2} \text{ @ } 86/8. \\ 4\pounds \\ \hline 182.17.2 \\ 15.4.9 \\ \hline \text{Ans. } \underline{\underline{\pounds 198.1.11}} \end{array} \end{array}$$

(22.) ... $\begin{array}{r} \text{cwt.} \quad \text{qr.} \quad \text{lb.} \\ 198 \quad 1 \quad 19 \text{ @ } 98/4. \\ \hline \quad 5 \quad 2\frac{1}{7} \\ \hline \text{£}198 \quad 8 \quad 4\frac{5}{7} = \text{£}1 \\ \quad \quad 5\text{£} \\ \hline \text{£}992 \quad 1 \quad 11\frac{1}{2} \\ \text{off} \quad 16 \quad 10 \quad 8\frac{1}{2} \\ \hline \text{Ans. £} \quad 975 \quad 11 \quad 3 \end{array}$

(26.) $\begin{array}{r} 10/. = \frac{1}{2} \text{ £}45 \quad 9 \quad 6 \text{ @ } 36 \quad \overset{\text{£}}{\underset{\text{s.}}{15}} \\ \phantom{10/. = \frac{1}{2}} \quad \quad \quad 6 \times 6 \\ \hline 272 \quad 17 \\ \hline 6 \\ \hline 1637 \quad 2 \\ 5/. = \frac{1}{2} \quad 22 \quad 14 \quad 9 \\ \phantom{5/. = \frac{1}{2}} \quad \quad \quad 11 \quad 7 \quad 4\frac{1}{2} \\ \hline \text{Ans. £}1671 \quad 4 \quad 1\frac{1}{2} \end{array}$

(23.) $\begin{array}{r} \text{cwt.} \quad \text{qr.} \quad \text{lb.} \\ 198 \quad 1 \quad 19 \text{ @ } 99/. \\ \hline \quad 5 \quad 2\frac{1}{7} \\ \hline \text{£}198 \quad 8 \quad 4\frac{5}{7} = \text{£}1 \\ \quad \quad 5\text{£} \\ \hline 992 \quad 1 \quad 11\frac{1}{2} \\ \text{off} \quad 9 \quad 18 \quad 5 \\ \hline \text{Ans. £} \quad 982 \quad 3 \quad 6\frac{1}{2} \end{array}$

(27.) $\begin{array}{r} \text{tons.} \quad \text{cwt.} \quad \text{qr.} \quad \text{lb.} \\ 132 \quad 16 \quad 3 \quad 21 \\ \hline 6/8 = \frac{1}{8} \text{ £}132 \quad 16 \quad 11\frac{1}{4} = \text{£}1 \\ \phantom{6/8 = \frac{1}{8}} \quad \quad \quad 6 \\ \hline 797 \quad 1 \quad 7\frac{1}{2} \\ \quad \quad 7 \\ \hline \text{£}5579 \quad 11 \quad 4\frac{1}{2} \\ 132 \quad 16 \quad 11\frac{1}{4} \\ 44 \quad 5 \quad 7\frac{1}{4} \\ \hline \text{Ans. £}5756 \quad 13 \quad 11\frac{1}{2} \end{array}$

(24.) $\begin{array}{r} \text{cwt.} \quad \text{qr.} \quad \text{lb.} \\ 198 \quad 1 \quad 19 \text{ @ } 105/. \\ \hline \quad 5 \quad 2\frac{1}{7} \\ \hline 5/. = \frac{1}{4} \text{ £}198 \quad 8 \quad 4\frac{5}{7} = \text{£}1 \\ \quad \quad 5\text{£} \\ \hline 992 \quad 1 \quad 11\frac{1}{2} \\ 49 \quad 12 \quad 1\frac{1}{4} \\ \hline \text{Ans. £} \quad 1041 \quad 14 \quad 0\frac{1}{4} \end{array}$

(28.) $\begin{array}{r} 10/. = \frac{1}{2} \text{ £}132 \quad 16 \quad 11\frac{1}{4} \text{ @ } 67 \quad 10 \quad 6 \\ \phantom{10/. = \frac{1}{2}} \quad \quad \quad 6 \\ \hline 797 \quad 1 \quad 7\frac{1}{2} \\ \quad \quad 11 \\ \hline 8767 \quad 17 \quad 10\frac{1}{2} = 66\text{£} \\ 132 \quad 16 \quad 11\frac{1}{4} = 1 \\ 6d. = \frac{1}{20} \quad 66 \quad 8 \quad 5\frac{1}{2} = 10/. \\ \phantom{6d. = \frac{1}{20}} \quad \quad \quad 3 \quad 6 \quad 5 = \quad \quad \quad /6 \\ \hline \text{Ans. £} \quad 8970 \quad 9 \quad 8\frac{1}{4} \end{array}$

(25.) $\begin{array}{r} 10/. = \frac{1}{2} \text{ tons.} \quad \text{cwt.} \quad \text{qr.} \quad \text{£} \quad \text{s.} \\ 45 \quad 9 \quad 2 \text{ @ } 25 \quad 10 \\ \hline \text{£}45 \quad 9 \quad 6 \\ \quad \quad 5 \times 5 \\ \hline 227 \quad 7 \quad 6 \\ \quad \quad 5 \\ \hline 1136 \quad 17 \quad 6 \\ 22 \quad 14 \quad 9 \\ \hline \text{Ans. £}1159 \quad 12 \quad 3 \end{array}$

(29.) ... $\begin{array}{r} \text{oz.} \quad \text{dwt.} \quad \text{gr.} \\ 121 \quad 17 \quad 16 \text{ @ } 5/6 \\ \hline 5/. = \frac{1}{4} \text{ £}121 \quad 17 \quad 8 = \text{£}1 \\ \hline 6d. = \frac{1}{10} \quad 30 \quad 9 \quad 5 \\ \phantom{6d. = \frac{1}{10}} \quad \quad \quad 3 \quad 0 \quad 11\frac{1}{4} \\ \hline \text{Ans. £} \quad 33 \quad 10 \quad 4\frac{1}{4} \end{array}$

(30.) $6/8 = \frac{1}{3} | \text{£}121.17.8 \text{ @ } 6/8$
 Ans. £ 40.12.6½

$1/8 = \frac{1}{12} | \text{£}121.17.8 \text{ @ } 78/4$
 4 £
 (31.) 487.10.8 = 80/.
 off 10.3.1½ = 1/8
 Ans. £ 477.7.6½

$4/. = \frac{1}{5} | \text{£}121.17.8 \text{ @ } 84/.$
 4 £
 (32.) 487.10.8
24.7.6¼
 Ans. £ 511.18.2¼

$5/. = \frac{1}{4} | \text{£}121.17.8 \text{ @ } 87/9$
 4
 (33.) 487.10.8 = 80/.
30.9.5 = 5/.
 $2/6 = \frac{1}{2} | 15.4.8½ = 2/6$
 $3d. = \frac{1}{10} | 1.10.5½ = 1/3$
 Ans. £ 534.15.3

(34.) ...

<i>gr.</i>	<i>bu.</i>	<i>pk.</i>	185 . 5 . 2 @ 32/6
<hr/>			
$10/. = \frac{1}{10}$	£185.13.9* = £1		
$2/6 = \frac{1}{4}$	92.16.10½		
	23.4.2½		
<hr/>			
Ans. <u>£ 301.14.10</u>			

(35.) $3/4 = \frac{1}{8} | \text{£}185.13.9 \text{ @ } 43/4$
 185.13.9
 30.18.11½
 Ans. £ 402.6.5½

$8/. = \frac{2}{5} | \text{£}185.13.9 \text{ @ } 68/$
 3 £
 (36.) 557.1.3 = 60/.
37.2.9 = 4/.
37.2.9 = 4/.
 Ans. £ 631.6.9

$2/6 = \frac{1}{8} | \text{£}185.13.9 \text{ @ } 77/6$
 4 £
 (37.) 742.15.0 = 80/
 off 23.4.2½ = 2/6
 Ans. £ 719.10.9½

(38.) ...

<i>acr.</i>	<i>ro.</i>	<i>per.</i>	79 . 1 . 25 @ 63/.
<hr/>			
£79.8.1½†			
<hr/>			
3 £			
<hr/>			
$3/. = \frac{1}{20}$	238.4.4½ = 60/.		
	11.18.2½ = 3/.		
<hr/>			
Ans. <u>£ 250.2.7</u>			

$10/. = \frac{1}{2} | \text{£}79.8.1½ \text{ @ } 71/6$
 3 £
 (39.) 238.4.4½ = 60/.
 $1/. = \frac{1}{10} | 39.14.0¾ = 10/.$
 $6d. = \frac{1}{2} | 3.19.4¼ = 1/.$
1.19.8¼ = 6d.
 Ans. £ 283.17.6¼

* At £1 ³/₄ quarter, a bush. is 2/6. and a peck 7½d.
 † At £1 ³/₄ acre, 1 rood is 5/. and a perch or pole 1½d.

<p>(40.) $5/ = \frac{1}{4} \left \begin{array}{l} \text{£}79 . 8 . 1\frac{1}{2} @ 75/. \\ \hline 4\text{£} \\ \hline 317 . 12 . 6 = 80/. \\ \text{off } 19 . 17 . 0\frac{1}{4} = 5/. \\ \hline \text{Ans. } \text{£ } 297 . 15 . 5\frac{1}{4} \end{array} \right.$</p>	<p>$2/6 = \frac{1}{8} \left \begin{array}{l} \text{£}79 . 8 . 1\frac{1}{2} @ 82/6 \\ \hline 4\text{£} \\ \hline 317 . 12 . 6 = 80/. \\ \hline 9 . 18 . 6 = 2/6. \\ \hline \text{Ans. } \text{£ } 327 . 11 . 0 \end{array} \right.$</p>
--	--

(42.) $10/ = \frac{1}{2} \left| \begin{array}{l} \text{£}79 . 8 . 1\frac{1}{2} @ 90/. \\ \hline 4\text{£} \\ \hline 317 . 12 . 6 = 80/. \\ \hline 39 . 4 . 10\frac{3}{4} = 10/. \\ \hline \text{Ans. } \text{£}357 . 6 . 6\frac{3}{4} \end{array} \right.$

PRACTICAL ABBREVIATIONS.

I. To find the value of a dozen.

	<i>Ans.</i>		<i>Ans.</i>
(1.)..... 12lb. @ 11d. is	11/.	(5.)..... 12lb. @ 15½d. is	15/6
(2.)..... 12lb. @ 10½d. is	10/6	(6.)..... 12lb. @ 18d. is	18/.
(3.)..... 12lb. @ 1/5 is	17/.	(7.)..... 12lb. @ 19½d. is	19/6
(4.)..... 12yd. @ 2/9 is	33/.	(8.)..... 12lb. @ 3/8 is	44/.

II. To find the value of a single article, at a price ₹ dozen.

	<i>₹ doz.</i>	<i>Ans.</i>		<i>₹ doz.</i>	<i>Ans.</i>		
(1.) 13 articles @	2/6	is	2/8½	(8.) 9 articles @	4/6	is	3/4½
(2.) 11	@ 3/.	is	2/9	(9.) 7	@ 5/.	is	2/11
(3.) 10	@ 3/3	is	2/8½	(10.) 11	@ 5/3	is	4/9¾
(4.) 14	@ 3/6	is	4/1	(11.) 16	@ 6/.	is	8/.
(5.) 15	@ 3/9	is	4/8¼	(12.) 8	@ 7/9	is	5/2
(6.) 18	@ 4/.	is	6/.	(13.) 18	@ 8/.	is	12/.
(7.) 9	@ 4/3	is	3/2¼	(14.) 10	@ 9/6	is	7/11

III. To find the price of a single article, at so much a score.

	<i>Ans.</i>		
(1.)..... 20 articles for	£ 2 . 5 . 0	is	2/3
(2.)..... 20	for 3 . 10 . 0	is	3/6
(3.)..... 20	for 4 . 15 . 0	is	4/9
(4.)..... 20 cwt. for	18 . 13 . 4	is	18/8
(5.)..... 20 quires	3 . 7 . 6	is	3/4½
(6.)..... Discount on	32 . 6 . 8	is	32/4
(7.)..... Interest on	56 . 15 . 0	is	56/9

} each.

IV. To find the value of a cwt. at so much p lb.

<i>Ans.</i>	
(1.) At $7d. \times 9/4 =$	$\text{£}3. 5. 4$ (11.) $9/4 \times 9 = 84/.$
(2.) At $8d. \times 9/4 =$	$3. 14. 8$ $3 \text{ far. } \frac{7}{7}$ <i>Ans.</i>
(3.) At $9d. \times 9/4 =$	$4. 4. 0$ $91 \times 2 = \text{£}9. 2. 0$
(4.) At $10d. 156 \text{ lb.} =$	$6. 10. 0$
(5.) At $9\frac{1}{2}d. \times 9/4 =$	$4. 8. 8$
(6.) At $10\frac{1}{4}d. \times 9/4 =$	$4. 15. 8$ (12.) $9/4 \times 3 = 28$
(7.) At $11\frac{3}{4}d. \times 9/4 =$	$5. 9. 8$ $\frac{10\frac{1}{2}d.}{14}$
(8.) At $12\frac{1}{2}d. \times 9/4 =$	$5. 16. 8$ $\frac{\frac{1}{2}d. 280}{14}$
(9.) At $7\frac{1}{2}d. \times 9/4 =$	$3. 10. 0$ <i>Ans.</i>
(10.) At $8\frac{1}{4}d. \times 14/ =$	$5. 15. 6$ <u><u>shill. 294,</u></u> or $\text{£}14. 14. 0$

V. To find the price of a single lb. at so much p cwt.

- (1.)..... $35/. \times 3 = \frac{105}{7} = 15$ farthings, or $3\frac{3}{4}d. \text{ p lb.}$ *Ans.*
Divide by 7
- (2.)..... $37/4 \times 3 = \frac{112}{7} = 16$ farthings, or $4d. \text{ p lb.}$ *Ans.*
- (3.)..... $46/. \times 3 = \frac{138}{7} = 19\frac{5}{7}$ farthings, or $5d.$ nearly. *Ans.*
- (4.)..... $63/. \times 3 = \frac{189}{7} = 27$ farthings, or $6\frac{3}{4}d. \text{ p lb.}$ *Ans.*
- (5.)..... $70/. \times 3 = \frac{210}{7} = 30$ farthings, or $7\frac{1}{2}d. \text{ p lb.}$ *Ans.*
- (6.)..... $74/8 \times 3 = \frac{224}{7} = 32$ farthings, or $8d. \text{ p lb.}$ *Ans.*
- (7.)..... $77/4 \times 3 = \frac{232}{7} = 33\frac{1}{7}$ farthings, or $8\frac{1}{4}d. \text{ p lb.}$ *Ans.*
- (8.)..... $80/8 \times 3 = \frac{242}{7} = 34\frac{4}{7}$ farthings, or $8\frac{1}{2}d. \text{ p lb.}$ *Ans.*
- (9.)..... $84/. \times 3 = \frac{252}{7} = 36$ farthings, or $9d. \text{ p lb.}$ *Ans.*

VI. To find the value of 240 articles.

	Ans.
(1.) Article @ $7\frac{1}{2}d.$ = 30 farthings + 4 =	£ 7 . 10 . 0
(2.) @ $9\frac{1}{4}d.$ = 37 farthings + 4 =	9 . 5 . 0
(3.) @ $10\frac{1}{2}d.$ = 42 farthings + 4 =	10 . 10 . 0
(4.) @ $11\frac{3}{4}d.$ = 47 farthings + 4 =	11 . 15 . 0
(5.) @ $15d.$ or	15 . 0 . 0
(6.) @ $17\frac{1}{2}d.$ = 70 farthings + 4 =	17 . 10 . 0
(7.) @ $21d.$ = 84 farthings + 4 =	21 . 0 . 0
(8.) For 360 lb. $\frac{3}{9}$ = 45 pence, or	45 . 0 . 0
(9.) 480 lb. $\frac{6}{8}$ = 80 pence, or	80 . 0 . 0
(10.)... 120 lb. $\frac{3}{4}$ = 40 pence, or	40 . 0 . 0

VII. To find the value of 120 articles, or six score.

	Ans.
(1.) Articles @ $6\frac{1}{4}d.$ = 25 farthings + 8 =	£ 3 . 2 . 6
(2.) @ $9\frac{1}{2}d.$ = 38 farthings + 8 =	4 . 15 . 0
(3.) @ $10\frac{3}{4}d.$ = 43 farthings + 8 =	5 . 7 . 6
(4.) @ $13d.$ = 130 shillings, or	6 . 10 . 0
(5.) @ $14\frac{1}{2}d.$ = 145 shillings, or	7 . 5 . 0
(6.) @ $16\frac{3}{4}d.$ × 3 = $50\frac{1}{4}d.$ or	24 . 7 . 6
(7.) @ $19\frac{1}{2}d.$ × 4 = $78d.$ =	39 . 0 . 0
(8.) @ $5\frac{1}{2} ÷ 2 = 31d.$ =	15 . 10 . 0

VIII. To find the value of 100 articles, or five score.

<p>(1.) At 9/. × 5 =</p> <p>(2.) At 11/. × 5 =</p> <p>(3.) At 7/. × 5 =</p> <p>(4.) At 18/. × 5 =</p> <p>(5.) At 23/. × 5 =</p> <p>(6.) At $3\frac{3}{4}d.$ = 30/. + $\frac{1}{3}$</p> <p>(7.) At $4\frac{1}{2}d.$ = 36/. + $\frac{1}{6}$</p>	Ans.	<p>(8.) Say @ 1/. for 100 =</p> <p>$7d.$ = 28 far. =</p> <p>28 pence =</p> <p>Ans. for 100 =</p> <p>7.18.4</p> <p>Ans. for 200 =</p> <p>15.16.8</p>
		<p>£45 . 0 . 0</p> <p>55 . 0 . 0</p> <p>35 . 0 . 0</p> <p>90 . 0 . 0</p> <p>115 . 0 . 0</p> <p>1 . 11 . 3</p> <p>1 . 17 . 6</p>

(9.)..... @ 2/. × 5	= £10 . 0 . 0
10d. or 40 far.	= 4 . 0 . 0
10 pence	= 0 . 3 . 4
	£14 . 3 . 4
	3
Ans. for 300.....	£42 . 10 . 0

(10.)..... At $17\frac{1}{2}d.$ = 70/. + $\frac{2}{11}$ = £3 . 12 . 11

IX. *To find the value of 144 articles, or a gross.*

- | | |
|--|--|
| (1.) At 8 <i>d.</i> is, first, £4 . 0 . 0
Then Add $\frac{1}{5}$, or 0 . 16 . 0
Ans. <u>£4 . 16 . 0</u> | (7.) At 19 $\frac{1}{2}$ <i>d.</i> is, first, £9 . 15 . 0
Add $\frac{1}{5}$, or 1 . 19 . 0
Ans. <u>£11 . 14 . 0</u> |
| (2.) At 9 $\frac{1}{2}$ <i>d.</i> is, first, £4 . 15 . 0
Add $\frac{1}{5}$, or 0 . 19 . 0
Ans. <u>£5 . 14 . 0</u> | (8.) At 20 $\frac{1}{4}$ <i>d.</i> is, first, £10 . 2 . 6
Add $\frac{1}{5}$, or 2 . 0 . 6
Ans. <u>£12 . 3 . 0</u> |
| (3.) At 10 $\frac{1}{2}$ <i>d.</i> is, first, £5 . 5 . 0
Add $\frac{1}{5}$, or 1 . 1 . 0
Ans. <u>£6 . 6 . 0</u> | (9.) At 22 $\frac{1}{2}$ <i>d.</i> is, first, £11 . 5 . 0
Add $\frac{1}{5}$, or 2 . 5 . 0
Ans. <u>£13 . 10 . 0</u> |
| (4.) At 13 <i>d.</i> is, first, £6 . 10 . 0
Add $\frac{1}{5}$, or 1 . 6 . 0
Ans. <u>£7 . 16 . 0</u> | (10.) At 27 <i>d.</i> is, first, £13 . 10 . 0
Add $\frac{1}{5}$, or 2 . 14 . 0
Ans. <u>£16 . 4 . 0</u> |
| (5.) At 15 $\frac{1}{2}$ <i>d.</i> is, first, £7 . 15 . 0
Add $\frac{1}{5}$, or 1 . 11 . 0
Ans. <u>£9 . 6 . 0</u> | (11.) At 30 <i>d.</i> is, first, £15 . 0 . 0
Add $\frac{1}{5}$, or 3 . 0 . 0
Ans. <u>£18 . 0 . 0</u> |
| (6.) At 18 <i>d.</i> is, first, £9 . 0 . 0
Add $\frac{1}{5}$, or 1 . 16 . 0
Ans. <u>£10 . 16 . 0</u> | (12.) At 45 <i>d.</i> is, first, £22 . 10 . 0
Add $\frac{1}{5}$, or 4 . 10 . 0
Ans. <u>£27 . 0 . 0</u> |

X. *To find the value of 1000 articles.*

- | | |
|---|--|
| (1.) At 2 $\frac{1}{2}$ <i>d.</i> is, first, £10 . 0 . 0
10 tenpences, 0 . 8 . 4
Ans. <u>£10 . 8 . 4</u> | (4.) At 6 $\frac{1}{2}$ <i>d.</i> is, first, £26 . 0 . 0
and 26 tenpences, 1 . 1 . 8
Ans. <u>£27 . 1 . 8</u> |
| (2.) At 3 $\frac{3}{4}$ <i>d.</i> is..... £15 . 0 . 0
and 15 tenpences, 0 . 12 . 6
Ans. <u>£15 . 12 . 6</u> | (5.) At 8 $\frac{1}{4}$ <i>d.</i> is, first, £33 . 0 . 0
Add $\frac{1}{4}$ 1 . 7 . 6
Ans. <u>£34 . 7 . 6</u> |
| (3.) At 5 <i>d.</i> is..... £20 . 0 . 0
and 20 tenpences, 0 . 16 . 8
Ans. <u>£20 . 16 . 8</u> | (6.) At 10 $\frac{1}{2}$ <i>d.</i> is..... £42 . 0 . 0
and 42 tenpences, 1 . 15 . 0
Ans. <u>£43 . 15 . 0</u> |

(7.) At $11\frac{1}{4}d.$ is... £45 . 0 . 0 (8.) At $13d.$ for 2000 is £104 . 0 . 0
 and 45 tenpences, 1 . 17 . 6 *Add* 4 . 6 . 8
Ans. £46 . 17 . 6 *Ans.* £108 . 6 . 8

(9.)... At $14d.$ for 500 is..... £28 . 0 . 0
 and 28 tenpences 1 . 3 . 4
Ans. £29 . 3 . 4

XI. To find the value of 1200 articles, at a certain price.

(1.) At $8\frac{1}{4}d.$ is..... £33 . 0 . 0 (4.) At $22d.$ for 2400 is £88 . 0 . 0
Add $\frac{1}{4}^*$ 8 . 5 . 0 *Add* $\frac{1}{4}$ 22 . 0 . 0
Ans. £41 . 5 . 0 *Ans.* £110 . 0 . 0

(2.) At $9\frac{3}{4}d.$ is..... £39 . 0 . 0 (5.) At $54d.$ for 4800 is £216 . 0 . 0
Add $\frac{1}{4}$ 9 . 15 . 0 *Add* $\frac{1}{4}$ 54 . 0 . 0
Ans. £48 . 15 . 0 *Ans.* £270 . 0 . 0

(3.) At $10\frac{1}{2}d.$ is... £42 . 0 . 0 (6.) At $21\frac{1}{4}d.$ is £85 . 0 . 0
Add $\frac{1}{4}$ 10 . 10 . 0 *Add* $\frac{1}{4}$ 21 . 5 . 0
Ans. £52 . 10 . 0 1000 = 106 . 5 . 0
 500 = £53 . 2 . 6

XII. To find the expense or income for a year, at a certain rate p day.

(1.)	14 pence... =	£	s.	d.	(2.)	$19\frac{1}{2}$ pence... =	£	s.	d.
	half ...	14	0	0		half ...	19	10	0
	14 { fourpences	0	4	8		$19\frac{1}{2}$ { fourpences	0	6	6
	{ pence...	0	1	2		{ pence.....	0	1	$7\frac{1}{2}$
	<i>Ans.</i> <u>£21 . 5 . 10</u>					<i>Ans.</i> <u>£29 . 13 . $1\frac{1}{2}$</u>			

(3.)..... At $2/3\frac{3}{4}$ or $27\frac{3}{4}d.$ is..... £ 27 . 15 . 0
 half 13 . 17 . 6
 $27\frac{3}{4}$ { fourpences 0 . 9 . 3
 { pence 0 . 2 . $3\frac{3}{4}$
Ans. £42 . 4 . $0\frac{3}{4}$

* In the rule of the Commercial Arithmetic, add $\frac{1}{4}$, p. 84.

DEDUCTIONS ON WEIGHTS.

$$(1.) \begin{array}{r} \text{cwt. qr. lb.} \\ 750 . 1 . 11 \text{ @ } 2\frac{1}{2} \text{ lb. } \text{ } \text{ } 100 \\ \frac{1}{40} \underline{\underline{18 . 3 . 1}} \text{ tare. Ans.} \end{array}$$

$$(9.) \begin{array}{r} \text{cwt. qr. lb.} \\ \frac{1}{7} 184 . 2 . 21 \text{ @ } 16 \text{ lb.} \\ \underline{\underline{26 . 1 . 15}} \text{ Ans.} \end{array}$$

$$(2.) \begin{array}{r} \text{cwt. qr. lb.} \\ 543 . 2 . 16 \text{ @ } 4 \text{ lb. } \text{ } 100 \\ \frac{1}{25} \underline{\underline{21 . 2 . 27}} \text{ tare. Ans.} \end{array}$$

$$(10.) \dots \begin{array}{r} \text{cwt. qr. lb.} \\ 6 . 1 . 11 \text{ gross.} \\ \text{off } 1 . 1 . 16 \text{ tare.} \\ \underline{\quad 4 . 3 . 23 \text{ net.}} \end{array}$$

$$(3.) \begin{array}{r} \text{cwt. qr. lb.} \\ 352 . 3 . 8 \text{ @ } 5 \text{ } \text{ } \text{ cent.} \\ \frac{1}{20} \text{ is } \underline{\underline{17 . 2 . 15\frac{3}{4}}} \text{ Ans.} \end{array}$$

$$\begin{array}{r} \frac{1}{5} 555 \text{ lb. @ } 4/6 \\ \frac{1}{8} 111 \text{ lb. @ } 4/. \\ \underline{\quad 13 . 17 . 6} \\ \underline{\underline{\text{£}124 . 17 . 6}} \text{ Ans.} \end{array}$$

$$(4.) \begin{array}{r} \text{cwt. qr. lb.} \\ 614 . 0 . 24 \text{ @ } 3\frac{1}{2} \text{ lb. } \text{ } \text{ } \text{ cwt.} \\ \frac{1}{32} \text{ is } \underline{\underline{19 . 0 . 21\frac{3}{4}}} \text{ Ans.} \end{array}$$

$$(11.) \dots \begin{array}{r} \text{cwt. qr. lb.} \\ 194 . 3 . 12 \text{ gross.} \\ \text{off } 23 . 3 . 20 \text{ tare.} \\ \underline{\quad 170 . 3 . 20 \text{ net weight.}} \end{array}$$

$$(5.) \begin{array}{r} \text{cwt. qr. lb.} \\ 465 . 2 . 0 \text{ @ } 7 \text{ lb. } \text{ } \text{ } \text{ cwt.} \\ \frac{1}{16} \text{ is } \underline{\underline{29 . 0 . 10\frac{1}{2}}} \text{ tare. Ans.} \end{array}$$

$$\frac{1}{32} \left\{ \begin{array}{l} 4 \left| \begin{array}{l} 19144 \text{ lb. @ } 7\frac{1}{2} \text{ } \text{ } \text{ lb.} \\ \underline{\quad 4786} \\ \text{£ } 598 . 5 \end{array} \right. \text{ 2nd Ans.} \end{array} \right.$$

$$(6.) \begin{array}{r} \text{cwt. qr. lb.} \\ 292 . 2 . 14 \text{ @ } 8 \text{ lb. } \text{ } \text{ } \text{ cwt.} \\ \frac{1}{14} \text{ is } \underline{\underline{20 . 3 . 17}} \text{ Ans.} \end{array}$$

$$(12.) \dots \begin{array}{r} \text{cwt. qr. lb.} \\ 241 . 0 . 6 \text{ gross.} \\ \underline{\quad 2 . 16 \text{ draft.}} \end{array}$$

$$(7.) \begin{array}{r} \text{cwt. qr. lb.} \\ \frac{1}{8} 219 . 3 . 20 \text{ @ } 12 \text{ lb.} \\ \text{off } \frac{1}{7} \left\{ \begin{array}{l} 27 . 1 . 27 = 14 \text{ lb.} \\ \underline{\quad 3 . 3 . 20 = 2 \text{ lb.}} \\ \underline{\underline{23 . 2 . 7}} \text{ Ans.} \end{array} \right. \end{array}$$

$$\frac{1}{25} \left\{ \begin{array}{l} \text{off } \left\{ \begin{array}{l} 240 . 1 . 18 \text{ @ } 4 \text{ lb. } \text{ } 100. \\ \underline{\quad 9 . 2 . 13} \\ 230 . 3 . 5 \text{ net. 1st Ans.} \end{array} \right. \end{array} \right.$$

$$2/. \frac{1}{10} \left\{ \begin{array}{l} 25849 \text{ lb. @ } 2/3 \\ \underline{\quad 2584 . 18} \\ 323 . 2 . 3 \end{array} \right.$$

$$\underline{\underline{\text{£}2908 . 0 . 3}} \text{ 2nd Ans.}$$

$$(8.) \begin{array}{r} \text{cwt. qr. lb.} \\ \frac{1}{8} 198 . 0 . 8 \text{ @ } 14 \text{ lb. } \text{ } \text{ } \text{ cwt.} \\ \underline{\underline{24 . 3 . 1}} \text{ Ans.} \end{array}$$

(13.)... $\begin{array}{r} \text{cwt. qr. lb.} \\ 25 . 2 . 19 \text{ gross.} \\ \text{off } 2 . 0 . 16 \text{ tare.} \\ \hline 23 . 2 . 3 \text{ net.} \\ 4/. \frac{1}{5} \overline{)2635 \text{ lb. @ } 4/9} \\ 6d. \frac{1}{8} \overline{)527} \\ 3d. \frac{1}{2} \overline{)65 . 17 . 6} \\ \hline 32 . 18 . 9 \\ \hline \underline{\underline{\pounds 625 . 16 . 3 \text{ Ans.}}} \end{array}$

(14.)... $\begin{array}{r} \text{packs. st. lb.} \\ 15 . 14 . 8 \\ \text{off } 0 . 4 . 8 \text{ tare.} \\ \hline 15 . 10 . 0 \text{ net.} \end{array}$

$\begin{array}{r} \pounds 21 \text{ @ pack.} \\ 15 \frac{2}{3} \text{ packs.} \\ 315 \\ 14 \\ \hline \underline{\underline{\pounds 329 \text{ Ans.}}} \end{array}$

(15.)... $\begin{array}{r} \text{cwt. qr. lb.} \\ 85 . 3 . 22 \\ 0 . 1 . 8 \text{ draft.} \\ \hline 8 \text{ lb. } \frac{1}{14} \overline{)85 . 2 . 14 \text{ @ } 10 \text{ lb. @ cwt.}} \\ 2 \text{ lb. } \frac{1}{4} \overline{)6 . 0 . 13} \\ \hline 1 . 2 . 3 \\ \text{off } 7 . 2 . 16 \text{ tare.} \\ \hline \underline{\underline{1st \text{ Ans. } 77 . 3 . 26 \text{ net.}}} \end{array}$

$\begin{array}{r} \text{cwt. qr. lb.} \\ 77 . 3 . 26 \text{ @ } 84/. \\ 5 . 2 \frac{1}{4} \\ \hline \frac{1}{5} \overline{)77 . 19 . 7 \frac{5}{7} = 20/.} \\ 4 \pounds \\ \hline 311 . 18 . 6 \frac{3}{4} = 80/. \\ 15 . 11 . 11 \frac{1}{4} = 14/. \\ \hline \underline{\underline{\pounds 327 . 10 . 6 \text{ 2nd Ans.}}} \end{array}$

(16.)... $\begin{array}{r} \text{cwt. qr. lb.} \\ \frac{1}{5} \overline{)331 . 3 . 12 \text{ @ } 14 \text{ lb.}} \\ \text{off } 41 . 1 . 26 \text{ tare.} \\ \hline \underline{\underline{1st \text{ Ans. } 290 . 1 . 14 \text{ net weight.}}} \end{array}$

$\begin{array}{r} \pounds 290 . 7 . 6 = 20/. \\ \frac{1}{20}, \frac{1}{8} \overline{)290 . 7 . 6 = 20/.} \\ 36 . 5 . 11 \frac{1}{4} = 2/6 \\ 14 . 10 . 4 \frac{1}{2} = 1/. \\ \hline \underline{\underline{2nd \text{ Ans. } = \pounds 631 . 11 . 3 \frac{3}{4} \text{ value.}}} \end{array}$

CASE II.

(1.)... $\begin{array}{r} \text{cwt. qr. lb.} \\ 2 . 3 . 15 \\ 10 \text{ bales.} \\ \hline 28 . 3 . 10 \\ 20 \text{ tare.} \\ \hline \frac{1}{28} \overline{)28 . 2 . 18} \\ 1 . 0 . 11 \frac{1}{2} \text{ tret.} \\ \hline \underline{\underline{1st \text{ Ans. } 27 . 2 . 6 \frac{1}{2} \text{ net weight.}}} \end{array}$

$\begin{array}{r} 15d. = \frac{1}{16} \overline{)3086 \frac{1}{2} \text{ lb. @ } 1/3 \frac{3}{4}} \\ \frac{3}{4}d. \frac{1}{20} \overline{)192 . 17 . 6} \\ 9 . 12 . 10 \frac{1}{2} \\ \frac{1}{2} \text{ lb. } \overline{)0 . 0 . 7 \frac{1}{4}} \\ \hline \underline{\underline{2nd \text{ Ans. } \pounds 202 . 11 . 0 \frac{1}{4} \text{ value.}}} \end{array}$

$$\begin{array}{r}
 \text{(2.)... } \begin{array}{l} \text{cwt. } \text{qr. } \text{lb.} \\ 20 . 1 . 8 \text{ gross.} \\ 5 . 0 . 6 \text{ tare.} \\ \hline 15 . 1 . 2 \\ 16 \text{ draft.} \\ \hline 15 . 0 . 14 \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 1694 \text{ lb.} \\
 51 \text{ dust.} \\
 \frac{1}{28} \overline{)1643} \\
 63 \text{ tret.} \\
 \hline
 \text{Ans. } \underline{\underline{1580 \text{ lb. net.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(3.)... } \begin{array}{l} \text{cwt. } \text{qr. } \text{lb.} \\ 15 . 2 . 1 \\ 8 \text{ draft.} \\ \hline \frac{1}{28} \overline{)15 . 1 . 21} \\ 0 . 2 . 5\frac{3}{4} \\ \hline \frac{1}{28} \overline{)14 . 3 . 15\frac{1}{4}} \text{ suttle.} \\ \phantom{14 . 3 . 15\frac{1}{4}} 0 . 2 . 8 \text{ tret.} \\ \hline 14 . 1 . 7\frac{1}{4} \text{ net.} \\ \hline \hline \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \frac{1}{5} \overline{)163\frac{1}{4} \text{ lb. net } \bar{a} 4/8} \\
 \frac{1}{8} \overline{)320 . 12 . 0 = 4/0} \\
 53 . 8 . 8 = 8d. \\
 0 . 1 . 2 = \frac{1}{4} \text{ lb.} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 374 . 1 . 10}}
 \end{array}$$

$$\begin{array}{r}
 \text{(4.)... } \begin{array}{l} \text{cwt. } \text{qr. } \text{lb.} \\ 28 . 1 . 18 \text{ gross.} \\ 5 . 3 . 0 \text{ tare.} \\ \hline 22 . 2 . 18 \\ 0 . 1 . 12 \text{ draft \& cloff.} \\ \hline \text{Ans. } \underline{\underline{22 . 1 . 6 \text{ net.}}} \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \text{(5.)... } \begin{array}{l} \text{cwt. } \text{qr. } \text{lb.} \\ 10 . 3 . 6 \text{ gross.} \\ 0 . 0 . 6 \text{ tare.} \\ \hline 10 \text{ cwt.} \\ 7 \text{ stone each.} \\ \frac{1}{40} \overline{)70 \text{ stones.}} \\ \phantom{70 \text{ stones.}} 1\frac{3}{4} \\ \hline 68\frac{1}{4} \text{ stones, net.} \end{array} \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \frac{1}{2} \overline{)68\frac{1}{4} \text{ stones } \bar{a} 11/6} \\
 \frac{1}{10} \overline{)34 . 0 . 0} \\
 \frac{1}{2} \overline{)3 . 8 . 0} \\
 1 . 14 . 0 \\
 0 . 2 . 10\frac{1}{2} \\
 \hline
 \text{Ans. } \underline{\underline{\pounds 39 . 4 . 10\frac{1}{2}}}
 \end{array}$$

REDUCTION OF FRACTIONS.

CASE I., page 88.

$$\text{(1. to 3.) } 5\frac{2}{3} = 5 \times 3 + 2 = \frac{17}{3}; \quad 7\frac{3}{4} = 7 \times 4 + 3 = \frac{31}{4}; \\
 8\frac{1}{2} = 8 \times 2 + 1 = \frac{17}{2}, \text{ Ansrs.}$$

$$\text{(4. to 6.) } 6\frac{4}{5} = 6 \times 5 + 4 = \frac{34}{5}; \quad 9\frac{5}{8} = 9 \times 8 + 5 = \frac{59}{8}; \\
 12\frac{7}{8} = 12 \times 8 + 7 = \frac{103}{8}, \text{ Ansrs.}$$

$$\text{(7. to 9.) } 17\frac{5}{12} = 17 \times 12 + 5 = \frac{209}{12}; \quad 21\frac{9}{14} = 21 \times 14 + 9 = \frac{303}{14}; \\
 132\frac{15}{18} = 132 \times 16 + 15 = \frac{2127}{18}, \text{ Ansrs.}$$

CASE II., page 88.

- (1. to 3.) Reduce $\frac{17}{3} = 17 \div 3 = 5\frac{2}{3}$; $\frac{38}{5} = 38 \div 5 = 7\frac{3}{5}$;
 $\frac{17}{2} = 17 \div 2 = 8\frac{1}{2}$ *Ansrs.*
 (4. to 6.) $\frac{96}{7} = 96 \div 7 = 13\frac{5}{7}$; $\frac{76}{4} = 76 \div 4 = 19$;
 $\frac{239}{11} = 239 \div 11 = 21\frac{8}{11}$, *Ansrs.*
 (7. to 9.) $\frac{173}{8} = 173 \div 8 = 21\frac{5}{8}$; $\frac{280}{8} = 280 \div 8 = 35$;
 $\frac{1175}{12} = 1175 \div 12 = 97\frac{11}{12}$, *Ansrs.*

CASE III., page 89.

(1)..... Reduce $\frac{20}{48}$ to its lowest terms.

Note.—It is obvious on inspection that both terms are divisible by 4.

Therefore $\frac{20}{48} \div 4 = \frac{5}{12}$, *Ans.*

(2.) Reduce $\frac{64}{184}$ to its lowest terms. (3.) Reduce $\frac{204}{540}$ to its lowest terms.

64)184(2
 128
 — 56)64(1
 56
 — last divisor 8)56(7
 56
 —

Therefore $\frac{64}{184} \div 8 = \frac{8}{23}$, *Ans.*

204)540(2
 408
 — 132)204(1
 132
 — 72)132(1
 72
 — 60)72(1
 60
 — last divisor 12)60(5
 60
 —

Therefore $\frac{204}{540} \div 12 = \frac{17}{45}$, *Ans.*

(4.) Reduce $\frac{290}{481}$ to its lowest terms.

290)481(1
 290
 — 191)290(1
 191
 — 99)191(1
 99
 — 92)99(1
 92
 — 7)92(13
 91
 — last divisor 1

Note.—As there is no common measure greater than 1, this fraction is already in its lowest terms.

(5.)..... Reduce $\frac{345}{800} \div 15 = \frac{23}{40}$, *Ans.*

$$\begin{array}{r}
 345)600(1 \\
 \underline{345} \\
 255)345(1 \\
 \underline{255} \\
 90)255(2 \\
 \underline{180} \\
 75)90(1 \\
 \underline{75} \\
 \text{last divisor } 15)75(5 \\
 \underline{75} \\
 \hline
 \end{array}$$

(6.) Reduce $\frac{27}{934} \div 9 = \frac{3}{108}$, *Ans.*

$$\begin{array}{r}
 27)954(35 \\
 \underline{81} \\
 144 \\
 135 \\
 \text{last divisor } 9)27(3 \\
 \underline{27} \\
 \hline
 \end{array}$$

(7.) Reduce $\frac{820}{884} \div 4 = \frac{155}{218}$, *Ans.*

$$\begin{array}{r}
 620)864(1 \\
 \underline{620} \\
 244)620(2 \\
 \underline{488} \\
 132)244(1 \\
 \underline{132} \\
 112)132(1 \\
 \underline{112} \\
 20)112(5 \\
 \underline{100} \\
 12)20(1 \\
 \underline{12} \\
 8)12(1 \\
 \underline{8} \\
 \text{last divisor } 4)8(2 \\
 \underline{8} \\
 \hline
 \end{array}$$

(8.) Reduce $\frac{1080}{1728} \div 216 = \frac{5}{8}$. *Ans.*

$$\begin{array}{r} 1080)1728(1 \\ \underline{1080} \\ 648)1080(1 \\ \underline{648} \\ 432)648(1 \\ \underline{432} \\ \text{last divisor } 216)432(2 \\ \underline{432} \\ \hline \end{array}$$

CASE IV., page 89.

$$(1.) \dots \left. \begin{array}{l} \text{Red. } \frac{2}{3} \times 6 = \frac{12}{18} \\ \text{com. den. } \left\{ \begin{array}{l} \frac{5}{8} \times 3 = \frac{15}{24} \\ \frac{7}{9} \times 2 = \frac{14}{18} \end{array} \right\} \text{Ans.} \end{array} \right\} \quad (3.) \dots \left. \begin{array}{l} \text{Red. } \frac{5}{8} \times 9 = \frac{45}{72} \\ \frac{8}{9} \times 8 = \frac{64}{72} \\ \frac{5}{12} \times 6 = \frac{30}{72} \end{array} \right\} \text{Ans.}$$

$$(2.) \dots \left. \begin{array}{l} \text{Red. } \frac{4}{5} \times 5 = \frac{15}{20} \\ \frac{2}{5} \times 4 = \frac{8}{20} \\ \frac{9}{10} \times 2 = \frac{18}{20} \end{array} \right\} \text{Ans.} \quad (4.) \dots \left. \begin{array}{l} \text{Red. } \frac{3}{7} \times 4 = \frac{12}{28} \\ \frac{9}{14} \times 2 = \frac{18}{28} \\ \frac{11}{28} \times 1 = \frac{11}{28} \end{array} \right\} \text{Ans.}$$

(5.)... Reduce the following fractions to similar ones.

$$\text{com. den. } \left\{ \begin{array}{l} \frac{1}{2} \times 8 = \frac{8}{16} \\ \frac{3}{4} \times 4 = \frac{12}{16} \\ \frac{5}{8} \times 2 = \frac{10}{16} \\ \frac{9}{16} \times 1 = \frac{9}{16} \end{array} \right\} \text{Ans.}$$

CASE V.

EXERCISES, page 90.

- (1.)..... Reduce $\frac{2}{3}$ of $\frac{1}{2} = \frac{1}{3}$; and $\frac{3}{5}$ of $\frac{5}{7} = \frac{3}{7}$. *Ansrs.*
- (2.)..... $\frac{3}{4}$ of $\frac{4}{5}$ of $\frac{5}{8} = \frac{3}{8}$, or $\frac{1}{2}$. *Ans.*
- (3.)..... $\frac{4}{15}$ of $3\frac{3}{4}$, or $\frac{1}{4}$ of $\frac{10}{1} = \frac{10}{1}$. *Ans.*
- (4.)..... $\frac{2}{7}$ of $\frac{2}{5}$ of $\frac{1}{2}$ of $\frac{7}{1} = \frac{3}{5}$. *Ans.*
- (5.)..... $9\frac{7}{20}$ of $\frac{3}{4}$ of $\frac{1}{20} = \frac{561}{1600}$. *Ans.*

CASE VI.

EXERCISES, page 91.

- (1.)... $5d. = \frac{5}{12}$. *Ans.*
- (2.)... $11d. = \frac{11}{12 \times 20 = 240}$. *Ans.*
- (3.) $12/4 = 148$
 $20 \times 12 = 240$, or $\frac{37}{80}$. *Ans.*
- (4.) $17/8\frac{1}{2} = 425$
 $20 \times 12 \times 2 = 480$, or $\frac{85}{96}$. *Ans.*
- (5.)..... $\frac{6}{7}d. = \frac{6}{7 \times 12 = 84}$, or $\frac{1}{14}$ sh. *Ans.*
- (6.)..... $\frac{7}{8}d. = \frac{7}{8 \times 12 \times 20 = 1920}$ £. *Ans.*
- (7.)..... $9 \text{ dwt. } 18 \text{ gr.} = \frac{284}{12 \times 20 \times 24 = 5760}$, or $\frac{13}{320}$. *Ans.*
- (8.)..... $3 \text{ oz. } 10\frac{2}{3} \text{ dr.} = \frac{176}{16 \times 16 \times 3 = 768} = \frac{11}{48}$. *Ans.*
- (9.)..... $2 \text{ qr. } 16 \text{ lb.} = \frac{72}{4 \times 28 = 112} = \frac{9}{14}$. *Ans.*
- (10.)..... $5 \text{ stone} = \frac{5}{15 \times 1 = 15}$, or $\frac{1}{3}$. *Ans.*
- (11.)..... $3 \text{ qr. } 21 \text{ lb.} = \frac{105}{20 \times 4 \times 28 = 2240}$, or $\frac{3}{84}$. *Ans.*
- (12.)..... $12 \text{ gal.} = \frac{12}{4 \times 63 = 252}$, or $\frac{1}{21}$. *Ans.*
- (13.)..... $2\frac{3}{4}d. = \frac{11}{12 \times 4 = 48}$. *Ans.*
- (14.)..... $6\frac{2}{3}d. = \frac{20}{20 \times 12 \times 3 = 720}$, or $\frac{1}{36}$. *Ans.*
- (15.)..... $3 \text{ qr. } 15\frac{5}{9} \text{ lb.} = \frac{896}{4 \times 28 \times 9 = 1008}$, or $\frac{8}{9}$ cwt. *Ans.*

- (16.)..... $3\frac{1}{3}in.=10$
 $12 \times 3 = 36$, or $\frac{5}{18}$. *Ans.*
- (17.)..... $\frac{3}{4} \times \frac{1}{36} = \frac{3}{144}$, or $\frac{1}{48}$. *Ans.*
- (18.)..... $2\frac{1}{4} pecks = 11$
 $4 \times 2 \times 4 = 32$. *Ans.*
- (19.)..... $3\frac{3}{4} bu. = 15$
 $8 \times 4 = 32$. *Ans.*
- (20.)..... $48\frac{7}{8} gal. = 391$
 $63 \times 8 = 504$. *Ans.*
- (21.)..... $14 per. 18 yd. = 441\frac{1}{2}$
 $4 \times 40 \times 30\frac{1}{4} = 4840$, or $\frac{883}{9680}$. *Ans.*
- (22.)..... $2 ro. 24 per. = 104$
 $4 \times 40 = 160$, or $\frac{12}{5}$. *Ans.*
- (23.)..... $8 yd. 2\frac{2}{3} ft. = 80$
 $1760 \times 3 \times 3 = 15840$, or $\frac{1}{198}$. *Ans.*
- (24.)..... $14 h. 40 m. = 880$
 $24 \times 60 = 1440$, or $\frac{11}{18}$. *Ans.*

CASE VII., page 92.

- (1.) $\frac{5}{12} \times \frac{12}{1} = 5d.$ *Ans.* (3.) $\frac{37}{20}$
- (2.) $\frac{11}{240} \times \frac{20 \times 12}{1} = 11d.$ *Ans.* $6,0)74,0$
12/4 *Ans.*
- (4.)..... $\frac{85}{20}$
 $96)1700$
17/8\frac{1}{2} *Ans.*
- (5.)..... $1 \times 20 \times 12 = \frac{240}{280}$, or $\frac{6}{7}d.$ *Ans.*
- (6.)..... $7 \times 20 \times 12 = \frac{1680}{1920}$, or $\frac{7}{8}d.$ *Ans.*

- (7.)..... $\frac{13 \times 12 \times 20 \times 24}{320} = 9 \text{ dwt. } 18 \text{ gr. } \textit{Ans.}$
- (8.)..... $\frac{11 \times 16 \times 16}{48} = 3 \text{ oz. } 10\frac{2}{3} \text{ dr. } \textit{Ans.}$
- (9.)..... $\frac{9 \times 4 \times 28}{14} = 2 \text{ qr. } 16 \text{ lb. } \textit{Ans.}$
- (10.)..... $\frac{1 \times 16 \times 15}{48} = 5 \text{ lb. } \textit{Ans.}$
- (11.)... .. $\frac{3 \times 20 \times 4 \times 28}{64} = 3 \text{ qr. } 21 \text{ lb. } \textit{Ans.}$
- (12.)..... $\frac{1 \times 4 \times 63}{21} = 12 \text{ gal. } \textit{Ans.}$
- (13.)..... $\frac{11 \times 12}{48} = 2\frac{3}{4} \text{ d. } \textit{Ans.}$
- (14.)... .. $\frac{1 \times 20 \times 12}{36} = 6\frac{2}{3} \text{ d. } \textit{Ans.}$
- (15.)..... $\frac{8 \times 4 \times 28}{9} = 3 \text{ qr. } 15\frac{5}{9} \text{ lb. } \textit{Ans.}$
- (16.)..... $\frac{5 \times 12}{18} = 3\frac{1}{3} \text{ inches. } \textit{Ans.}$
- (17.)..... $\frac{1 \times 3 \times 12}{48} = \frac{36}{48}$, or $\frac{3}{4} \text{ in. } \textit{Ans.}$
- (18.)..... $\frac{7 \times 4 \times 2 \times 4}{32} = 1 \text{ gal. } 3 \text{ qt. } \textit{Ans.}$
- (19.)..... $\frac{9}{\cancel{27}^3} \times \frac{\cancel{8}^3}{1} = \frac{9}{3} = 3 \text{ bush. } \textit{Ans.}$
- (20.)..... $\frac{7 \times 54}{8} = 47 \text{ gal. } 2 \text{ pt. } \textit{Ans.}$
- (21.)..... $\frac{5 \times 4 \times 40 \times 30\frac{1}{4}}{64} = 12 \text{ per. } 15\frac{1}{8} \text{ yd. } \textit{Ans.}$
- (22.)..... $\frac{13 \times 4 \times 40}{20} = 2 \text{ ro. } 24 \text{ pol. } \textit{Ans.}$

(23.)..... $\frac{1 \times 1760 \times 3}{198} = 8 \text{ yd. } 2\frac{2}{3} \text{ ft. Ans.}$

(24.)..... $\frac{11 \times 24 \times 60}{18} = 14 \text{ ho. } 40 \text{ min. Ans.}$

ADDITION OF FRACTIONS.

EXERCISES, page 93.

(1.) $\frac{1}{2} \times 6 = \frac{6}{12}$
 $\frac{2}{3} \times 4 = \frac{8}{12}$
 $\frac{3}{4} \times 3 = \frac{9}{12}$
 Ans. $1\frac{1}{12}$

(7.) $6\frac{1}{2} = 6\frac{9}{18}$
 $9\frac{5}{8} = 9\frac{15}{18}$
 $10\frac{1}{9} = 10\frac{2}{18}$
 Ans. $26\frac{4}{9}$

(2.) $\frac{1}{4} \times 21 = \frac{21}{84}$
 $\frac{5}{7} \times 12 = \frac{60}{84}$
 $\frac{1}{3} \times 28 = \frac{28}{84}$
 Ans. $1\frac{25}{84}$

(8.)... $\frac{4}{11} \times 7 \times 8 = \frac{224}{88}$
 $\frac{2}{7} \times 11 \times 8 = \frac{176}{88}$
 $\frac{5}{8} \times 11 \times 7 = \frac{385}{88}$
 $16 + 48 + 63 + 1\frac{169}{88} = 128\frac{169}{88}$
 Ans.

(3.) $\frac{2}{5} \times 8 \times 9 = \frac{144}{360}$
 $\frac{7}{8} \times 5 \times 9 = \frac{315}{360}$
 $\frac{6}{9} \times 5 \times 8 = \frac{320}{360}$
 Ans. $2\frac{59}{360}$

(9.) $\frac{3}{4}$ of a pound = 15/
 $\frac{5}{8}$ of a shill... = 10
 Ans. $15/10$

(4.) $\frac{9}{10} \times 2 \times 16 = \frac{288}{320}$
 $\frac{3}{2} \times 10 \times 16 = \frac{480}{320}$
 $\frac{15}{16} \times 10 \times 2 = \frac{300}{320}$
 Ans. $3\frac{27}{80}$

(10.)... $\frac{1}{2}$ of a penny..... $s. \ d.$
 $\frac{3}{8}$ of a pound 7 . 6
 $\frac{2}{3}$ of a shilling ... 0 . 8
 Ans. $8 . 2\frac{1}{2}$

(5.) $\frac{5}{7}$ of $\frac{2}{8} = \frac{10}{28}$, and $\frac{3}{5}$ of $\frac{7}{8} = \frac{21}{40}$
 $\frac{10}{28} \times 40 = \frac{400}{7}$
 $\frac{21}{40} \times 21 = \frac{441}{40}$
 Ans. $1\frac{1}{840}$

(11.)... $\frac{7}{8}$ qr..... $bus. \ pe. \ gal. \ qt.$
 $\frac{2}{3}$ bu..... = 7 . 0 . 0 . 0
 $\frac{3}{4}$ gal..... = 0 . 2 . 1 . $2\frac{2}{3}$
 Ans. $7 . 3 . 0 . 1\frac{2}{3}$

(6.)..... $\frac{10}{3} \times 5 \times 4 = \frac{200}{3}$
 $\frac{22}{5} \times 3 \times 4 = \frac{264}{5}$
 $\frac{31}{4} \times 3 \times 5 = \frac{465}{4}$
 Ans. $15\frac{29}{60}$

$$\begin{array}{r}
 \text{(12.)...} \quad \begin{array}{l} \frac{4}{5} \text{ last...} \\ \frac{5}{8} \text{ qr....} \\ \frac{1}{4} \text{ bu....} \\ \frac{1}{2} \text{ peck..} \end{array} \begin{array}{l} \text{gr. bu. pe. gal.} \\ = 8 . 0 . 0 . 0 \\ = 0 . 5 . 0 . 0 \\ = 0 . 0 . 1 . 0 \\ = 0 . 0 . 0 . 1 \end{array} \\
 \text{Ans.} \quad \underline{\underline{8 . 5 . 1 . 1}}
 \end{array}$$

$$\begin{array}{r}
 \text{(14.)...} \quad \begin{array}{l} \frac{5}{8} \text{ yd.....} \\ \frac{3}{4} \text{ foot.....} \\ \frac{2}{3} \text{ inch} \end{array} \begin{array}{l} \text{ft. in. p.} \\ = 2 . 6 . 0 \\ = 0 . 9 . 0 \\ = 0 . 0 . 8 \end{array} \\
 \text{Ans.} \quad \underline{\underline{3 . 3 . 8}}
 \end{array}$$

$$\begin{array}{r}
 \text{(13.)...} \quad \begin{array}{l} \frac{8}{9} \text{ hhd.....} \\ \frac{8}{9} \text{ gal.....} \end{array} \begin{array}{l} \text{gal. qt. pt.} \\ = 56 . 0 . 0 \\ = 0 . 1 . 1 \end{array} \\
 \text{Ans.} \quad \underline{\underline{56 . 1 . 1}}
 \end{array}$$

$$\begin{array}{r}
 \text{(15.)...} \quad \begin{array}{l} \frac{1}{4} \text{ of a week} \\ \frac{7}{8} \text{ of a day...} \\ \frac{2}{3} \text{ of an hour} \end{array} \begin{array}{l} \text{da. ho. min.} \\ = 1 . 18 . 0 \\ = 0 . 21 . 0 \\ = 0 . 0 . 24 \end{array} \\
 \text{Ans.} \quad \underline{\underline{2 . 15 . 24}}
 \end{array}$$

SUBTRACTION OF FRACTIONS.

EXERCISES, pages 94 and 95.

$$\begin{array}{r}
 \text{(1.)...} \quad \text{From} \quad \frac{7}{8} \text{ or } \frac{14}{16} \\
 \text{Sub.} \quad \frac{3}{4} \text{ or } \frac{12}{16} \\
 \text{Ans.} \quad \underline{\underline{\frac{2}{16} \text{ or } \frac{1}{8}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(6.)...} \quad \text{From} \quad \frac{8}{9} \text{ or } \frac{16}{18} \\
 \text{Take..} \quad \frac{1}{3} \text{ of } \frac{5}{6} \text{ or } \frac{5}{18} \\
 \text{Ans.} \quad \underline{\underline{\frac{11}{18}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(2.)...} \quad \text{From} \quad \frac{5}{8} \text{ or } \frac{25}{80} \\
 \text{Sub.} \quad \frac{2}{5} \text{ or } \frac{12}{80} \\
 \text{Ans.} \quad \underline{\underline{\frac{13}{80}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(7.)...} \quad \text{From ...} \quad 5\frac{3}{4} \text{ or } 5\frac{15}{20} \\
 \text{Take} \quad 4\frac{2}{5} \text{ or } 4\frac{8}{20} \\
 \text{Ans.} \quad \underline{\underline{1\frac{7}{20}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(3.)...} \quad \text{From} \quad \frac{1}{9} \text{ or } \frac{10}{90} \\
 \text{Sub.} \quad \frac{1}{10} \text{ or } \frac{9}{90} \\
 \text{Ans.} \quad \underline{\underline{\frac{1}{90}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(8.)...} \quad \text{From } 12\frac{1}{8} \text{ or } 12\frac{9}{72} \\
 \text{Take} \quad \frac{8}{9} \text{ or } \frac{64}{72} \\
 \text{Ans.} \quad \underline{\underline{11\frac{17}{72}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(4.)...} \quad \text{From} \quad \frac{17}{20} \text{ or } \frac{51}{60} \\
 \text{Sub.} \quad \frac{2}{3} \text{ or } \frac{40}{60} \\
 \text{Ans.} \quad \underline{\underline{\frac{11}{60}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(9.)...} \quad \text{From } 54\frac{1}{2} \text{ or } 54\frac{5}{10} \\
 \text{Take} \quad \frac{3}{10} \\
 \text{Ans.} \quad \underline{\underline{54\frac{1}{5}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(5.)...} \quad \text{From} \quad \frac{8}{11} \text{ or } \frac{56}{77} \\
 \text{Sub.....} \quad \frac{5}{7} \text{ or } \frac{55}{77} \\
 \text{Ans.} \quad \underline{\underline{\frac{1}{77}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(10.)} \quad \text{From} \quad 81 \\
 \text{Take} \quad 19\frac{5}{12} \\
 \text{Ans.} \quad \underline{\underline{61\frac{7}{12}}}
 \end{array}$$

(11.)..... From $\frac{2}{3}$ of a shilling..... = $8d.$
 Take $\frac{1}{12}$ of a penny..... = $\frac{1}{12}d.$
Ans. $\underline{\underline{7\frac{11}{12}d.}}$

(12.)..... From..... $\frac{7}{9}$ £, or $15/6\frac{4}{9}$
 Take..... $\frac{5}{8}$ sh. or $7\frac{3}{8}$
Ans. $\underline{\underline{14/11\frac{1}{8}}}$

(13.)..... From $\frac{1}{8}$ lb..... = $\begin{matrix} \text{oz.} & \text{dwt.} & \text{gr.} \\ 4 & 0 & 0 \end{matrix}$
 Take $\frac{3}{5}$ dwt..... = $\begin{matrix} 0 & 0 & 14\frac{2}{5} \end{matrix}$
Ans. $\underline{\underline{3 . 19 . 9\frac{3}{5}}}$

(14.)..... From $\frac{7}{10}$ ton..... = $\begin{matrix} \text{cwt.} & \text{qr.} & \text{lb.} \\ 14 & 0 & 0 \end{matrix}$
 Take $\frac{4}{7}$ cwt..... = $\begin{matrix} 0 & 2 & 8 \end{matrix}$
Ans. $\underline{\underline{13 . 1 . 20}}$

(15.)..... From $\frac{3}{4}$ of an ell... = $\begin{matrix} \text{qr.} & \text{na.} \\ 3 & 3 \end{matrix}$
 Take $\frac{13}{16}$ of a yard.. = $\begin{matrix} 3 & 1 \end{matrix}$
Ans. $\underline{\underline{0 . 2}}$

MULTIPLICATION OF FRACTIONS.

EXERCISES, pages 95. and 96.

(1.) $\frac{5}{8} \times \frac{1}{2} = \frac{5}{16}$ *Ans.*

(7.) $1\frac{1}{4} \times \frac{7}{9} = \frac{89}{9} = 9\frac{8}{9}$ *Ans.*

(2.) $\frac{6}{7} \times \frac{3}{4} = \frac{18}{28}$ or $\frac{9}{14}$ *Ans.*

(8.) $2\frac{49}{1} \times \frac{5}{8} = \frac{1245}{8} = 155\frac{5}{8}$ *Ans.*

(3.) $\frac{7}{8} \times \frac{1}{8} = \frac{7}{64}$ *Ans.*

(9.) $6\frac{5}{1} \times \frac{85}{11} = \frac{5525}{11} = 502\frac{3}{11}$ *Ans.*

(4.) $\frac{8}{9} \times \frac{4}{7} = \frac{32}{63}$ *Ans.*

(10.) $18\frac{7}{7} \times \frac{19}{1} = 243\frac{1}{7} = 347\frac{2}{7}$ *Ans.*

(5.) $\frac{3}{10} \times \frac{3}{4} = \frac{9}{40}$ *Ans.*

(11.) $69\frac{9}{8} \times \frac{9}{10} = \frac{6291}{80} = 78\frac{61}{80}$ *Ans.*

(6.) $\frac{55}{3} \times \frac{5}{8} = \frac{275}{8}$ or $34\frac{3}{8}$ *Ans.*

(12.) $13\frac{4}{3} \times \frac{44}{3} = \frac{586}{3} = 195\frac{2}{3}$ *Ans.*

¶(13.)..... $\frac{7}{8} \times \frac{7}{8} = \frac{49}{64} \text{ £} = 15/3\frac{3}{4} \text{ Ans.}$

(14.)..... $16\frac{7}{8} = \frac{135}{8}$, and $15\frac{1}{2} \text{ feet} = \frac{191}{12}$
 Then, $\frac{135}{8} \times \frac{191}{12} = \frac{25785}{96} = 268\frac{19}{32} \text{ feet. Ans.}$

(15.)..... $3\frac{1}{8} = \frac{19}{8}$; $2\frac{7}{12} = \frac{31}{6}$; and $11 \text{ in.} = \frac{11}{12}$
 Then, $\frac{19}{8} \times \frac{31}{6} \times \frac{11}{12} = 7\frac{431}{864} \text{ feet. Ans.}$

DIVISION OF FRACTIONS.

EXERCISES, page 97.

(1.) $\frac{1}{8} \div \frac{5}{8} (\frac{15}{8} \text{ or } 2\frac{1}{2} \text{ Ans.}$

(2.) $\frac{5}{9} \div \frac{17}{18} (\frac{153}{90} \text{ or } 1\frac{7}{10} \text{ Ans.}$

(3.) $\frac{15}{18} \div \frac{3}{18} = 5 \text{ Ans.}$

(4.) $\frac{25}{82} \times \frac{7}{4} = \frac{175}{128} \text{ or } 1\frac{47}{128} \text{ Ans.}$

(5.) $1\frac{11}{12} = \frac{23}{12}$; and $\frac{1}{2} \text{ of } \frac{3}{4} = \frac{3}{8}$

Then, $\frac{23}{12} \times \frac{3}{8} = \frac{184}{96} = 5\frac{1}{3} \text{ Ans.}$

(6.) $\frac{5}{8} \times \frac{1}{7} = \frac{5}{56} \text{ Ans.}$

(7.) $\frac{6}{7} \div \frac{1}{1} (\frac{109}{8} \text{ or } 166\frac{5}{8} \text{ Ans.}$

(8.) $\frac{8}{11} \div \frac{1}{1} (\frac{1232}{8} = 154 \text{ Ans.}$

(9.) $\frac{53}{9} \div \frac{1}{1} (\frac{612}{53} = 11\frac{29}{53} \text{ Ans.}$

(10.) $\frac{28}{5} \div \frac{1}{1} (\frac{430}{5} = 11\frac{6}{19} \text{ Ans.}$

(11.) $\frac{10}{1} \div \frac{1}{1} (\frac{19423}{110} (\frac{19423}{110} \text{ or } 176\frac{62}{110} \text{ Ans.}$

(12.) $\frac{25}{8} \div \frac{1}{4} (\frac{2877}{100} \text{ or } 28\frac{77}{100} \text{ Ans.}$

¶(13.) $\frac{3}{4} \div \frac{1}{1} (\frac{400}{3} = 133\frac{1}{3} \text{ times. Ans.}$

(14.) $18\frac{2}{3} \overline{) 72.11.3}$
 $\begin{array}{r} \phantom{18\frac{2}{3}} \overline{) 72.11.3} \\ \underline{3} \\ 56 \\ \underline{168} \\ 49 \\ \underline{20} \\ 56 \overline{) 993} (17 \\ \underline{56} \\ 433 \\ \underline{392} \\ 41 \\ \underline{12} \\ 56 \overline{) 501} (8 \\ \underline{448} \\ 53 \\ \underline{4} \\ 56 \overline{) 212} (3 \\ \underline{168} \\ 44 \\ \underline{56} = \frac{11}{14} \end{array}$

(15.) Here $\frac{35\frac{3}{4} \text{ ft.} \times 19\frac{1}{4} \text{ ft.}}{17\frac{1}{3} \text{ in.} \times 13\frac{3}{8} \text{ in.} \times \frac{1}{144} \text{ sq. in.}} = \frac{\frac{143}{4} \times \frac{77}{4}}{\frac{52}{3} \times \frac{107}{8} \times \frac{1}{144}}$; by Remark 1,

page 97. we have $\frac{\cancel{11}}{\cancel{4}} \times \frac{77}{\cancel{4}} \times \frac{3}{\cancel{8}} \times \frac{\cancel{8}}{107} \times \frac{\cancel{144}}{\cancel{1}} = \frac{11}{1} \times \frac{77}{1} \times \frac{3}{1} \times \frac{1}{107} \times \frac{18}{1} =$

$\frac{45738}{107} = 427\frac{49}{107}$ stones. *Ans.*

PRACTICAL QUESTIONS, page 98.

(1.) $\left. \begin{array}{l} \text{A... } \frac{1}{2} \text{ or } \frac{6}{12} \\ \text{B... } \frac{1}{3} \text{ or } \frac{4}{12} \\ \text{C... } \frac{1}{4} \text{ or } \frac{3}{12} \end{array} \right\} = \frac{13}{12}$

	20/.	20/.
	6	4
	13)120	13)80
<i>Ans.</i> {	A.'s share... $9/2\frac{3}{4} - \frac{1}{13}$	$6/1\frac{1}{4} - \frac{5}{13}$
	B.'s do. ... $6/1\frac{3}{4} - \frac{5}{13}$	20/.
	C.'s do. ... $4/7\frac{1}{4} - \frac{7}{13}$	3
	<u>20/. Proof.</u>	13)60
		<u>$4/7\frac{1}{4} - \frac{7}{13}$</u>

(2.) ... $\frac{6}{7} \times \frac{3}{4} = \frac{18}{28}$ or $\frac{9}{14}$ product. 1st *Ans.* $\frac{6}{7}$ guin. = 18/.

$\frac{3}{4} \div \frac{6}{7} = \frac{21}{8}$ or $2\frac{5}{8}$ quotient. 2nd *Ans.* $\frac{3}{4}$ do. = 15/9

3rd *Ans.* 2 . 3 diff.

(3.) $\frac{2}{3}$ 240 pupils.

$\frac{160}{3}$	160 writers. 1st <i>Ans.</i>
$\frac{80}{3}$	80 remainder.
$\frac{66\frac{2}{3}}{3}$	66 $\frac{2}{3}$ arithmeticians. 2nd <i>Ans.</i>
$\frac{13\frac{1}{3}}{3}$	13 $\frac{1}{3}$ book-keepers. 3rd <i>Ans.</i>

(4.) $\frac{7}{15} \times 4 = \frac{28}{15}$ A lb. troy = 12 oz. A lb. avoird. = 16 oz.

$\frac{9}{18} \times 3 = \frac{27}{18}$ 20 dwt. 16 dr.

1st *Ans.* $\frac{1}{4\frac{1}{2}}$ 48)240(5^{dwt.} 2nd 48)256(5 $\frac{1}{3}$ dr. 3rd

240	240	240
<u>240</u>	<u>240</u>	<u>240</u>
	16	16

Ans. *Ans.*

(5.) $\frac{1}{2}$ of 4 = $\frac{3}{8}$ £1600

8
3)12800
<u>£ 4266 . 13 . 4</u>

Ans.

(12.)..... A..... $\frac{3}{4}$ or 9
 B..... $\frac{2}{3}$ or 8
 If 17 : £1860 :: 9

$$\begin{array}{r} 17 \overline{)16740} \\ \underline{153} \\ 144 \\ \underline{133} \\ 1110 \\ \underline{102} \\ 900 \\ \underline{810} \\ 900 \\ \underline{810} \\ 0 \end{array}$$

A. advanced..... £ 984 . 2 . 4 $\frac{4}{17}$ } 1st Ans.
 B. advanced..... £ 875 . 17 . 7 $\frac{1}{17}$ }

shares. gains. shares.
 If 17 : £269 . 15 :: 9

$$\begin{array}{r} 17 \overline{)2427 . 15} \\ \underline{136} \\ 1067 \\ \underline{102} \\ 470 \\ \underline{42} \\ 290 \\ \underline{273} \\ 170 \\ \underline{153} \\ 170 \\ \underline{153} \\ 170 \\ \underline{153} \\ 170 \end{array}$$

£ 142 . 17 A.'s gain. } 2nd Ans.
 269 . 15 }
 £126 . 18 B.'s gain. }

First, to find how much each advanced.

(13.)..... C. advanced, ~~of~~ question..... £1200
 B. advanced $\frac{1}{4}$ more, or 1500
 A. advanced $\frac{5}{4}$ of B.'s 1875
 Sum advanced £4575
 $\frac{7}{20}$ of which is £1601 . 5 . 0, the whole loss.

Secondly, to find each partner's share of loss.

If $\frac{\text{capital.}}{61}$: $\frac{\text{loss.}}{16}$:: $\frac{1200}{16}$

$$\begin{array}{r} 61 \overline{)25620 . 0} \\ \underline{122} \\ 13400 \\ \underline{122} \\ 12000 \\ \underline{122} \\ 7800 \\ \underline{776} \\ 400 \\ \underline{396} \\ 400 \\ \underline{396} \\ 400 \end{array}$$

£420 . 0 C.'s loss.

If $\frac{£4575}{61}$: $\frac{£1601 . 5}{20}$:: $\frac{1500}{20}$

$$\begin{array}{r} 61 \overline{)32025 . 0} \\ \underline{122} \\ 20000 \\ \underline{122} \\ 7800 \\ \underline{776} \\ 400 \\ \underline{396} \\ 400 \\ \underline{396} \\ 400 \end{array}$$

£525 . 0 B.'s loss.

$$\begin{array}{r} \text{If } \frac{\pounds 4575}{61} : \frac{\pounds 1601 \cdot 5}{25} :: \frac{1875}{25} \\ \hline 61 \overline{) 40031 \cdot 5} \\ \underline{\pounds 656 \cdot 5} \text{ A's loss.} \end{array}$$

A. advanced $\pounds 1875 \cdot 0 \cdot 0$
 Deduct loss $656 \cdot 5 \cdot 0$
 A. retires with $\underline{\underline{\pounds 1218 \cdot 15 \cdot 0}}$ 1st Ans.

B. advanced $\pounds 1500 \cdot 0 \cdot 0$
 Deduct loss..... $525 \cdot 0 \cdot 0$
 B. retires with $\underline{\underline{\pounds 975 \cdot 0 \cdot 0}}$ 2nd Ans.

C. advanced $\pounds 1200 \cdot 0 \cdot 0$
 Deduct loss..... $420 \cdot 0 \cdot 0$
 C. retires with $\underline{\underline{\pounds 780 \cdot 0 \cdot 0}}$ 3rd Ans.

(14.) A. $\frac{1}{3}$ or $\frac{20}{60}$ If $\frac{24}{60} : 390 :: \frac{60}{5}$
 B. $\frac{1}{4}$ of $\frac{2}{3}$ or $\frac{1}{6}$ or $\frac{10}{60}$ $\frac{2}{5}$
 C. $\frac{1}{5}$ of $\frac{1}{2}$ or $\frac{1}{10}$ or $\frac{6}{60}$ $\frac{2}{5}$
 Sum $\frac{6}{60}$
 D. the rest, or $\frac{24}{60}$

$$\begin{array}{r} \text{ded. } \frac{1}{3} \overline{) 1950} \\ \underline{\pounds 975} \text{ sum left.} \\ \text{ded. } \frac{1}{4} \overline{) 325} \text{ A. receives. 1st Ans.} \\ \underline{650} \text{ remainder.} \\ \text{ded. } \frac{1}{5} \overline{) 162 \cdot 10} \text{ B. receives. 2d Ans.} \\ \underline{487 \cdot 10} \text{ left.} \\ \underline{97 \cdot 10} \text{ C. receives. 3d Ans.} \\ \underline{\underline{\pounds 390 \cdot 0}} \text{ D. receives. 4th An.} \end{array}$$

(15.).....

	<i>sh.</i>	<i>no.</i>	
A man	1	× 12	= 12
A woman	$\frac{3}{4}$	× 18	= $13\frac{1}{2}$
A boy	$\frac{1}{2}$	× 6	= 3
A girl	$\frac{1}{4}$	× 9	= $2\frac{1}{4}$
Sum of their shares			<u><u>$30\frac{1}{4}$</u></u>

$$\begin{array}{r}
 \begin{array}{r}
 \text{£} \quad \text{s.} \\
 30\frac{3}{4})1483.15 \\
 \underline{4} \quad \quad \quad \underline{4} \\
 123 \)5935.0(\\
 \underline{492} \cdot \\
 1015 \\
 \underline{984} \\
 31 \\
 \underline{20} \\
 123)620(5\text{s.} \\
 \underline{615} \\
 5 \\
 \underline{12} \\
 60 \\
 \underline{4} \\
 123)240(\frac{1}{4}q. \\
 \underline{123} \\
 117 = \underline{39} \\
 \underline{123} \quad \underline{41}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 \text{£} \quad \text{s.} \quad \text{d.} \\
 \frac{1}{4})48.5.0\frac{1}{4} \quad \frac{39}{41} \text{ A Man. 1st Ans.} \\
 \underline{12.1.3} \quad \frac{20}{41} \\
 \frac{1}{3})36.3.9\frac{1}{4} \quad \frac{19}{41} \text{ A Woman. 2nd Ans.} \\
 \underline{12.1.3} \quad \frac{20}{41} \\
 \frac{1}{2})24.2.6 \quad \frac{40}{41} \text{ A Boy. 3rd Ans.} \\
 \underline{\text{£}12.1.3} \quad \frac{20}{41} \text{ A Girl. 4th Ans.}
 \end{array}$$

Proof.

$$\begin{array}{r}
 \text{£}48.5.0\frac{1}{4} \quad \frac{39}{41} \times 12 = \text{£}579.0.5\frac{3}{4} \quad \frac{17}{41} \\
 36.3.9\frac{1}{4} \quad \frac{19}{41} \times 18 = 651.8.0\frac{1}{2} \quad \frac{14}{41} \\
 24.2.6 \quad \frac{40}{41} \times 6 = 144.15.1\frac{1}{4} \quad \frac{35}{41} \\
 12.1.3 \quad \frac{20}{41} \times 9 = 108.11.4 \quad \frac{16}{41} \\
 \hline
 \text{£}1483.15.0
 \end{array}$$

- (16.) A ... $\frac{2}{8}$ or $\frac{12}{32}$
 B ... $\frac{1}{4}$ of $\frac{3}{8}$ $\frac{9}{32}$
 C ... $\frac{1}{8}$ of $\frac{9}{8}$ $\frac{9}{32}$
 D ... the rem. or $\frac{8}{32}$

$$\begin{array}{r}
 32 \left\{ \begin{array}{l}
 4 \mid 1200 \text{ sum left.} \\
 8 \mid 300 \\
 \text{£ } 37.10 \times 12 \times 9 \times 3 \times 8 \\
 \text{£ } 450.0 \text{ A's share.} \\
 337.10 \text{ B's do.} \\
 112.10 \text{ C's do.} \\
 300.0 \text{ D's do.}
 \end{array} \right\} \text{ Ans.} \\
 \hline
 \text{£}1200.0 \text{ Proof.}
 \end{array}$$

- (17.)... Property left.....£6039.10
 $\frac{2}{5}$ ths of which is..... 3623.14 *Eldest Son. 1st Ans.*
 Remainder.....£2415.16
 $\frac{2}{3}$ ds of which is..... 1610.10.8 *Second Son. 2nd Ans.*
 Rest..... 805.5.4
 $\frac{1}{2}$ of which is 402.12.8 *Wife. 3rd Ans.*
 402.12.8 *Daughter. 4th Ans.*
 Sum of their shares£6039.10.0 *Proof.*

(18.) Eldest Son, or... $\frac{40}{84}$ If $\frac{2.5}{84} : 168.5 :: \frac{64}{84}$
 Second, $\frac{5}{8}$ of $\frac{3}{8}$... $\frac{1.5}{84}$
 Mother (rest) ... $\frac{9}{84}$

	£		
		1346 . 0	
		8	
25 {		5 10768	
		5 2153 . 12	
Amount of Property.....	£	430 . 14 . $4\frac{4}{5}$	
$\frac{5}{8}$ ths of which is.....		269 . 4 . 0	<i>Eldest Son. 1st Ans.</i>
Remainder.....		161 . 10 . $4\frac{4}{5}$	
$\frac{5}{8}$ ths of which is.....		100 . 19 . 0	<i>Younger Son. 2d An.</i>
		<u>£60 . 11 . $4\frac{4}{5}$</u>	<i>Mother. 3rd Ans.</i>

(19.).....Four quarters $\frac{1}{2}$ or $\frac{18}{36}$
 Tallow..... $\frac{1}{12}$ or $\frac{3}{36}$
 Skin..... $\frac{1}{18}$ or $\frac{2}{36}$
 Sum..... $\frac{23}{36}$
 For the rest..... $\frac{13}{36}$ *Ans.*

(20.).....From 1 take $\frac{1}{2} = \frac{1}{2}$ to the poor.
 Then, $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ by unjust means. *Ans.*
Proof $\frac{1}{8} \times \frac{4}{1} = \frac{4}{8}$ or $\frac{1}{2}$ to be restored.

REDUCTION OF DECIMALS.

EXERCISES, page 101.

(1.) $\frac{1}{5}=5)1.0$ $\frac{2}{5}=5)2.0$ $\frac{3}{5}=5)3.0$ $\frac{4}{5}=5)4.0$
Ans. .2 *Ans.* 4 *Ans.* .6 *Ans.* .8

$\frac{1}{4}=4)1.0$ $\frac{1}{2}=2)1.0$ $\frac{3}{4}=4)3.0$
Ans. .25 *Ans.* .5 *Ans.* .75

(2.) $\frac{1}{8}=8)1.0$ $\frac{3}{8}=8)3.0$ $\frac{5}{8}=8)5.0$ $\frac{7}{8}=8)7.0$
Ans. .125 *Ans.* .375 *Ans.* .625 *Ans.* .875

$\frac{1}{16}=16)1.00$ $\frac{3}{16}=16)3.0$ $\frac{5}{16}=16)5.0$
Ans. .0625 *Ans.* .1875 *Ans.* .3125

- (3.) $\frac{7}{18}=16)7\cdot0$ $\frac{9}{18}=16)9\cdot0$ $\frac{11}{18}=16)11\cdot0$
 Ans. $\cdot4375$ Ans. $\cdot5625$ Ans. $\cdot6875$
- $\frac{13}{18}=16)13\cdot0$ $\frac{15}{18}=16)15\cdot0$ $\frac{1}{20}=20)1\cdot00$ $\frac{3}{20}=20)3\cdot0$
 Ans. $\cdot8125$ Ans. $\cdot9375$ Ans. $\cdot05$ Ans. $\cdot15$
- (4.) ... $\frac{7}{20}=20)7\cdot0$ $\frac{9}{20}=20)9\cdot0$ $\frac{11}{20}=20)11\cdot0$ $\frac{13}{20}=20)13\cdot0$
 Ans. $\cdot35$ Ans. $\cdot45$ Ans. $\cdot55$ Ans. $\cdot65$
- $\frac{17}{20}=20)17\cdot0$ $\frac{19}{20}=20)19\cdot0$ $\frac{37}{40}=40)37\cdot0$
 Ans. $\cdot85$ Ans. $\cdot95$ Ans. $\cdot925$
- (5.) $\frac{1}{3}=3)1\cdot0$ $\frac{2}{3}=3)2\cdot00$ $\frac{1}{6}=6)1\cdot0$
 Ans. $\cdot333$ Ans. $\cdot666$ Ans. $\cdot166$
- $\frac{5}{6}=6)5\cdot0$ $\frac{7}{12}=12)7\cdot0$ $\frac{11}{12}=12)11\cdot0$
 Ans. $\cdot833$ Ans. $\cdot583$ Ans. $\cdot916$
- (6.) $\frac{8}{15}=15)8\cdot0$ $\frac{4}{21}=21)4\cdot0$ $\frac{7}{22}=22)7\cdot0$
 Ans. $\cdot533$ Ans. $\cdot190476$ Ans. $\cdot318$
- $\frac{5}{60}=60)5\cdot00$ $\frac{7}{75}=75)2\cdot00$ $\frac{1}{99}=99)1\cdot00$
 Ans. $\cdot083$ Ans. $\cdot026$ Ans. $\cdot01$

CASE II.

EXERCISES, page 102.

- (1.)... $1\frac{1}{2}d.= 2|1\cdot0$ $3\frac{3}{4}d.= 4|3\cdot0$ $4\frac{1}{2}d.= 2|1\cdot0$
 12|1 \cdot 5 12|3 \cdot 75 12|4 \cdot 5
 Ans. $\cdot125$ Ans. $\cdot3125$ Ans. $\cdot375$
- (2.) ... $7\frac{1}{2}d.= 2|1\cdot0$ $9\frac{3}{4}d.= 4|3\cdot0$ $10\frac{1}{2}d.= 2|1\cdot0$
 12|7 \cdot 5 12|9 \cdot 75 12|10 \cdot 5
 Ans. $\cdot625$ Ans. $\cdot8125$ Ans. $\cdot875$
- (3.) ... $2/6=12|6\cdot0$ $3/9=12|9\cdot0$ $4/3=12|3\cdot0$ $5/7\frac{1}{2}= 2|1\cdot0$
 20|2 \cdot 5 20|3 \cdot 75 20|4 \cdot 25 12|7 \cdot 5
 Ans. $\cdot125$ Ans. $\cdot1875$ Ans. $\cdot2125$ 20|5 \cdot 625
 Ans. $\cdot28125$

$$(4.) \dots\dots\dots 6/0\frac{3}{4} \quad 4 \overline{) 3 \cdot 0}$$

$$\quad \quad \quad 12 \overline{) 0 \cdot 75}$$

$$\quad \quad \quad 20 \overline{) 6 \cdot 0625}$$

$$\text{Ans. } \underline{\underline{\cdot 303125}}$$

$$7/6 = 12 \overline{) 6 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 7 \cdot 5}$$

$$\text{Ans. } \underline{\underline{\cdot 375}}$$

$$8/9 = 12 \overline{) 9 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 8 \cdot 75}$$

$$\text{Ans. } \underline{\underline{\cdot 4375}}$$

$$9/3 = 12 \overline{) 3 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 9 \cdot 25}$$

$$\text{Ans. } \underline{\underline{\cdot 4625}}$$

$$(5.) \dots\dots\dots 10/6 = 12 \overline{) 6 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 10 \cdot 5}$$

$$\text{Ans. } \underline{\underline{\cdot 525}}$$

$$11/9 = 12 \overline{) 9 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 11 \cdot 75}$$

$$\text{Ans. } \underline{\underline{\cdot 5875}}$$

$$12/3 = 12 \overline{) 3 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 12 \cdot 25}$$

$$\text{Ans. } \underline{\underline{\cdot 6125}}$$

$$13/7\frac{1}{2} = 2 \overline{) 1 \cdot 0}$$

$$\quad \quad \quad 12 \overline{) 7 \cdot 5}$$

$$\quad \quad \quad 20 \overline{) 13 \cdot 625}$$

$$\text{Ans. } \underline{\underline{\cdot 68125}}$$

$$(6.) \dots\dots\dots 14/10\frac{1}{2} = 2 \overline{) 1 \cdot 0}$$

$$\quad \quad \quad 12 \overline{) 10 \cdot 5}$$

$$\quad \quad \quad 20 \overline{) 14 \cdot 875}$$

$$\text{Ans. } \underline{\underline{\cdot 74375}}$$

$$15/6 = 12 \overline{) 6 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 15 \cdot 5}$$

$$\text{Ans. } \underline{\underline{\cdot 775}}$$

$$17/6 = 12 \overline{) 6 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 17 \cdot 5}$$

$$\text{Ans. } \underline{\underline{\cdot 875}}$$

$$19/9\frac{3}{4} = 4 \overline{) 3 \cdot 0}$$

$$\quad \quad \quad 12 \overline{) 9 \cdot 75}$$

$$\quad \quad \quad 20 \overline{) 19 \cdot 8125}$$

$$\text{Ans. } \underline{\underline{\cdot 990625}}$$

$$(7.) \dots 6/8 = 12 \overline{) 8 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 6 \cdot 6}$$

$$\text{Ans. } \underline{\underline{\cdot 333}}$$

$$8/4 = 12 \overline{) 4 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 8 \cdot 3}$$

$$\text{Ans. } \underline{\underline{\cdot 416}}$$

$$11/10 = 12 \overline{) 10 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 11 \cdot 83}$$

$$\text{Ans. } \underline{\underline{\cdot 5916}}$$

$$13/4 = 12 \overline{) 4 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 13 \cdot 3}$$

$$\text{Ans. } \underline{\underline{\cdot 666}}$$

$$16/8 = 12 \overline{) 8 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 16 \cdot 6}$$

$$\text{Ans. } \underline{\underline{\cdot 833}}$$

$$19/11 = 12 \overline{) 11 \cdot 0}$$

$$\quad \quad \quad 20 \overline{) 19 \cdot 916}$$

$$\text{Ans. } \underline{\underline{\cdot 99583}}$$

$$\text{¶ (8.)} \dots\dots\dots 6 \text{ oz. } 8 \text{ dr. avoird. } 16 \overline{) 8 \cdot 0}$$

$$\quad \quad \quad \quad \quad \quad \quad \quad \quad 16 \overline{) 6 \cdot 5}$$

$$\text{Ans. } \underline{\underline{\cdot 40625}} \text{ lb. av.}$$

	<i>sh.</i>	<i>sh.</i>	<i>sh.</i>	<i>sh.</i>
(3.)...	· <u>333</u>	· <u>83</u>	· <u>4083</u>	· <u>666</u>
	20	20	20	20
	6· <u>6666</u>	16· <u>666</u>	8· <u>1666</u>	13· <u>333</u>
	12	12	12	12
	8·	8·	2·	4· <u>000</u>
	<i>Ans.</i> 6/8	<i>Ans.</i> 16/8	<i>Ans.</i> 8/2	<i>Ans.</i> 13/4

		<i>cwt.</i>	<i>cwt.</i>
(4.)...	·6875	· <u>83</u>	· <u>416</u>
	4	4	4
	2· <u>7500</u>	3· <u>33</u>	1· <u>666</u>
	28	28	28
	21·	9½ lb.	5333
	<i>Ans.</i> 2 qrs. 21 lb.	<i>Ans.</i> 3 qrs. 9½ lb.	13333
			25·893
			17066
			21·666
			<i>Ans.</i> 3 qr. 25 lb. <i>Ans.</i> 1 qr. 21½ lb.

	<i>qr. corn.</i>	<i>qr. corn.</i>	
(5.)...	·1875	666	8 bus.
	8 bus.	8 bus.	
	1· <u>5000</u>	5· <u>333</u>	
	4	4	
	2· <u>0000</u>	1· <u>333</u>	
	<i>Ans.</i> 1 bus. 2 pec.	<i>Ans.</i> 5 bus. 1½ pec.	

	<i>of a mile.</i>	<i>of a mile.</i>	
(6.)...	·125	·748	8 fur.
	8 fur.	8 fur.	
	1· <u>000</u>	5· <u>991</u>	
	<i>Ans.</i> 1 furlong.	40 poles.	
		39· <u>644</u>	
		5½	
		3· <u>222</u>	
		· <u>322</u>	
		3· <u>544</u>	
		<i>fur. po. yd.</i>	
		<i>Ans.</i> 5 . 39 . 3½	

	<i>of an acre.</i>		
(7.)...	·875	· <u>93</u>	4
	4	4	
	3· <u>500</u>	3· <u>733</u>	
	40	40	
	20·	29· <u>333</u>	
	<i>Ans.</i> 3 ro. 20 po.	<i>Ans.</i> 3 ro. 29⅔ per.	

<p>(8.)..... $\cdot 325$ of a yard.</p> $\begin{array}{r} 3 \\ \hline \cdot 975 \\ 12 \\ \hline 11\cdot 700 \end{array}$ <p><i>Ans.</i> $11\frac{7}{10}$ inches.</p>	<p>$\cdot 58\dot{3}$ of a yard.</p> $\begin{array}{r} 3 \\ \hline 1\cdot 750 \\ 12 \\ \hline 9\cdot \end{array}$ <p><i>Ans.</i> 1 ft. 9 in.</p>
--	--

CASE IV.

EXERCISES, page 103.

- (1.) $\cdot 6 = \frac{6}{10}$ or $\frac{3}{5}$ *Ans.*; $\cdot 25 = \frac{25}{100}$ or $\frac{1}{4}$ *Ans.*; $\cdot 75 = \frac{75}{100}$ or $\frac{3}{4}$ *Ans.*;
 $\cdot 875 = \frac{875}{1000}$ or $\frac{7}{8}$ *Ans.*
- (2.)... $\cdot 16 = \frac{16}{100}$ or $\frac{4}{25}$ *Ans.*; $\cdot 85 = \frac{85}{100}$ or $\frac{17}{20}$ *Ans.*; $\cdot 995 = \frac{995}{1000}$
or $\frac{199}{200}$; *Ans.*; $\cdot 9375 = \frac{9375}{10000}$ or $\frac{15}{16}$. *Ans.*
- (3.)... $\cdot 05 = \frac{5}{100}$ or $\frac{1}{20}$ *Ans.*; $\cdot 76 = \frac{76}{100}$ or $\frac{19}{25}$ *Ans.*; $\cdot 005 = \frac{5}{1000}$
or $\frac{1}{200}$ *Ans.*; $\cdot 00224 = \frac{224}{100000}$ or $\frac{16}{625}$ *Ans.*

CASE V.

EXERCISES, page 104.

- (1.)... $\dot{3} = \frac{3}{9}$ or $\frac{1}{3}$ *Ans.*; $\dot{6} = \frac{6}{9}$ or $\frac{2}{3}$ *Ans.*; $\dot{7} = \frac{7}{9}$ *Ans.*
- (2.)... $\dot{3}6 = \frac{36}{99}$ or $\frac{4}{11}$ *Ans.*; $\dot{7}2 = \frac{72}{99}$ or $\frac{8}{11}$ *Ans.*; $\dot{0}9 = \frac{9}{99}$
or $\frac{1}{11}$ *Ans.*; $\dot{9}0 = \frac{90}{99} = \frac{10}{11}$. *Ans.*
- (3.)... $\dot{1}48 = \frac{148}{999}$ or $\frac{4}{27}$ *Ans.*; $\dot{0}37 = \frac{37}{999}$ or $\frac{1}{27}$ *Ans.*;
 $\dot{7}145 = \frac{7145}{9999}$ *Ans.*

CASE VI.

EXERCISES, page 104.

- (1.)... $\dot{1}6 = \frac{16}{99}$ or $\frac{1}{6}$ *Ans.*; $\dot{8}3 = \frac{75}{99}$ or $\frac{5}{6}$ *Ans.*; $\dot{0}13 = \frac{12}{990}$
or $\frac{1}{75}$ *Ans.*; $\dot{3}27 = \frac{295}{990}$ or $\frac{59}{198}$ *Ans.*; $\dot{9}583 = \frac{8625}{9900}$
or $\frac{23}{24}$ *Ans.*
- (2.)... $\dot{4}29 = \frac{425}{990} = \frac{85}{198}$ *Ans.*; $\dot{8}12 = \frac{804}{990}$ or $\frac{134}{165}$ *Ans.*;
 $\dot{1}136 = \frac{1125}{9900}$ or $\frac{5}{44}$ *Ans.*; $\dot{5}681 = \frac{5625}{9900}$ or $\frac{25}{44}$ *Ans.*

I. CONTRACTIONS.

EXERCISES, page 105.

- (1.)... Red. $7/5\frac{1}{4} = \cdot 371$ Ans. (3.)... Red. $13/9\frac{1}{2} = \cdot 691$ Ans.
 (2.)... Red. $9/11 = \cdot 495$ Ans. (4.)... Red. $15/8 = \cdot 783$ Ans.

II. CONTRACTIONS.

EXERCISES, page 105.

- (1.) Value $\cdot 158 = 3/2$ Ans.; $\cdot 709 = 14/2\frac{1}{4}$ Ans.; $\cdot 166 = 3/4$ Ans.;
 $\cdot 880 = 17/7\frac{1}{4}$ Ans.
 (2.) $\cdot 999 = 19/11\frac{3}{4}$ Ans.; $\cdot 095 = 1/10\frac{3}{4}$ Ans.; $\cdot 9975 = 19/10\frac{3}{4}$ Ans.;
 $\cdot 020 = 5d.$ Ans.; $\cdot 05 = 1/.$ Ans.; $\cdot 025 = 6d.$ Ans.;
 $\cdot 00325 = \frac{1}{4}d.$ Ans.
 (3.) $\cdot 365 = 7/3\frac{3}{4}$ Ans.; $\cdot 95 = 19/.$ Ans.; $\cdot 5875 = 11/9$ Ans.;
 $\cdot 0075 = 1\frac{3}{4}d.$ Ans.; $\cdot 730 = 14/7\frac{1}{4}$ Ans.; $\cdot 91 = 18/2\frac{1}{2}$ Ans.;
 $\cdot 098 = 1/11\frac{1}{2}$ Ans.
 (4.) $\cdot 987 = 19/9$ Ans.; $\cdot 876 = 17/6\frac{1}{4}$ Ans.; $\cdot 123 = 2/5\frac{3}{4}$ Ans.;
 $\cdot 402 = 8/0\frac{1}{2}$ Ans.; $\cdot 567 = 11/4\frac{1}{4}$ Ans.; $\cdot 117 = 2/4\frac{1}{4}$ Ans.;
 $\cdot 171 = 3/5\frac{1}{4}$ Ans.
 (5.) $\cdot 809 = 16/2\frac{1}{4}$ Ans.; $\cdot 73 = 14/7\frac{1}{2}$ Ans.; $\cdot 146 = 2/11$ Ans.;
 $\cdot 208 = 4/2$ Ans.; $\cdot 292 = 5/10$ Ans.; $\cdot 514 = 10/3\frac{1}{2}$ Ans.;
 $\cdot 657 = 13/1\frac{3}{4}$ Ans.

III. CONTRACTIONS.

EXERCISES, page 106.

- (1.) Say $\cdot 153 + 9 = 17$ lb. Ans.; $\cdot 477 = 53$ lb. Ans.; $\cdot 576 = 64$ lb. Ans.
 (2.) Say $\cdot 883 + 9 = 98$ lb. Ans.; $\cdot 774 = 86$ lb. Ans.; $\cdot 1000 = 111$ lb. Ans.

ADDITION OF DECIMALS.

CASE I.

EXERCISES, page 107.

$$\begin{array}{r}
 (1.) \dots \text{Add } 56 \cdot 165 \\
 48 \cdot 0125 \\
 14 \cdot 5 \\
 610 \cdot \\
 \cdot 0325 \\
 \hline
 \text{Ans. } \underline{\underline{728 \cdot 71}}
 \end{array}$$

$$\begin{array}{r}
 (2.) \dots \text{Add } 3624 \cdot \\
 362 \cdot 4 \\
 36 \cdot 24 \\
 3 \cdot 624 \\
 \cdot 3624 \\
 \hline
 142 \cdot 275 \\
 \hline
 \text{Ans. } \underline{\underline{4168 \cdot 9014}}
 \end{array}$$

$$\begin{array}{r}
 (3.) \dots\dots\dots \text{Add } 47 \frac{1}{4} = 47.25 \\
 28 \frac{1}{2} = 28.5 \\
 54 \frac{3}{4} = 54.75 \\
 31 \frac{1}{5} = 31.2 \\
 19 \frac{3}{8} = 19.375 \\
 112 \frac{9}{20} = 112.45 \\
 63 \frac{5}{18} = 63.3125 \\
 56 \frac{7}{10} = 56.7 \\
 \hline
 413 \frac{43}{80} = 413.5375 \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (4.) \dots \text{Reduce and add } \text{£}24. 6. 3 = \text{£}24.3125 \\
 42. 0. 10 \frac{1}{2} = 42.04375 \\
 35. 13. 8 \frac{1}{4} = 35.684375 \\
 56. 1. 9 \frac{1}{4} = 56.090625 \\
 12. 17. 4 \frac{1}{2} = 12.86875 \\
 \hline
 171. 0. 0 = 171.000000 \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (5.) \dots\dots\dots \begin{array}{l} \text{cwt. qr. lb.} \\ 37. 1. 14 \end{array} = 37.375 \\
 15. 0. 21 = 15.1875 \\
 9. 2. 0 = 9.5 \\
 20. 3. 7 = 20.8125 \\
 \hline
 82. 3. 14 = 82.875 \text{ Ans.}
 \end{array}$$

CASE II.

EXERCISES, page 107.

$$\begin{array}{r}
 (1.) \dots\dots\dots 98.6666 \\
 123.3333 \\
 67.8333 \\
 .125 \\
 \hline
 289.9583 \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (3.) \dots\dots\dots 27 \frac{1}{8} = 27.125 \\
 15 \frac{1}{8} = 15.1666 \\
 12 \frac{1}{9} = 12.1111 \\
 18 \frac{2}{3} = 18.6666 \\
 \hline
 73 \frac{5}{72} = 73.0694 \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (2.) \dots 54 \frac{1}{3} = 54.3333 \\
 45 \frac{5}{8} = 45.8333 \\
 68 \frac{11}{12} = 68.9166 \\
 156 \frac{7}{8} = 156.875 \\
 \hline
 325 \frac{23}{24} = 325.9583 \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 (4.) \text{£}16. 3. 4 = \text{£}16.166666 \\
 21. 19. 11 = 21.9958333 \\
 18. 0. 6 \frac{3}{4} = 18.028125 \\
 7. 12. 9 = 7.6375 \\
 \hline
 63. 16. 6 \frac{3}{4} = 63.828125 \text{ Ans.}
 \end{array}$$

SUBTRACTION OF DECIMALS.

EXERCISES, page 108.

- | | |
|--|--|
| (1.)... From67·385
Take.....49·5
<i>Ans.</i> <u>17·885</u> | (6.)... From75·525
Subtract56·625
<i>Ans.</i> <u>18·9</u> |
| (2.)... From18·005
Take ·18005
<i>Ans.</i> <u>17·82495</u> | (7.)... From84·5
Subtract17·04
<i>Ans.</i> <u>67·46</u> |
| (3.)... From6875·
Deduct..... ·1817
<i>Ans.</i> <u>6874·8183</u> | (8.)... From100·
Subtract.... ·975
<i>Ans.</i> <u>99·025</u> |
| (4.)... From1805·
Subtract 1·805
<i>Ans.</i> <u>1803·195</u> | (9.)... From..... ·6
Subtract.... ·05
<i>Ans.</i> <u>·55</u> |
| (5.)... From96·875
Subtract69·5625
<i>Ans.</i> <u>27·3125</u> | (10.).. From1·
Subtract ·005
<i>Ans.</i> <u>·995</u> |

CASE II.

EXERCISES, page 108.

- | | |
|---|--|
| (1.)... From108·6666
Subtract ... 89·125
<i>Ans.</i> <u>19·5416</u> | (2.)... From.....190·3125
Subtract109·46666
<i>Ans.</i> <u>80·84583</u> |
| (3.)..... From.....£100·
Take..... 19·99583
<i>Ans.</i> <u>80·00416</u> = £80 . 0 . 1 | |

MULTIPLICATION OF DECIMALS.

CASE I.

EXERCISES, page 109.

$$\begin{array}{r}
 (1.) \dots\dots\dots \text{Mult. } 282\cdot5 \\
 \text{by } 2\cdot64 \\
 \hline
 11300 \\
 16950 \\
 5650 \\
 \hline
 \text{Ans. } \underline{\underline{745\cdot8}}
 \end{array}$$

$$\begin{array}{r}
 (5.) \dots\dots\dots \text{Mult. } 6\cdot23 \\
 \text{by } \cdot049 \\
 \hline
 5607 \\
 2492 \\
 \hline
 \text{Ans. } \underline{\underline{\cdot30527}}
 \end{array}$$

$$\begin{array}{r}
 (2.) \dots\dots\dots \text{Mult. } 1\cdot736 \\
 \text{by } \cdot125 \\
 \hline
 8680 \\
 20832 \\
 \hline
 \text{Ans. } \underline{\underline{\cdot217}}
 \end{array}$$

$$\begin{array}{r}
 (6.) \dots\dots\dots \text{Mult. } \cdot875 \\
 \text{by } \cdot125 \\
 \hline
 4375 \\
 10500 \\
 \hline
 \text{Ans. } \underline{\underline{\cdot109375}}
 \end{array}$$

$$\begin{array}{r}
 (3.) \dots\dots\dots \text{Mult. } 1406 \\
 \text{by } \cdot342 \\
 \hline
 2812 \\
 5624 \\
 4218 \\
 \hline
 \text{Ans. } \underline{\underline{480\cdot852}}
 \end{array}$$

$$\begin{array}{r}
 (7.) \dots\dots\dots \text{Mult. } 436 \\
 \text{by } \cdot436 \\
 \hline
 2616 \\
 1308 \\
 1744 \\
 \hline
 \text{Ans. } \underline{\underline{190\cdot096}}
 \end{array}$$

$$\begin{array}{r}
 (4.) \dots\dots\dots \text{Mult. } \cdot748 \\
 \text{by } \cdot17 \\
 \hline
 5236 \\
 748 \\
 \hline
 \text{Ans. } \underline{\underline{\cdot12716}}
 \end{array}$$

$$\begin{array}{r}
 (8.) \dots\dots\dots \text{Mult. } \cdot00674 \\
 \text{by } \cdot321 \\
 \hline
 674 \\
 1348 \\
 2022 \\
 \hline
 \text{Ans. } \underline{\underline{\cdot216354}}
 \end{array}$$

(9.) Mult. $\cdot 23$
 by $\cdot 25$
 $\underline{115}$
 $\quad 46$
 Ans. $\underline{\underline{\cdot 0575}}$

(10.) Mult. 95
 by $\cdot 095$
 $\underline{475}$
 $\quad 855$
 Ans. $\underline{\underline{9\cdot 025}}$

CASE II.

EXERCISES, page 109.

(1.) ... Mult. $\cdot 357$ by $3 = \frac{1}{3}$
 $\underline{\underline{\cdot 119}}$ Ans.

(4.) ... Mult. $\cdot 145$ by $\cdot 44 = \frac{44}{100}$
 $\quad 44$
 $\underline{580}$
 580

(2.) ... Mult. $2\cdot 84$ by 69
 $\quad 69$
 $\underline{2560}$
 $\underline{17066}$
 $\underline{\underline{19\cdot 626}}$ Ans.

$90 \overline{) 6\cdot 380}$
 $\underline{\underline{\cdot 0708}}$ Ans.

(3.) ... Mult. $\cdot 916$ by $18\cdot 75$
 $\quad 18\cdot 75$
 $\underline{4583}$
 $\quad 64166$
 $\underline{733333}$
 $\underline{916666}$
 $\underline{\underline{17\cdot 1875}}$ Ans.

(5.) ... Mult. $70\cdot 83$ by 500
 $\quad 500$
 Ans. $\underline{\underline{35416\cdot 66}}$

(6.) ... Mult. $\cdot 789$ by $\cdot 4 = \frac{4}{10}$
 $\quad 4$
 $\underline{9 \overline{) 3\cdot 156}}$
 Ans. $\underline{\underline{\cdot 3506}}$

CASE III.

EXERCISES, page 110.

(1.) ... Mult. $176\cdot 3$ by 6 or $\frac{2}{3}$
 $\quad 2$
 $\underline{3 \overline{) 352\cdot 6}}$
 Ans. $\underline{\underline{117\cdot 5}}$

(2.) Mult. $84\cdot 5$ by $\cdot 8$
 $\quad 8$
 $\underline{9 \overline{) 676\cdot 4}}$
 Ans. $\underline{\underline{75\cdot 160493827}}$

<p>(3.) ... Mult. $43\dot{7}$ by $16\dot{3}$</p> $\begin{array}{r} 16\frac{1}{3} \\ \hline 262666 \\ 437777 \\ 14592 \\ \hline \text{Ans. } 715\dot{0}37 \end{array}$	<p>(5.)...Mult. $\pounds 98\dot{3}$ by $3\cdot65$</p> $\begin{array}{r} 3\cdot65 \\ \hline 4916 \\ 5900 \\ 2950 \\ \hline \text{Ans. } \pounds 258\cdot916 = \pounds 258\cdot18\cdot4 \end{array}$
---	--

<p>(4.) ... Mult. $9\cdot58\dot{3}$ by $8\cdot01\dot{6}$</p> $\begin{array}{r} 8\frac{1}{10} \\ \hline 76\cdot66666 \\ \cdot15972 \\ \hline \text{Ans. } 76\cdot82638 \end{array}$	<p>(6.)... $\frac{1}{8} 123\cdot441\dot{6}$ by $1\cdot1\dot{6}$</p> $\begin{array}{r} 1\frac{1}{8} \\ \hline 123\cdot4416 \\ 20\cdot5736 \\ \hline \text{Ans. } \pounds 144\cdot015 = \pounds 144\cdot0\cdot3\frac{1}{4} \end{array}$
--	---

(7.) Mult. $\pounds 321\cdot9958\dot{3}$

$$\begin{array}{r} 7\frac{19}{80} \\ \hline 2253\cdot97083 \\ 116\cdot9918 \\ \hline \pounds 2370\cdot96263 = \pounds 2370\cdot19\cdot3 \text{ Ans.} \end{array}$$

CONTRACTIONS, pages 110 and 111.

I.

- (1.) Mult. $56\cdot9$ by $10 = 569$ *Ans.*
- (2.) — $168\cdot25$ by $100 = 16825$ *Ans.*
- (3.) — $3\cdot15$ by $1000 = 3150$ *Ans.*

II.

- | | |
|--|--|
| <p>(1.) ... Mult. $45\cdot6$ by $\cdot2$</p> $\begin{array}{r} 2 \\ \hline 9 91\cdot2 \\ \hline 10\cdot133 \text{ Ans.} \end{array}$ | <p>(2.) ... Mult. $5\cdot67$ by 3 or $\frac{1}{3}$</p> $\begin{array}{r} \frac{1}{3} \\ \hline 1\cdot89 \text{ Ans.} \end{array}$ |
|--|--|

(3.) ... Mult. $\cdot 678$ by $\cdot 6$ or $\frac{2}{3}$

$$\begin{array}{r} 2 \\ 3 \overline{) 1.356} \\ \underline{.452} \text{ Ans.} \end{array}$$

(4.) ... Mult. 165 by $\cdot 8$

$$\begin{array}{r} 8 \\ 9 \overline{) 1320} \\ \underline{146.666} \text{ Ans.} \end{array}$$

III.

(1.)

$$\begin{array}{r} \cdot 7834 \\ \cdot 1243 \\ \hline 23502 \\ 3133 \\ 156 \\ 7 \\ \hline \text{Ans. } \underline{\underline{\cdot 26800}} \end{array}$$

(2.)

$$\begin{array}{r} 16.2875 \\ \underline{4568} \\ 1303000 \\ 97725 \\ 8143 \\ 651 \\ \hline \text{Ans. } \underline{\underline{140.9519}} \end{array}$$

(3.)

$$\begin{array}{r} \cdot 96543 \\ \cdot 23164 \\ \hline 386172 \\ 57925 \\ 960 \\ 289 \\ 9 \\ \hline \text{Ans. } \underline{\underline{\cdot 44557}} \end{array}$$

DIVISION OF DECIMALS.

CASE I.

EXERCISES, page 112.

(1.) $\cdot 15)353.25(2355$ *Ans.*

$$\begin{array}{r} 30 \cdot \cdot \\ \hline 53 \\ 45 \\ \hline 82 \\ 75 \\ \hline 75 \\ 75 \\ \hline \hline \end{array}$$

(3.)... $1.7)425.95(250.5588+$ *Ans.*

$$\begin{array}{r} 34 \cdot \cdot \\ \hline 85 \\ 85 \\ \hline 95 \\ 85 \\ \hline 100 \\ 85 \\ \hline 150 \\ 136 \\ \hline 140 \\ 136 \\ \hline 4 \\ \hline \hline \end{array}$$

(2.) $\cdot 218)92017.800(422100$ *Ans.*

$$\begin{array}{r} 872 \cdot \cdot \\ \hline 481 \\ 436 \\ \hline 457 \\ 436 \\ \hline 218 \\ 218 \\ \hline \hline \end{array}$$

(4.)..... $\cdot 192 \overline{) 17.8848} (\cdot 09315 \text{ Ans.}$ (8.)..... $\cdot 125 \overline{) 10.500} (8.4 \text{ Ans.}$

$$\begin{array}{r} 1728 \cdot \cdot \\ \hline 604 \\ 576 \\ \hline 288 \\ 192 \\ \hline 960 \\ 960 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 1000 \cdot \\ \hline 500 \\ \hline \hline \end{array}$$

(9.)..... $29 \overline{) 3564} (\cdot 1228 + 29 \cdot \cdot \text{ Ans.}$

$$\begin{array}{r} 66 \\ 58 \\ \hline 84 \\ 58 \\ \hline 260 \\ 252 \\ \hline 8 \\ \hline \hline \end{array}$$

(5.)..... $\cdot 0005 \overline{) 5000.0000}$
Ans. $\underline{\underline{1000000}}$

(6.)..... $\cdot 825 \overline{) 825.000}$
Ans. $\underline{\underline{1000}}$

(7.)..... $\cdot 98 \overline{) 645.87} (659.05102 + 588 \cdot \cdot \text{ Ans.}$

$$\begin{array}{r} 578 \\ 490 \\ \hline 887 \\ 882 \\ \hline 500 \\ 490 \\ \hline 10 \text{ \&c.} \\ \hline \hline \end{array}$$

(10.)..... $15,00 \overline{) 14,72.5} (\cdot 981\dot{6} + 135 \cdot \cdot \text{ Ans.}$

$$\begin{array}{r} 122 \\ 120 \\ \hline 25 \\ 15 \\ \hline 100 \\ 90 \\ \hline 10 \text{ \&c.} \\ \hline \hline \end{array}$$

CASE II.

EXERCISES, page 112.

(1.)..... $1.5 \overline{) 150.6} (100.444 + 15 \text{ Ans.}$

$$\begin{array}{r} 0066 \\ 60 \\ \hline 6 \text{ \&c.} \\ \hline \hline \end{array}$$

(2.)..... $2.5 \overline{) 18.3} (7.333 \text{ Ans.}$

$$\begin{array}{r} 17.5 \\ 83 \\ 75 \\ \hline 8 \text{ \&c.} \\ \hline \hline \end{array}$$

(3.)..... $\cdot 05)169\dot{3}(3386\dot{6}$

$$\begin{array}{r} 15 \\ \hline 19 \\ 15 \\ \hline 43 \\ 40 \\ \hline 33 \\ 30 \\ \hline 3 \text{ \&c.} \\ \hline \hline \end{array}$$

(4.)..... $12) \cdot 916\dot{7}$
 $\underline{\underline{\cdot 07638 \text{ Ans.}}}$

CASE III.

EXERCISES, page 113.

(1.)..... Divide $4\cdot 216\dot{9}$ by $\dot{5}$ or $\frac{5}{9}$ (2.)... Divide $8\cdot 962\dot{7}$ by $\dot{3}$ or $\frac{1}{3}$

$$\begin{array}{r} 9 \\ \hline 5)37\cdot 950 \\ \hline 7\cdot 59 \text{ Ans.} \\ \hline \hline \end{array}$$

$$\begin{array}{r} 3 \\ \hline \text{Ans. } 26\cdot 886 \\ \hline \hline \end{array}$$

(3.)..... $\dot{6})\cdot 3784\dot{5}$ by $\dot{6}$
 $\frac{9}{6})\underline{340610}$
 $\underline{\underline{\cdot 567683 \text{ Ans.}}}$

(4.)... $85\cdot \dot{3}$) $545450\cdot \dot{6}$ (
 $\frac{3}{256})\underline{1636352\cdot 0(6392}$
 $\underline{1536 \cdot \cdot \text{ Ans.}}$
 $\underline{1003}$
 $\underline{768}$
 $\underline{2355}$
 $\underline{2304}$
 $\underline{512}$
 $\underline{512}$
 $\underline{\underline{\hspace{1cm}}}$

CONTRACTIONS, page 113.

I.

- (1.)..... $156\cdot 25 \div 10 = 15\cdot 625 \text{ Ans.}$
- (2.)..... $987\cdot 5 \div 100 = 9\cdot 875 \text{ Ans.}$
- (3.)..... $1817\cdot \div 1000 = 1\cdot 817 \text{ Ans.}$

II.

(1.)... Divide 3.65 by .8

$$\begin{array}{r} 9 \\ 8 \overline{) 32.85} \\ \underline{410625} \end{array} \text{ Ans.}$$

(2.)... Divide 7.12 by .3.

$$\begin{array}{r} 3 \\ \underline{21.36} \end{array} \text{ Ans.}$$

(3.)..... Divide .2175 by .6
 add $\frac{1}{2}$ or 10875

$$\begin{array}{r} \underline{.32625} \end{array} \text{ Ans.}$$

III.

(1.) .3785)6436875(.170

$$\begin{array}{r} 3785 \cdot \text{ Ans.} \\ \underline{2651} \\ 2649 \\ \underline{2} \\ \underline{} \end{array}$$

(2.) .4523)98.76543(218.3627

$$\begin{array}{r} 9046 \quad \text{Ans.} \\ \underline{830} \\ 452 \\ \underline{378} \\ 361 \\ \underline{17} \text{ \&c.} \\ \underline{} \end{array}$$

(3.)..... 6.257)157.23841(25.13 Ans.

$$\begin{array}{r} 12514 \\ \underline{3209} \\ 3128 \\ \underline{81} \\ 62 \\ \underline{19} \\ 18 \\ \underline{1} \\ \underline{} \end{array}$$

COMMISSION AND BROKERAGE.

CASE I.

EXERCISES, pages 115, 116, 117.

- (1.)... $\underline{\underline{\pounds 1,275.5}} = \pounds 1 . 5 . 6$ (9.)... $\frac{1}{8} | 19,07.5 \text{ @ } \frac{1}{8} \text{ } \text{\textcircled{P}} \text{ cent.}$
Ans. $\underline{\underline{3.815}} = \pounds 3 . 16 . 3\frac{3}{4}$
- (2.)... $\frac{1}{8} | 12,75.5 \text{ @ } \frac{1}{8} \text{ } \text{\textcircled{P}} \text{ cent.}$
Ans. $\underline{\underline{1.594}} = \pounds 1 . 11 . 10\frac{1}{2}$ (10.)... $\frac{1}{4} | 19,07.5 \text{ @ } \frac{1}{4} \text{ per cent.}$
Ans. $\underline{\underline{4.768}} = \pounds 4 . 15 . 4\frac{1}{2}$
- (3.)... $\frac{1}{8} | 12,75.5 \text{ @ } \frac{1}{8} \text{ } \text{\textcircled{P}} \text{ cent.}$
Ans. $\underline{\underline{2.125}} = \pounds 2 . 2 . 6$ (11.)... $\frac{1}{8} | 19,07.5 \text{ @ } \frac{1}{8} \text{ } \text{\textcircled{P}} \text{ cent.}$
Ans. $\underline{\underline{6.358}} = \pounds 6 . 7 . 2$
- (4.)... $\frac{1}{8} | 12,75.5 \text{ @ } \frac{3}{16} \text{ } \text{\textcircled{P}} \text{ cent.}$

$$\begin{array}{r} \frac{1}{2} \overline{) 1.594} \\ \underline{.797} \end{array}$$

Ans. $\underline{\underline{2.391}} = \pounds 2 . 7 . 10$ (12.)... $\frac{1}{4} | 19,07.5 \text{ @ } \frac{3}{8} \text{ per cent.}$

$$\begin{array}{r} \frac{1}{2} \overline{) 4.7687} \\ \underline{2.3843} \end{array}$$

Ans. $\underline{\underline{7.1530}} = \pounds 7 . 3 . 0\frac{3}{4}$
- (5.) $\underline{\underline{\pounds 1,650.75}} = \pounds 1 . 13 . 0$ *Ans.* (13.)... $\frac{1}{2} | 19,07.5 \text{ @ } \frac{1}{2} \text{ } \text{\textcircled{P}} \text{ cent.}$
Ans. $\underline{\underline{9.537}} = \pounds 9 . 10 . 9$
- (6.)... $\frac{1}{8} | 16,5075 \text{ @ } 2/6 \text{ } \text{\textcircled{P}} \text{ cent.}$
Ans. $\underline{\underline{2.063}} = \pounds 2 . 1 . 3$ (14.)... $\frac{1}{4} | 32,10.5 \text{ @ } \frac{3}{8} \text{ } \text{\textcircled{P}} \text{ cent.}$

$$\begin{array}{r} \frac{1}{2} \overline{) 8.02625} \\ \underline{4.01312} \end{array}$$

Ans. $\underline{\underline{12.03937}} = \pounds 12 . 0 . 9\frac{1}{2}$
- (7.)... $\frac{1}{8} | 16,5075 \text{ @ } 3/4 \text{ } \text{\textcircled{P}} \text{ cent.}$
Ans. $\underline{\underline{2.751}} = \pounds 2 . 15 . 0$ (15.)... $\frac{1}{4} | 32,10.25 \text{ @ } \frac{3}{4} \text{ } \text{\textcircled{P}} \text{ cent.}$

$$\begin{array}{r} \text{off} \overline{) 8.0256} \end{array}$$

Ans. $\underline{\underline{24.0768}} = \pounds 24 . 1 . 6\frac{1}{4}$
- (8.)... $\frac{1}{8} | 16,5075 \text{ @ } 3/9 \text{ } \text{\textcircled{P}} \text{ cent.}$

$$\begin{array}{r} \frac{1}{2} \overline{) 2.0634} \\ \underline{1.0317} \end{array}$$

Ans. $\underline{\underline{3.0951}} = \pounds 3 . 1 . 10\frac{3}{4}$ (16.)... $\frac{1}{8} | 32,10.25 \text{ @ } \frac{7}{8} \text{ } \text{\textcircled{P}} \text{ cent.}$

$$\begin{array}{r} \text{off} \overline{) 4.0128} \end{array}$$

Ans. $\underline{\underline{28.0897}} = \pounds 28 . 1 . 9\frac{1}{2}$ *Ans.*

CASE II.

EXERCISES.

(1.) ... £1526 . 5 @ 1 % cent.

$$\frac{1}{100} \overline{152625} = \underline{\underline{£15 . 5 . 3}}$$

(2.) $\frac{1}{80} \overline{152,625}$ @ $1\frac{1}{4}$ % cent.
Ans. $\underline{\underline{19.078}} = \underline{\underline{£19 . 1 . 7}}$

$\frac{1}{100} \overline{15,2625}$ @ $1\frac{1}{2}$ % cent.
Add $\frac{1}{2}$

$$\begin{array}{r} 15.262 \\ 7.631 \\ \hline \end{array}$$

Ans. $\underline{\underline{22.893}} = \underline{\underline{£22 . 17 . 10\frac{1}{4}}}$

(4.) $\frac{1}{50} \overline{152,625}$ @ 2 % cent.

$$1 \overline{30.525} = \underline{\underline{£30 . 10 . 6}}$$
 Ans.

(5.) $\frac{1}{50} \overline{972.875}$ @ $2\frac{1}{4}$ % cent.

$$\frac{1}{8} \overline{19.4575}$$

$$\frac{1}{8} \overline{2.4321}$$

Ans. $\underline{\underline{21.8896}} = \underline{\underline{£21 . 17 . 9\frac{1}{2}}}$

(6.) $\frac{1}{40} \overline{972.875}$ @ $2\frac{1}{2}$ % cent.
Ans. $\underline{\underline{24.321}} = \underline{\underline{£24 . 6 . 5\frac{1}{4}}}$

(7.) 972.875 @ 3 % cent.

$$\frac{3}{100} \overline{29.18625} = \underline{\underline{£29 . 3 . 8\frac{3}{4}}}$$

(8.) $\frac{1}{40} \overline{972.875}$ @ $3\frac{1}{2}$ % cent.

$$\frac{1}{80} \overline{24.3218}$$

$$\frac{1}{80} \overline{9.7285}$$

Ans. $\underline{\underline{34.0503}} = \underline{\underline{£34 . 1 . 0}}$

(9.) $\frac{1}{20} \overline{1813.666}$ @ 4 % cent.
off $\frac{1}{5}$

$$\begin{array}{r} 90.6833 \\ 18.1366 \\ \hline \end{array}$$

Ans. $\underline{\underline{72.5466}} = \underline{\underline{£72.10.11}}$

(10.) $\frac{1}{20} \overline{1813.666}$ @ $4\frac{1}{2}$ % cent.
off $\frac{1}{10}$

$$\begin{array}{r} 90.6833 \\ 9.0683 \\ \hline \end{array}$$

Ans. $\underline{\underline{81.615}} = \underline{\underline{£81.12.3\frac{1}{4}}}$

(11.) $\frac{1}{20} \overline{1813.666}$ @ 5 % cent.
Ans. $\underline{\underline{90.683}} = \underline{\underline{£90.13.8}}$

(12.) $\frac{1}{20} \overline{1813.666}$ @ 6 % cent.
Add $\frac{1}{5}$

$$\begin{array}{r} 90.683 \\ 18.136 \\ \hline \end{array}$$

Ans. $\underline{\underline{108.819}} + = \underline{\underline{£108.16.4\frac{3}{4}}}$

(13.) $\frac{1}{20} \overline{2109.5}$ @ $6\frac{1}{4}$ % cent.
Add $\frac{1}{4}$

$$\begin{array}{r} 105.475 = 5 \text{ % cent.} \\ 26.368 = 1\frac{1}{4} \text{ % cent.} \\ \hline \end{array}$$

Ans. $\underline{\underline{131.843}} = \underline{\underline{£131.16.10\frac{1}{4}}}$

(14.) 2109.5 @ $6\frac{1}{2}$ % cent.

$$\frac{6\frac{1}{2}}{100} \overline{12657.0}$$

$$\frac{6\frac{1}{2}}{100} \overline{1054.75}$$

Ans. $\underline{\underline{137,11.75}} = \underline{\underline{£137 . 2 . 4\frac{1}{4}}}$

(15.) 2109.5 @ 7 % cent.

$$\frac{7}{100} \overline{147.66.5}$$

Ans. $\underline{\underline{147,66.5}} = \underline{\underline{£147 . 13 . 3\frac{3}{4}}}$

<p>(16.) $\frac{1}{20} \overline{)2109 \cdot 5}$ @ $7\frac{1}{2}\%$ cent.</p> <p>Add $\frac{1}{2}$ $\overline{)105 \cdot 475}$ = 5% cent.</p> <p>$\overline{)52 \cdot 7375}$ = $2\frac{1}{2}\%$ cent.</p> <p><u><u>158 \cdot 2125</u></u> = £158 . 4 . 3 Ans.</p>	<p>Or, $\frac{1}{20} \overline{)2109 \cdot 10}$</p> <p>$\frac{1}{2}$ $\overline{)105 \cdot 9 \cdot 6}$</p> <p>$\overline{)52 \cdot 14 \cdot 9}$</p> <p><u><u>£ 158 . 4 . 3</u></u> Ans.</p>
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QUESTIONS FOR PRACTICE.

Pages 116 and 117.

- (1.) Amount of Sales..... £1850 . 0
 Commission, $\frac{1}{2}\%$ cent., or $\frac{1}{200}$ part £ 9 . 5 Ans.
- (2.) Amount of Bills discounted..... £36627 . 10 . 0
 Commission, $\frac{1}{3}\%$ cent., $\frac{1}{300}$ £ 122 . 1 . 9 $\frac{3}{4}$ Ans.
- (3.) Amount of Sales £2520 . 16 . 8
 Commission, 2% cent., $\frac{1}{50}$ £ 50 . 8 . 4 Ans.
- (4.) Purchased Goods to the value of £625 . 10 . 0
 My Commission, $2\frac{1}{2}\%$ cent., or $\frac{1}{40}$ £ 15 . 12 . 9 Ans.
- (5.) Account Sales rendered £571 . 8 . 4
 Sundry Charges £14 . 16 . 8
 Commission and Risk..... 28 . 11 . 5
43 . 8 . 1
 Ans. Net Proceeds £528 . 0 . 3
- (6.) Account-Sales of 50 hhds. of Sugar... £2750 . 18 . 9
 Commission, $2\frac{1}{2}\%$ cent. £68 . 15 . 5 $\frac{3}{4}$
 Brokerage, $\frac{1}{2}\%$ cent.... 13 . 15 . 1
 Duty, Freight, &c..... 935 . 7 . 6
1017 . 18 . 0 $\frac{3}{4}$
 Ans. Net Proceeds..... £1733 . 0 . 8 $\frac{1}{4}$
- (7.) Account-Sales of 30 Puncheons of Rum £605 . 11 . 0
 Custom and Freight £213 . 17 . 6
 Commission and Guarantee, } 24 . 4 . 5 $\frac{1}{4}$
 4% cent }
- 238 . 1 . 11 $\frac{1}{4}$
 Ans. Net Proceeds..... £367 . 9 . 0 $\frac{1}{4}$

(8.).....	Goods of Invoice	£561 . 4 . 10
	Charges of Packing, Cartage, &c.....	3 . 15 . 6
	Wharfage, Entry, Bond, &c.....	5 . 10 . 8
	Sum	£570 . 11 . 0
	Commission, $2\frac{1}{2}$ of cent.	14 . 5 . $3\frac{1}{4}$
	<i>Ans. Amount of the Invoice...</i>	<u>£584 . 16 . $3\frac{1}{4}$</u>

(9.).....	Commission on £18,765 . 10 @ 6 of cent. is	£1125 . 18 . 7
	Losses by Failures.....	£452 . 12 . 6
	Charges for Incidents	196 . 15 . 0
		<u>649 . 7 . 6</u>
	<i>Ans. Net Profits.....</i>	<u>£ 476 . 11 . 1</u>

CALCULATION OF INTEREST.

CASE I.

TO CALCULATE INTEREST FOR YEARS.

EXERCISES, page 118.

- | | |
|--|---|
| (1.) $\frac{1}{10}$ £1265 . 0 for 2 years.
<u>£ 126 . 10</u> <i>Ans.</i> | (5.) $\frac{1}{2}$ £543 . 6 . 8 for 10 yrs.
<u>£271 . 13 . 4</u> <i>Ans.</i> |
| (2.) £815 . 10 for 3 years.
3 years.
$\frac{1}{20}$ 2446 . 10
<u>£ 122 . 6 . 6</u> <i>Ans.</i> | (6.) $\frac{1}{5}$ £365 . 17 . 6 @ $4 \times 6 = 24$
$\frac{1}{5}$ 73 . 3 . 6 = 20 of ct.
14 . 12 . $8\frac{1}{4}$
<u>£ 87 . 16 . $2\frac{1}{4}$</u> <i>Ans.</i> |
| (3.)... $\frac{1}{4}$ £789 . 5
<u>£197 . 6 . 3</u> <i>Ans.</i> | (7.)... $\frac{1}{5}$ £612 . 10 = 18 of cent.
off $\frac{1}{10}$ 122 . 10
12 . 5
<u>£110 . 5</u> <i>Ans.</i> |
| (4.)... £950 . 15 for 7 years.
7 years.
$\frac{1}{20}$ 6655 . 5
<u>£ 332 . 15 . 3</u> <i>Ans.</i> | (8.)... $\frac{1}{5}$ £1050 @ 20 of cent.
<u>£ 210</u> <i>Ans.</i> |

(9.) $\frac{1}{3} | \begin{array}{r} \text{£}546.18.4 \\ \text{£}182.6.1\frac{1}{3} \end{array} = 33\frac{1}{3} \text{ } \text{p cent.}$
Ans.

(10.) $\frac{1}{5} | \begin{array}{r} \text{£}730.15 \\ \frac{1}{2} | \begin{array}{r} 146.3 \\ 73.1.6 \end{array} \end{array} = 30 \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 20 \\ = 10 \end{array} \right\} \text{ } \text{p cent.}$
Ans.

EXERCISES FOR PRACTICE, page 119.

(1.) $\frac{1}{8} | \begin{array}{r} \text{£}625.10 \\ \text{£}78.3.9 \end{array} = 12\frac{1}{2} \text{ } \text{p cent.}$
Ans.

(2.) $\frac{1}{10} | \begin{array}{r} \text{£}625.10 \\ 62.11 \\ 31.5.6 \end{array} = 15 \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 10 \\ = 5 \end{array} \right\} \text{ } \text{p cent.}$
Ans.

(3.) $\frac{1}{5} | \begin{array}{r} \text{£}625.10 \\ 125.2 \\ 15.12.9 \end{array} = 17\frac{1}{2} \text{ } \text{p cent.}$
off $\frac{1}{8} \left. \begin{array}{l} = 20 \\ = 2\frac{1}{2} \end{array} \right\} \text{ } \text{p ct.}$
Ans.

(4.) $\frac{1}{5} | \begin{array}{r} \text{£}625.10 \\ \text{£}125.2 \end{array} = 20 \text{ } \text{p cent.}$
Ans.

(5.) $\frac{1}{5} | \begin{array}{r} \text{£}625.10 \\ 125.2 \\ 15.12.9 \end{array} = 22\frac{1}{2} \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 20 \\ = 2\frac{1}{2} \end{array} \right\} \text{ } \text{p ct.}$
Ans.

(6.) $\frac{1}{4} | \begin{array}{r} \text{£}437.5 \\ \text{£}109.6.3 \end{array} = 25 \text{ } \text{p cent.}$
Ans.

(7.) $\frac{1}{8} | \begin{array}{r} \text{£}437.5 \\ 87.9 \\ 54.13.1\frac{1}{2} \end{array} = 32\frac{1}{2} \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 20 \\ = 12\frac{1}{2} \end{array} \right\} \text{ } \text{p ct.}$
Ans.

(8.) $\frac{1}{10} | \begin{array}{r} \text{£}437.5 \\ 109.6.3 \\ 43.14.6 \end{array} = 35 \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 25 \\ = 10 \end{array} \right\} \text{ } \text{p cent.}$
Ans.

(9.) $\frac{2}{5} | \begin{array}{r} \text{£}437.5 \\ 87.9 \\ 87.9 \\ 10.18.7\frac{1}{2} \end{array} = 42\frac{1}{2} \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 40 \\ = 2\frac{1}{2} \end{array} \right\} \text{ } \text{p ct.}$
Ans.

(10.) $\frac{1}{5} | \begin{array}{r} \text{£}437.5 \\ 109.6.3 \\ 87.9.0 \end{array} = 45 \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 25 \\ = 20 \end{array} \right\} \text{ } \text{p cent.}$
Ans.

(11.) $\frac{1}{4} | \begin{array}{r} \text{£}342.15 \\ 85.13.9 \\ 8.11.4\frac{1}{2} \end{array} = 27\frac{1}{2} \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 25 \\ = 2\frac{1}{2} \end{array} \right\} \text{ } \text{p ct.}$
Ans.

(12.) $\frac{1}{5} | \begin{array}{r} \text{£}342.15 \\ 68.11 \\ 34.5.6 \end{array} = 30 \text{ } \text{p cent.}$
 $\left. \begin{array}{l} = 20 \\ = 10 \end{array} \right\} \text{ } \text{p cent}$
Ans.

$$\begin{array}{l} \frac{1}{2} | \text{£}342 . 15 . 0 = 37\frac{1}{2} \text{ } \text{p cent.} \\ \text{off } \frac{1}{4} | \begin{array}{l} 171 . 7 . 6 = 50 \\ 42 . 16 . 10\frac{1}{2} = 12\frac{1}{2} \end{array} \} \text{ } \text{p ct.} \\ \hline \text{£}128 . 10 . 7\frac{1}{2} \text{ } \text{Ans.} \end{array} \quad (18.) \quad \begin{array}{l} \frac{3}{8} | \text{£}511 . 10 = 40 \text{ } \text{p cent.} \\ \begin{array}{l} 102 . 6 = 20 \\ 102 . 6 = 20 \end{array} \} \text{ } \text{p cent.} \\ \hline \text{£}204 . 12 \text{ } \text{Ans.} \end{array}$$

$$(14.) \quad \begin{array}{l} \frac{2}{5} | \text{£}342 . 15 = 40 \text{ } \text{p cent.} \\ \begin{array}{l} 68 . 11 = 20 \\ 68 . 11 = 20 \end{array} \} \text{ } \text{p cent.} \\ \hline \text{£}137 . 2 \text{ } \text{Ans.} \end{array} \quad (19.) \quad \begin{array}{l} \frac{1}{10} | \text{£}730 . 15 . 0 = 15 \text{ } \text{p cent.} \\ \frac{1}{2} | \begin{array}{l} 73 . 1 . 6 = 10 \\ 36 . 10 . 9 = 5 \end{array} \} \text{ } \text{p cent.} \\ \hline \text{£}109 . 12 . 3 \text{ } \text{Ans.} \end{array}$$

$$(15.) \quad \frac{1}{10} | \text{£}511 . 10 = 10 \text{ } \text{p cent.} \quad (20.) \quad \frac{1}{5} | \text{£}730 . 15 = 20 \text{ } \text{p cent.} \\ \hline \text{£} 51 . 3 \text{ } \text{Ans.} \quad \hline \text{£}146 . 3 \text{ } \text{Ans.}$$

$$(16.) \quad \begin{array}{l} \frac{1}{5} | \text{£}511 . 10 = 20 \text{ } \text{p cent.} \\ \hline \text{£}102 . 6 \text{ } \text{Ans.} \end{array} \quad (21.) \quad \begin{array}{l} \frac{1}{5} | \text{£}730 . 15 . 0 = 22\frac{1}{2} \text{ } \text{p cent.} \\ \frac{1}{8} | \begin{array}{l} 146 . 3 . 0 = 20 \\ 18 . 5 . 4\frac{1}{2} = 2\frac{1}{2} \end{array} \} \text{ } \text{p cent.} \\ \hline \text{£}164 . 8 . 4\frac{1}{2} \text{ } \text{Ans.} \end{array}$$

$$(17.) \quad \begin{array}{l} \frac{1}{8} | \text{£}511 . 10 = 33\frac{1}{8} \text{ } \text{p cent.} \\ \hline \text{£}170 . 10 \text{ } \text{Ans.} \end{array} \quad (22.) \quad \begin{array}{l} \frac{1}{5} | \text{£}730 . 15 . 0 = 30 \text{ } \text{p cent.} \\ \frac{1}{2} | \begin{array}{l} 146 . 3 . 0 = 20 \text{ } \text{p cent.} \\ 73 . 1 . 6 = 10 \text{ } \text{p cent.} \end{array} \\ \hline \text{£}219 . 4 . 6 \text{ } \text{Ans.} \end{array}$$

CASE II.

EXERCISES, page 119.

(1 to 3.)... £35 for 1 mo. is $\frac{2}{11}$; for 2 mo. is $\frac{5}{10}$; for 3 mo. is $\frac{8}{9}$

(4 to 6.)... £45 for 2 mo. is $\frac{7}{6}$; for 3 mo. is $\frac{11}{3}$; for 4 mo. is $\frac{15}{4}$.

(7 to 9.)... £67 . 10 for 1 mo. is $\frac{5}{7\frac{1}{2}}$; for 3 mo. is $\frac{16}{10\frac{1}{2}}$; for 5 mo. is £1 . 8 . $\frac{1}{2}$

(10 to 12.) £78 . 5 for 2 mo. is $\frac{13}{0\frac{1}{2}}$; for 3 mo. is $\frac{19}{6\frac{3}{4}}$; for 4 mo. is £1 . 6 . 1

(13 to 15.) £130 for 1 mo. is $\frac{10}{10}$; for 3 mo. is £1 . 12 . 6; for 6 mo. is £3 . 5

CASE III.

EXERCISES, page 120.

At 5 per cent.

(1.)... £408.5
25 days.

$$\begin{array}{r}
 20425 \\
 8170 \\
 \hline
 73 \cdot 102 \cdot 125 (1 \cdot 399 \\
 73 \cdots \underline{\underline{\pounds 1 \cdot 7 \cdot 11 \frac{3}{4}}} \\
 291 \quad \text{Ans.} \\
 219 \\
 \hline
 722 \\
 657 \\
 \hline
 655 \\
 657 \\
 \hline
 \hline
 \end{array}$$

(2.) £408.5
30 days.

$$\begin{array}{r}
 73 \cdot 122 \cdot 550 (1 \cdot 678 \\
 73 \cdots \underline{\underline{\pounds 1 \cdot 13 \cdot 7}} \\
 495 \quad \text{Ans.} \\
 438 \\
 \hline
 575 \\
 511 \\
 \hline
 640 \\
 584 \\
 \hline
 56 \\
 \hline
 \hline
 \end{array}$$

(3.) £408.5
61 days.

$$\begin{array}{r}
 4085 \\
 24510 \\
 \hline
 73 \cdot 249 \cdot 185 (3 \cdot 413 \\
 219 \cdots \underline{\underline{\pounds 3 \cdot 8 \cdot 3 \frac{1}{4}}} \\
 301 \quad \text{Ans.} \\
 292 \\
 \hline
 98 \\
 73 \\
 \hline
 255 \\
 219 \\
 \hline
 36 \\
 \hline
 \hline
 \end{array}$$

(4.) £408.5
92 days.

$$\begin{array}{r}
 8170 \\
 36765 \\
 \hline
 73 \cdot 375 \cdot 820 (5 \cdot 148 \\
 365 \cdots \underline{\underline{\pounds 5 \cdot 2 \cdot 11 \frac{1}{2}}} \\
 108 \quad \text{Ans.} \\
 73 \\
 \hline
 352 \\
 292 \\
 \hline
 600 \\
 584 \\
 \hline
 16 \\
 \hline
 \hline
 \end{array}$$

(5.)... £370.625
45 days.

$$\begin{array}{r}
 1853125 \\
 1482500 \\
 \hline
 73 \cdot 166 \cdot 78125 (2 \cdot 284 \\
 146 \cdots \underline{\underline{\pounds 2 \cdot 5 \cdot 8 \frac{1}{4}}} \\
 207 \quad \text{Ans.} \\
 146 \\
 \hline
 618 \\
 584 \\
 \hline
 341 \\
 292 \\
 \hline
 49 \\
 \hline
 \hline
 \end{array}$$

(6.) £370.625
60 days.

$$\begin{array}{r}
 73 \cdot 222 \cdot 37500 (3 \cdot 046 \\
 219 \cdots \underline{\underline{\pounds 3 \cdot 0 \cdot 11}} \\
 337 \quad \text{Ans.} \\
 292 \\
 \hline
 455 \\
 438 \\
 \hline
 17 \\
 \hline
 \hline
 \end{array}$$

(7.) £370·625
73 days.

$$\begin{array}{r} \underline{1111875} \\ 2594375 \\ 73 \cdot 270 \cdot 55625 (3 \cdot 706 \\ \underline{219 \dots} \quad \underline{\underline{\pounds 3 \cdot 14 \cdot 1\frac{1}{2}}} \\ 515 \\ 511 \\ \underline{452} \\ 438 \\ \underline{14} \\ \underline{\underline{\hspace{1cm}}} \end{array}$$

Ans.

(8.) £370·625
124 days.

$$\begin{array}{r} \underline{1482500} \\ 4447500 \\ 73 \cdot 459 \cdot 57500 (6 \cdot 295 \\ \underline{438 \dots} \quad \underline{\underline{\pounds 6 \cdot 5 \cdot 10\frac{3}{4}}} \\ 215 \\ 146 \\ \underline{697} \\ 657 \\ \underline{405} \\ 365 \\ \underline{40} \\ \underline{\underline{\hspace{1cm}}} \end{array}$$

Ans.

(9.) £370·625
150 days.

$$\begin{array}{r} \underline{18531250} \\ 3706250 \\ 73 \cdot 555 \cdot 93750 (7 \cdot 615 \\ \underline{511 \dots} \quad \underline{\underline{\pounds 7 \cdot 12 \cdot 3\frac{3}{4}}} \\ 449 \\ 438 \\ \underline{113} \\ 73 \\ \underline{407} \\ 365 \\ \underline{42} \\ \underline{\underline{\hspace{1cm}}} \end{array}$$

Ans.

(10.)..... £657
70 days.

$$\begin{array}{r} \underline{438 \cdot} \\ 219 \\ 73 \cdot 459 \cdot 90 (6 \cdot 3 = \pounds 6 \cdot 6 \cdot 0 \\ \underline{\hspace{1cm}} \end{array}$$

Ans.

(11.) £657
146 days.

$$\begin{array}{r} \underline{3942} \\ 2628 \\ 657 \\ 73 \cdot 959 \cdot 22 (13 \cdot 14 = \pounds 13 \cdot 2 \cdot 9\frac{1}{2} \\ \underline{73 \cdot \cdot} \end{array}$$

Ans.

$$\begin{array}{r} \underline{229} \\ 219 \\ 102 \\ 73 \\ \underline{292} \\ 292 \\ \underline{\underline{\hspace{1cm}}} \end{array}$$

(12.) £657
219 days.

$$\begin{array}{r} \underline{5913} \\ 657 \\ 1314 \\ 73 \cdot 1438 \cdot 83 (19 \cdot 71 \\ \underline{73 \cdot \cdot} \quad \underline{\underline{\pounds 19 \cdot 14 \cdot 2\frac{1}{2}}} \\ 708 \\ 657 \\ \underline{518} \\ 511 \\ \underline{73} \\ \underline{\underline{\hspace{1cm}}} \end{array}$$

Ans.

(13.) £657
292 days.

$$\begin{array}{r} \underline{1314} \\ 5913 \\ 1314 \\ 73 \cdot 1918 \cdot 44 \\ \underline{\underline{\pounds 26 \cdot 5 \cdot 7}} \end{array}$$

Ans.

At 4 ¼ cent.

(14.)..... £627.75
 29 days.

$$\begin{array}{r}
 \underline{564075} \\
 125550 \\
 73 \overline{)182.0475} \quad (2.4938 \\
 \underline{146 \dots \dots} \quad \quad .8 \\
 \underline{360} \quad \quad 1.9950 = \underline{\underline{£1.19.10\frac{3}{4}}} \text{ Ans.} \\
 292 \\
 \underline{684} \\
 657 \\
 \underline{277} \\
 219 \\
 \underline{585} \\
 584 \\
 \underline{1} \\
 \underline{\underline{}}
 \end{array}$$

(15.)..... £627.75
 56 days.

$$\begin{array}{r}
 \underline{376650} \\
 313875 \\
 73 \overline{)351.5400} \quad (4.8156 \\
 \underline{292 \dots} \quad \quad .8 \\
 \underline{595} \quad \quad 3.85248 = \underline{\underline{£3.17.0\frac{1}{2}}} \text{ Ans.} \\
 584 \\
 \underline{114} \\
 73 \\
 \underline{410} \\
 365 \\
 \underline{450} \\
 438 \\
 \underline{12} \\
 \underline{\underline{}}
 \end{array}$$

(16.) £627.75
 83 days.

$$\begin{array}{r} 188325 \\ 502200 \\ \hline 73 \cdot 521 \cdot 0325 \\ 7 \cdot 1374 = 5 \text{ p cent.} \\ \cdot 8 \\ \hline 5 \cdot 7099 = \text{£}5 . 14 . 2\frac{1}{2} \text{ Ans.} \end{array}$$

(17.) £627.75
 200 days.

$$\begin{array}{r} 73 \cdot 1255 \cdot 5000 \\ 17 \cdot 1986 = 5 \text{ p cent.} \\ \cdot 8 \\ \hline 13 \cdot 758 = \text{£}13 . 15 . 2 \text{ Ans.} \end{array}$$

(18.) £438
 30 days.

$$\begin{array}{r} 73 \cdot 131 \cdot 40 \\ \text{off } \frac{1}{5} \left[\begin{array}{l} 1 \cdot 80 = 5 \text{ p cent.} \\ \cdot 36 = 1 \text{ p cent.} \\ \hline 1 \cdot 44 = \text{£}1 . 8 . 9\frac{1}{2} \text{ Ans.} \end{array} \right. \end{array}$$

(19.) £438
 60 days.

$$\begin{array}{r} 73 \cdot 262 \cdot 80 \\ \text{off } \frac{1}{5} \left[\begin{array}{l} 3 \cdot 60 = 5 \text{ p cent.} \\ \cdot 72 = 1 \text{ p cent.} \\ \hline 2 \cdot 88 = \text{£}2 . 17 . 7\frac{1}{4} \text{ Ans.} \end{array} \right. \end{array}$$

(20.) £438
 120 days.

$$\begin{array}{r} 73 \cdot 525 \cdot 60 \\ \text{off } \frac{1}{5} \left[\begin{array}{l} 7 \cdot 20 = 5 \text{ p cent.} \\ 1 \cdot 44 = 1 \text{ p cent.} \\ \hline 5 \cdot 76 = \text{£}5 . 15 . 2\frac{1}{2} \text{ Ans.} \end{array} \right. \end{array}$$

(21.) £438
 240 days.

$$\begin{array}{r} 73 \cdot 1051 \cdot 20 \\ \text{off } \frac{1}{5} \left[\begin{array}{l} 14 \cdot 40 = 5 \text{ p cent.} \\ 2 \cdot 88 = 1 \text{ p cent.} \\ \hline 11 \cdot 52 = \text{£}11 . 10 . 5 \text{ Ans.} \end{array} \right. \end{array}$$

At 6 p cent.

(22.) £365
 42 days.

$$\begin{array}{r} 730 \\ 1460 \\ \hline 73 \cdot 153 \cdot 30 \\ \text{Add } \frac{1}{5} \left[\begin{array}{l} 2 \cdot 10 = 5 \text{ p cent.} \\ \cdot 42 = 1 \text{ p cent.} \\ \hline 2 \cdot 52 = \text{£}2 . 10 . 5 \text{ Ans.} \end{array} \right. \end{array}$$

(23.) £365
 84 days.

$$\begin{array}{r} 1460 \\ 2920 \\ \hline 73 \cdot 306 \cdot 60 \\ \text{Add } \frac{1}{5} \left[\begin{array}{l} 4 \cdot 20 = 5 \text{ p cent.} \\ \cdot 84 = 1 \text{ p cent.} \\ \hline 5 \cdot 04 = \text{£}5 . 0 . 9\frac{1}{2} \text{ Ans.} \end{array} \right. \end{array}$$

(24.) £365
 168 days.

$$\begin{array}{r} 2920 \\ 5840 \\ \hline 73 \cdot 613 \cdot 20 \\ \text{off } \frac{1}{5} \left[\begin{array}{l} 8 \cdot 40 = 5 \text{ p cent.} \\ 1 \cdot 68 = 1 \text{ p cent.} \\ \hline 10 \cdot 08 = \text{£}10 . 1 . 7\frac{1}{4} \text{ Ans.} \end{array} \right. \end{array}$$

(25.) £365
 210 days.

$$\begin{array}{r} 3650 \\ 730 \\ \hline 73 \cdot 766 \cdot 50 \\ \text{Add } \frac{1}{5} \left[\begin{array}{l} 10 \cdot 50 = 5 \text{ p cent.} \\ 2 \cdot 10 = 1 \text{ p cent.} \\ \hline 12 \cdot 60 = \text{£}12 . 12 \text{ Ans.} \end{array} \right. \end{array}$$

- (4.)... 73· £315 for 90 days. Or, £315
 off $\frac{1}{10}$ $\begin{array}{r} 4\cdot315=100 \text{ days.} \\ \cdot431=10 \text{ da. off.} \\ \hline 3\cdot884=\text{£}3.17.8\frac{1}{4} \text{ Ans.} \end{array}$ $\begin{array}{r} 90 \\ 30 \overline{)2835,0} \\ 12 \overline{)945} \text{ pence.} \\ \hline 78/9 \\ \hline 1/1 \\ \hline 77/8=\text{£}3.17.8 \end{array}$
- (5.)... 73· £315 for 95 days.
 off $\frac{1}{20}$ $\begin{array}{r} 4\cdot315=100 \text{ days.} \\ \cdot215=5 \text{ days.} \\ \hline 4\cdot100=\text{£}4.2 \text{ Ans.} \end{array}$
- (6.)... 73· £315 for 100 days.
 $\begin{array}{r} 4\cdot315=\text{£}4.6.3\frac{3}{4} \text{ Ans.} \end{array}$
- (7.)..... 73· £420, for 110 days.
 add $\frac{1}{10}$ $\begin{array}{r} 5\cdot753=100 \text{ days.} \\ \cdot575=10 \text{ days.} \\ \hline 6\cdot328=\text{£}6.6.7 \text{ Ans.} \end{array}$
- (8.) 73· £420 for 120 days. (9.) 73· £420 for 125 days.
 add $\frac{1}{5}$ $\begin{array}{r} 5\cdot753=100 \text{ days.} \\ 1\cdot150=20 \text{ days.} \\ \hline 6\cdot903=\text{£}6.18.0\frac{3}{4} \text{ Ans.} \end{array}$ add $\frac{1}{4}$ $\begin{array}{r} 5\cdot753=100 \text{ days.} \\ 1\cdot438=25 \text{ days.} \\ \hline 7\cdot191=\text{£}7.3.10 \text{ Ans.} \end{array}$

CASE IV.

EXERCISES, pages 121 and 122.

			£	days.	
(1.)	March	23	Sum due.....	320	
			Paid.....	110	
			Bal	210	× 68 = 14280
	May	30	Paid.....	160	
				50	× 50 = 2500
	July	19	Paid bal.....	50	73·) 167·80
					<u>£2.5.11½ Ans.</u>

			£	da.	
(2.)	Feb.	2	Sum due ...	250	
			Paid in part	50	
				200	× 102 = 20400
	May	15	Paid.....	50	
				150	× 78 = 11700
	Aug.	1	Paid.....	50	
				100	× 102 = 10200
	Nov.	11	Paid bal.....	100	73·) 423·00
					<u>Ans. 5·794 = £5.15.10½</u>

			£	×	da.	=	
(3.) Dec.	1	Borrowed...	960	×	31	=	29760
Jan.	1	Paid.....	80				
			880	×	31	=	27280
Feb.	1	Paid.....	80				
			800	×	28	=	22400
Mar.	1	Paid.....	80				
			720	×	31	=	22320
April	1	Paid.....	80				
			640	×	30	=	19200
May	1	Paid.....	80				
			560	×	31	=	17360
June	1	Paid.....	80				
			480	×	30	=	14400
July	1	Paid.....	80				
			400	×	31	=	12400
Aug.	1	Paid.....	80				
			320	×	31	=	9920
Sept.	1	Paid.....	80				
			240	×	30	=	7200
Oct.	1	Paid.....	80				
			160	×	31	=	4960
Nov.	1	Paid.....	80				
			80	×	30	=	2400
Dec.	1	Paid.....	80				
					73.)	1896·00	
							<i>Ans.</i>
						25·972 =	£25 . 19 . 5½

			£	×	da.	=	
(4.) Apr.	6	Bill due.....	240	×	84	=	20167
June	29	Paid.....	95				
			145	×	63	=	9135
Aug.	31	Paid.....	80				
Oct.	12	Paid bal.....	65	×	42	=	2730
		Interest..	4 . 7 . 9		73.)	320·25	
			£69 . 7 . 9			4·387 =	£4 . 7 . 9 <i>Ans.</i>

CASE V.

EXERCISES, page 124.

			£	s.	d.	da.	
(1.)	Feb.	4	To Rum	312	10	.	× 36 = 11250
	Mar.	12	To ditto.....	185	7	6	
				497	17	6	× 8 = 3983
		20	By Bill	168	11	8	
				329	5	10	× 20 = 6586*
	Apr.	9	To Sugar...	219	5	.	
				548	10	10	× 25 = 13714
	May	4	By Cash.....	150	.	.	
				398	10	10	× 11 = 4384
		15	To Sugar...	167	10	.	
				566	.	10	× 26 = 14717
	June	10	By Bill	197	10	.	
				368	10	10	× 21 = 7739
							73)623·73
							8·544 = £8.10.10½

			£	s.	d.	da.	
(2.)	Jan.	1	By Balance	156	12	.	× 18 =2819
		19	To Cotton ..	438	15	9	
			Dr.	282	3	9	× 11 = 3104
		30	By Bill.....	260	.	.	
			Dr.	22	3	9	× 41 = 910
	Mar.	12	To Cotton ..	584	10	.	
			Dr.	606	13	9	× 23 = 13954
	Apr.	4	By Cash.....	430	.	.	
			Dr.	176	13	9	× 51 = 9011
	May	25	To Ashes...	290	12	3	
			Dr.	467	6	.	× 43 = 20094
	July	7	To ditto.....	145	5	.	
			Dr.	612	11	.	× 45 = 27565
	Aug.	21	By Calicoes	310	8	6	
				302	2	6	× 72 = 21753
							96391
							off 2819
							73)935·72
							12·818 = £12.16.4½

* When the shillings in the product exceed 10, one is added to the pounds.

		£	s.	d.	da.		
(3.) Aug. 1	To Goods	248	10	.	× 30	=	7455
31	By Cash.....	180	.	.			
		68	10	.	× 19	=	1302
Sep. 19	To Cash.....	318	1	.			
		386	11	.	× 14	=	5412
Oct. 3	To Insurance	31	19	7			
	Dr.	418	10	7	× 2	=	837
5	By Bill.....	450	3	9			
	Cr.	31	13	2	× 21	=	665
26	To Goods	246	17	6			
	Dr.	215	4	4	× 15	=	3228
Nov. 10	By Bill.....	305	10	10			
	Cr.	90	6	6	× 6	=	542
16	To Cash.....	330	.	.			
	Dr.	239	13	6	× 26	=	6232
Dec. 12	By Cotton ...	2436	9	11			
	Balance...	2196	16	5	× 19	=	41740
							24466 42947

42947
 ded. 24466
 73)184·81
 1st Ans. 2·531 = £ 2 . 10 . 7½ Interest.
 Add.....2196 . 16 . 5 Balance.
 2nd Ans. 2199 . 7 . 0½

DISCOUNTING BILLS.

CASE I.

EXERCISES, page 125.

- (1.) A Bill of £65 @ 3 mo. discount 16/3
 A Bill of £65 @ 4 mo. ditto 21/8
 Discount £1 . 17 . 11

	<i>Dis.</i>	<i>Proceeds.</i>	
(2.) A Bill of £39 @ 1 mo. 3/3 =		£38 . 16 . 9	
Another of £39 @ 2 mo. 6/6 =		38 . 13 . 6	
Another of £39 @ 3 mo. 9/9 =		38 . 10 . 3	
			£116 . 0 . 6
A Bill of £67 . 10 @ 2 mo. 11/3 =		£66 . 18 . 9	
Another of £67 . 10 @ 4 mo. 22/6 =		66 . 7 . 6	
			133 . 6 . 3
A Bill of £130 @ 3 mo. 32/6 is.....		128 . 7 . 6	
			Ans. £377 . 14 . 3

CASE II.

EXERCISES, page 126.

(1.).....	£146 . 0 for 50 da. =	7300	
	182 . 10 for 60 da. =	10950	
	365 . 0 for 91 da. =	33215	
Sum of Bills	693 . 10	73)514·65	
Discount	7 . 1	7·05 =	£7 . 1 Ans.
Proceeds.....	£686 . 9		

(2.).....	£1209		
	57 days to run.		
	8463		
	6045		
	73)689·13		
	9·440 =		£9 . 8 . 9½ Ans.

(3.).....	Bill dated 11th Sept. @ 4 mo. falls due 14th January. Then from 17th Oct. till 14th Jan. is 89 days.
	A Bill of £390
	89 days.
	3510
	3120
	73)347·10
	4·754 =
	£390 . 0 . 0 Bill.
	4 . 15 . 1 Discount.
	Ans. £385 . 4 . 11 Proceeds.

(4.)... Bill due 10th April, and from 7th January, is 93 days.

$$\begin{array}{r}
 \text{£}198\cdot75 \\
 \underline{\quad\quad 93 \text{ days.}} \\
 \quad 59625 \\
 \underline{\quad 178875} \\
 73\cdot)184\cdot8375 \\
 \underline{\quad 2\cdot532} = \text{£}198\cdot15\cdot0 \text{ Bill.} \\
 \text{Ans. } \underline{\underline{\text{£}196\cdot4\cdot4}} \text{ Proceeds.}
 \end{array}$$

(5.)..... $\text{£}362\cdot5$ due 7th January.
89 days to run.

$$\begin{array}{r}
 \underline{\quad 32625} \\
 \quad 29090 \\
 73\cdot)\underline{322\cdot625} \quad \text{£}362\cdot10\cdot0 \\
 \underline{\quad 4\cdot419} = \quad 4\cdot8\cdot4\frac{3}{4} \\
 \text{A. B.'s proceeds.....} \underline{\underline{\text{£}358\cdot1\cdot7\frac{1}{4}}} \text{ 1st Ans.}
 \end{array}$$

$\text{£}295\cdot6$ due 9th January.
91 days to run.

$$\begin{array}{r}
 \underline{\quad 2956} \\
 \quad 26604 \\
 73\cdot)\underline{268\cdot996} \quad \text{£}295\cdot12\cdot0 \\
 \underline{\quad 3\cdot684} = \quad 3\cdot13\cdot8\frac{1}{2} \\
 \text{C. D.'s proceeds.....} \underline{\underline{\text{£}291\cdot18\cdot3\frac{1}{2}}} \text{ 2d Ans.}
 \end{array}$$

$\text{£}143\cdot25$ due 12th January.
94 days to run.

$$\begin{array}{r}
 \underline{\quad 57300} \\
 \quad 128925 \\
 73\cdot)\underline{134\cdot6550} \quad \text{£}143\cdot5\cdot0 \text{ Bill.} \\
 \underline{\quad 1\cdot844} = \quad 1\cdot16\cdot10\frac{1}{2} \text{ Discount.} \\
 \text{E. F.'s proceeds.....} \underline{\underline{\text{£}141\cdot8\cdot1\frac{1}{2}}} \text{ Proceeds.} \\
 \text{3d Ans.}
 \end{array}$$

EXERCISES, page 126.

(1.).... Interest for 292 days... $\text{£} 4$
Add... 100

As $\overline{104} : 100 :: 520$

$$\begin{array}{r}
 \underline{\quad 100} \\
 104\cdot)\underline{52000} \\
 \text{Ans. } \underline{\underline{\text{£}500}}
 \end{array}$$

(2.)..... As $\frac{105}{21} : \frac{100}{20} :: \text{£}1000$

$$21 \left\{ \begin{array}{r} 3 \overline{)20000} \\ 7 \overline{)6666.13.4} \end{array} \right.$$

Ans. £952 . 7 . 7 $\frac{3}{7}$

Proof..... $\frac{1}{20} \left| \begin{array}{l} \text{£}952 . 7 . 7\frac{3}{7} \text{ Principal.} \\ 47 . 12 . 4\frac{4}{7} \text{ Interest.} \\ \hline \text{£}1000 . 0 . 0 \text{ Amount.} \end{array} \right.$

(3.)..... As $\frac{105}{21} : \frac{100}{20} :: \text{£}1050$

$$21 \overline{)21000}$$

Ans. £1000 sum lent.

(4.)..... As $\frac{103\frac{3}{4}}{415} : \frac{3.15}{15} :: \frac{830}{3}$

$$83 \overline{)2490}$$

Ans. £30 of discount.

EQUATION OF TIME.

(1.)..... Jan. 11th..... £50 due.
 28th..... 30 × 17 = 510
 Feb. 3d 80 × 23 = 1840
 13th..... 90 × 33 = 3070
 Mar. 28th..... 40 × 76 = 3040
 290 29,0)846,0
 28 days after 11th Jan.
 or on 8th February. *Ans.*

(2.)..... £25 × 6 mo. = 150
 30 × 7 mo. = 210
 40 × 10 mo. = 400
 95)760 (8 months. *Ans.*
 760

(3.).....Purchased Goods $\frac{1}{3}$ in cash.

$$\frac{1}{3} \text{ in } 6 \text{ mo.} = 2$$

$$\frac{1}{3} \text{ in } 9 \text{ mo.} = 3$$

Ans. 5 months.

(4.)..... May 4th $\frac{1}{4}$ in 3 mo. = $\frac{3}{4}$

$$\frac{1}{4} \text{ in } 6 \text{ do.} = 1\frac{1}{2}$$

$$\frac{1}{4} \text{ in } 9 \text{ do.} = 2\frac{1}{4}$$

$$\frac{1}{4} \text{ in } 12 \text{ do.} = 3$$

Ans. 7 $\frac{1}{2}$ months from 4th May.

(5.)..... A debt of £400 is to be paid as follows :

$$\frac{1}{4} 100 \text{ in } 8 \text{ mo.} = 800$$

$$\frac{1}{4} 100 \text{ in } 12 \text{ do.} = 1200$$

$$\frac{1}{2} 200 \text{ in } 15 \text{ do.} = 3000$$

$$\underline{\underline{400}} \quad 4,00 \overline{)50,00}$$

Ans. 12 $\frac{1}{2}$ months.

(6.)... A person owes £1000

March 25th $\frac{1}{4}$ due 250 due at this date

June 24th $\frac{1}{4}$... 250 \times 91 da. = 22750

Sept. 29th $\frac{1}{4}$... 250 \times 188 ... = 47000

Dec. 25th $\frac{1}{4}$... 250 \times 275 ... = 68750

$$\underline{\underline{1000}} \quad 10,00 \overline{)1385,00}$$

Ans. 138 da. after 25th March,
or on 10th Aug.

(7.)... An Agent sells Goods, &c.

Jan. 7th £52 . 10 due now.

29th 67 . 9* in 22 da. = 1474

Feb. 12th 36 . 18 in 36 ... = 1332

Mar. 1st 29 . 12 in 53 ... = 1590

31st 43 . 7 in 83 ... = 3569

$$\underline{\underline{229 . 16}} \quad 23,0 \overline{)796,5}$$

Ans. 34 days after 7th January,
or 10th February.

* Here 1 is added to the pounds in the sum, if the odd shillings amount to 10 or upwards, but neglected if below 10.

INSURANCE.

CASE I.

EXERCISES, page 129.

<p>(1.)..... $\frac{1}{80}$ £600 @ $1\frac{1}{4}$ gs. p ct.</p> <p style="padding-left: 20px;">Add $\frac{1}{20}$ <u>7.10.0</u></p> <p style="padding-left: 40px;">0.7.6</p> <p>Premium... £7.17.6</p> <p>Policy 0.15.0</p> <p style="padding-left: 20px;"><u>Ans. £8.12.6</u></p>	<p>(3.)..... $\frac{1}{40}$ £1950 @ $3\frac{3}{4}$ gs. p ct.</p> <p style="padding-left: 20px;">$\frac{1}{2}$ <u>48.15.0</u></p> <p style="padding-left: 40px;">24.7.6</p> <p style="padding-left: 20px;">Add $\frac{1}{10}$ <u>73.2.6</u></p> <p style="padding-left: 40px;">3.13.1$\frac{1}{2}$</p> <p>Premium £76.15.7$\frac{1}{2}$</p> <p>Policy ... 2.10.0</p> <p>Commission 9.15.0</p> <p style="padding-left: 20px;"><u>Ans. £89.0.7$\frac{1}{2}$</u></p>
<p>(2.)..... £1625 @ 8 gs. p cent.</p> <p style="padding-left: 40px;">8</p> <p style="padding-left: 20px;"><u>130.00 = £130.0.0</u></p> <p style="padding-left: 40px;">Add $\frac{1}{20}$ <u>6.10.0</u></p> <p>Premium..... £136.10.0</p> <p>Policy..... 4.9.3</p> <p>Commission 8.2.6</p> <p style="padding-left: 20px;"><u>Ans. £149.1.9</u></p>	<p>(4.)..... $\frac{1}{20}$ £1375 at 5 gs. p ct.</p> <p style="padding-left: 20px;">Add $\frac{1}{20}$ <u>68.15.0</u></p> <p style="padding-left: 40px;">3.8.9</p> <p>Premium £72.3.9</p> <p>Policy... 3.13.6</p> <p>Commission 6.17.6</p> <p style="padding-left: 20px;"><u>Ans. £82.14.9</u></p>

CASE II.

EXERCISES, page 130.

<p>(1.)..... Premium..... £5.5</p> <p style="padding-left: 20px;">Policy and Commission 0.15</p> <p style="padding-left: 40px;">From 100—6=94 : 100 :: say £470*</p> <p style="padding-left: 60px;">470</p> <p style="padding-left: 40px;">94)47000</p> <p style="padding-left: 20px;"><u>Ans. £500</u></p>	
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* Note. As insurances are never effected on shillings, they are either rejected altogether, or, if they amount to 10, one is added to the pounds, as above.

(2.)..... Premium.....£8 . 8 . 0
 Policy and Commission 0 . 15 . 3
 From 100—9 . 3 . 3
 Remainder 90 . 16 . 9 : 100 :: 687
 687
 90·8)68700
Sum to be insured..... £757 nearly. *Ans.*

(3.)..... Premium.....£9 . 9 . 0
 Policy and Commission 0 . 15 . 6
 From 100—10 . 4 . 6
 Remainder 89 . 15 . 6 : 100 :: 1560
 89·775 1560
)156000·000
Ans. £1737

CASE III.

EXERCISES, page 131.

(1.)..... $\frac{1}{10}$ | £2375 . 0 . 0 @ 10 gs. $\frac{1}{2}$ cent.
 Add $\frac{1}{20}$ | 237 . 10 . 0
 11 . 17 . 6
 Premium..... £249 . 7 . 6
 Policy..... 6 . 0 . 0
 Commission..... 11 . 17 . 6
 Full Premium... £267 . 5 . 0
 Ded. Return..... 118 . 15 . 0
 Net Premium... £148 . 10 . 0 *Ans.*

Say £24,00
 5/
 Policy..... 120/. or £6.

$\frac{1}{200}$)23·75
 Commission £11·875 = £11 . 17 . 6

$\frac{1}{20}$)237,5
£118 . 15 Return.

(2.).....		$\frac{1}{20}$	£3000 @ 5 gs.	
	Add $\frac{1}{20}$	150 . 0		
		7 . 10		
Premium		157 . 10		
Policy		7 . 10		
Commission		15 . 0		
Full Premium		£180 . 0		
Ded. Return		75 . 0		
Net Premium		<u>£105 . 0</u>		Ans.

(3.).....		£6 . 6 $\frac{1}{4}$ cent.		
		12,00 £		
Premium		75 . 12		
Policy		3 . 0		
Commission		6 . 0		
Full Cost		£84 . 12		
Ded. Return 3 $\frac{1}{4}$ cent.		36 . 0		
Net Cost		<u>£48 . 12</u>		Ans.

CASE IV.

EXERCISES, page 132.

(1.)..... If 50,00 : \int £31,2 . 10 :: 1,00
 5,0 $\left\{ \frac{6\frac{1}{4} \frac{1}{4} \text{ cent.}}{\underline{\underline{\hspace{1cm}}}} \right.$ Ans.

(2.)...	Cost of replacing Masts, Cables, &c....	£450	
	Deduct $\frac{1}{3}$ for newness	150	
		<u>£300</u>	
	Anchor lost, value	50	
	Rum, 10 Pun. thrown overboard	200	
	Charges of Pilotage	50	
	General average loss	<u>£600 . 0 . 0</u>	
	Ship valued at	£5000	
	Cargo	8100	
	Freight, deducting Charges.....	1900	
	Value at Risk.....	<u>£15000 . 0 . 0</u>	

As $\frac{\text{value.}}{\text{£150,00}}$: $\frac{\text{loss.}}{600}$:: 1,00
 150..... $\frac{4 \frac{1}{4} \text{ cent.}}{\underline{\underline{\hspace{1cm}}}}$ average loss. 1st Ans.

180 hhds. Sugar at £25 is £4500. Loss $22\frac{1}{2}$ hhds. value £562 . 10
 As £45,00 : £562 . 10 :: 100

45..... $12\frac{1}{2}$ cent., particular average loss on
 sugar. *2nd Ans.*

General average on £4500, value of the sugar,
 at 4 p cent., is£180 . 0 . 0

Particular average on ditto, at $12\frac{1}{2}$ p cent. is 562 . 10 . 0

Insured on sugar.....£4500 . 0

Loss on ditto 562 . 10

Return of prem. on...£3937 . 10 (the value of
 the sugar that arrived safe) at 3 p cent. ... 118 . 2 . 6

The underwriters must pay the assured£860 . 12 . 6 *3d An.*

STOCK-JOBGING.

EXERCISES, page 134.

(1.)... $\frac{1}{4}$...£62 . 7 . 6
6,25
374 . 5 . 0
15 . 11 . $10\frac{1}{2}$
 Value...£389 . 16 . $10\frac{1}{2}$
 Ded. Brok. 0 . 15 . $7\frac{1}{2}$
Proceeds £389 . 1 . 3 Ans.

(3.)... £61 . 2 . 6
15,00
916 . 17 . 6
 Brokerage 1 . 17 . 6
Ans. £918 . 15 . 0

(2.)... $\frac{1}{2}$...£79 . 5
12,50
£951 . 0
39 . 12 . 6
£990 . 12 . 6
 Add Brok. 1 . 11 . 3
Cost £992 . 3 . 9 Ans.

(4.)... £95.375
185
476875
763000
95375
176.44375 = £176 . 8 . $10\frac{1}{2}$
 Brokerage..... 0 . 4 . $7\frac{1}{2}$
Ans. £176 . 13 . 6

(5.)... Bought at..... $62\frac{3}{8}$
 Add Comm. ... $\frac{1}{8}$
62 $\frac{1}{2}$
 Sold at $65\frac{1}{4}$
 Ded. Comm ... $\frac{1}{8}$
65 $\frac{1}{8}$
 Difference..... $2\frac{5}{8}$

Then £18,00 @ $2\frac{5}{8}$
 $2\frac{5}{8}$ p cent.
36
11 . 5
Ans. £47 . 5 difference.

(6.).... Purchased @ ... $71\frac{1}{4}$
 Add Comm. $\frac{1}{8}$

 $71\frac{3}{8}$
 Sold at $71\frac{3}{8}$
 Ded. Comm. $\frac{1}{8}$

 $71\frac{1}{4}$
Difference per cent. $\frac{1}{8}$

Then
 $\frac{1}{800} | \text{£}70,00 \text{ @ } \frac{1}{8}$
Ans. £ 8.15 loss.

(7.).... $\frac{1}{8}$... $\text{£}68 \text{ @ } 18\frac{3}{16}$ yrs.
 $\frac{18}{544}$
 $\frac{68}{16}$
 $\frac{1}{2}$... $8.10 = \frac{2}{16}$
 $4.5 = \frac{1}{16}$
 Amount... 1236.15
 Brokerage $1.10.10\frac{3}{4}$
Proceeds £1235.4.1 $\frac{1}{4}$ *Ans.*

(8.).... $\frac{1}{4}$... $\text{£}75 \text{ @ } 7\frac{1}{4}$ yrs.
 $\frac{7}{525}$
 18.15
 Amount... 543.15
 Brokerage 13.7
Cost £544.8.7 *Ans.*

CASE II.

EXERCISES, page 134.

(1.).... Price..... $62\frac{1}{4}$ per cent.
 Add Comm. $\frac{1}{8}$
 $\frac{62\frac{3}{8}}{499} : \frac{100}{800} :: \text{£}350$
 $\frac{350}{499} \overline{)280000} (561.122 = \text{£}561.2.5\frac{1}{2}$ *Ans.*
 $\frac{2495 \cdot \cdot}{3050}$
 $\frac{2994}{560}$
 $\frac{499}{610}$
 $\frac{499}{1110}$
 $\frac{998}{112}$

(2.).... Price..... $71\frac{3}{4}$ ¢ cent.
 Ded. Comm. $\frac{1}{8}$
 $\frac{71\frac{5}{8}}{573} : \frac{100}{800} :: \frac{£1148}{800}$
 $573 \overline{) 918400}$
 Ans. £ 1602 . 15 . 10

(3.)..... Price..... $80\frac{7}{8}$ ¢ cent.
 Add Comm. $\frac{1}{8}$
 $81 : 100 :: \frac{£1000}{1000}$
 $81 \overline{) 100000}$
£ 1234 . 11 . 4 $\frac{1}{4}$ Ans.

(4.)..... If £3 : 100 :: £450
 $\frac{100}{3} \overline{) 45000}$
 $\frac{stock.}{price.}$
 If 100 : $66\frac{1}{2}$:: $\frac{15000}{66\frac{1}{2}}$
 $\frac{990000}{7500}$
 Price..... $97\frac{3}{4} : 100 :: \frac{9975,00}{800}$
 Add Comm. $\frac{1}{8}$ 800
 $\frac{97\frac{7}{8}}{783} \quad 783 \overline{) 7980000}$
£ 10191 . 11 . 5 Ans.

CASE III.

EXERCISES, page 135.

(1.)..... £250 Net income.
 Add $\frac{1}{8}$ 27·777 Tax 10 ¢ cent. of gross income.
 As 3 : 100 :: $\frac{277·777}{100}$
 $3 \overline{) 27777·777}$
 $\frac{9259·259}{63\frac{7}{8}}$ = £9259 . 5 . 2 $\frac{1}{4}$ Stock.
 including Brokerage.
 $\frac{27777777}{55555554}$
 $\frac{8101852}{5914·351}$ = $\frac{7}{8}$
£5914 . 7 . 0 $\frac{1}{4}$ Ans.

(2.) £300
 Add $\frac{1}{8}$ 33·333
 As 5 : 100 :: 333·333
 100
 $\frac{4}{8} \dots \frac{1}{2}$ $5 \overline{) 33333 \cdot 333}$
 6666·666 = £6666 . 13 . 4 Stock.
 97 $\frac{5}{8}$ including Brokerage.
 46666·666
 $\frac{1}{8} \dots \frac{1}{4}$ 600000·00
 3333·333
 833·333
6508,33·333 = £6508 . 6 . 8 Ans.

(3.) $\frac{1}{8}$) £4732·5 @ 64 $\frac{1}{8}$ comm. deducted.
 64 $\frac{1}{8}$ ¢ cent.
 18930·0
 283950
 591·5625
3034,71·5625 = £3034 . 14 . 4 Money.

Interest on which is 151 . 14 . 8 $\frac{1}{2}$ @ 5 ¢ cent.
 Which deduct from the income 222 . 4 . 5 $\frac{1}{2}$
 Sum in sterling ¢ annum £ 70 . 9 . 9 Ans.

CASE IV.

EXERCISES, page 136.

(1.) $\frac{\text{Stock.}}{\text{As } 81\frac{3}{4}} : \frac{\text{Int.}}{4} :: \frac{\text{£}}{100}$
 327 16
 100
 327)1600
 Ans. 4·892 = £4 . 17 . 10 ¢ cent.

(2.) $\frac{\text{Stock.}}{\text{As } 5\frac{1}{8}} : \frac{\text{Ster.}}{3} :: \frac{\text{£}}{100}$
 41 100
 300
 8
 41)2400
 Ans. £ 58 . 10 . 8 $\frac{3}{4}$ ¢ cent.

(3.) As $\frac{82\frac{1}{2}}{165}$ Price. $\frac{4}{8}$ $\frac{\text{p cent.}}{8}$:: $\frac{100}{100}$ £

$$\begin{array}{r}
 100 \\
 165 \overline{)800} \\
 \underline{165} \\
 635 \\
 \underline{480} \\
 1550 \\
 \underline{1550} \\
 0
 \end{array}$$

Ans. £ 4 . 16 . 11 $\frac{1}{2}$ p cent.

GAIN AND LOSS.

CASE I.

EXERCISES, page 137.

(1.) If $\frac{30d.}{120}$: $\frac{3\frac{3}{4}d.}{15}$:: 100

$$\begin{array}{r}
 100 \\
 8 \overline{)100} \\
 \underline{80} \\
 20 \\
 \underline{16} \\
 40 \\
 \underline{40} \\
 0
 \end{array}$$

Ans. 12 $\frac{1}{2}$ p cent.

(2.) If $\frac{80d.}{16}$: $\frac{5d.}{1}$:: $\frac{100}{6\frac{1}{4}}$ p cent. Ans.

(3.) If $\frac{56d.}{8}$: $\frac{7d.}{1}$:: $\frac{100}{12\frac{1}{2}}$ p cent. Ans.

(4.) If $\frac{32d.}{8}$: $\frac{4d.}{1}$:: $\frac{100}{12\frac{1}{2}}$ p cent. Ans

(5.) If 420 : 31 . 10 :: 100

$$\begin{array}{r}
 100 \\
 42,0 \overline{)315,0} \\
 \underline{294} \\
 210 \\
 \underline{210} \\
 0
 \end{array}$$

$\frac{21}{42} = \frac{1}{2}$ Ans.

(2.)..... 8,0d. : $87\frac{1}{2}$:: 100d.
 $\frac{10,0}{8 \overline{)8750}}$
 $\underline{109\frac{3}{8}} - 100 = 9\frac{3}{8} \text{ } \textit{p cent. Ans.}$

(3.)..... If $\frac{28/}{7}$: 85 :: $\frac{32}{8}$
 $\frac{7 \overline{)680}}$
 $\underline{97\frac{1}{7}} - 100 = 2\frac{6}{7} \textit{ p cent. Ans.}$

(4.)..... If $\frac{90d.}{6}$: 110 :: $\frac{105}{7}$
 $\frac{6 \overline{)770}}$
 From..... $\frac{128\frac{1}{3}}$
 Deduct..... 100
 He gains..... $\underline{28\frac{1}{3} \textit{ p cent.}}$

If $\frac{7/6}{15}$: 110 :: $\frac{7/}{14}$
 $\frac{15 \overline{)1540}}$
 Ans. $\underline{102\frac{2}{3}} - 100 = 2\frac{2}{3} \textit{ p cent. gains.}$

PROMISCUOUS QUESTIONS.

Page 139.

(1.)..... $1\frac{1}{2}d. = \frac{1}{8})100$ Gain £900 *p annum.*
 1st Ans. Profit $\underline{12\frac{1}{2} \textit{ p cent.}}$ $\frac{8}{8} = 12\frac{1}{2} \textit{ p cent.}$
 $\underline{\underline{£7200}}$ extent of Sales. 2d An.

(2.)... Price *p cwt.* 84/. $12\frac{1}{2} \textit{ p cent.} = \frac{1}{8})84/.$
 Add $\frac{1}{8}$ 14 $\frac{10/6}{10/6}$
 $\frac{112 \overline{)98/}}$ 2nd Ans. $\underline{94/6} \textit{ p cwt.}$
 1st Ans. $\underline{10\frac{1}{2} \textit{ p lb.}}$

(10.)... $\frac{\text{£} \quad \text{s.} \quad \text{lb.} \quad \text{£} \quad \text{s.}}{14 \cdot 14 : 112 :: 80 \cdot 17}$

$$\begin{array}{r} 294 \overline{) 181104} \\ \underline{1617} \\ 112 \\ \underline{19404} \\ 1617 \\ \underline{294} \overline{) 181104} \\ 181104 \\ \underline{181104} \\ 0 \end{array}$$

1st Ans. 616 lb. sold.

$$\begin{array}{r} 2/. \frac{1}{10} \overline{) 616 \text{ lb. @ } 2/3} \\ 3d. \frac{1}{8} \overline{) 61 \cdot 12} \\ \underline{7 \cdot 14} \\ \hline \text{Sold for } \underline{\underline{\text{£}69 \cdot 6}} \end{array}$$

Prime Cost... £80 . 17 . 0

9 Mo. Interest 3 . 0 . 8

Amount £83 . 17 . 8 : $\frac{\text{Loss.}}{\text{£}14 \cdot 11 \cdot 8} :: 100$

Pence... 20132 : 3500

$$\begin{array}{r} 20132 \overline{) 350000} \left(17 \frac{277}{719} \text{ cent. loss. 2nd Ans.} \right. \\ \underline{20132} \\ 148680 \\ \underline{140924} \\ 7756 \quad 277 \\ \underline{20132} \quad 719 \end{array}$$

PARTNERSHIP.

CASE I.

EXERCISES, page 141.

(1.) $2 \overline{) \text{£}999 \cdot 19 \cdot 10}$
£499 . 19 . 11 Ans.

(2.) ... $\frac{\text{£}987 \cdot 16 \cdot 9}{100 \cdot 0 \cdot 0}$
 $3 \overline{) 887 \cdot 16 \cdot 9}$

Ansrs.
£295 . 18 . 11 B. & C. each.
100 . 0 . 0
£395 . 18 . 11 A.'s share.

CASE II.

EXERCISES, pages 141 and 142.

(1.) ^{shares.} 17 | £959 . 11 . 7
£ 56 . 8 . 11 × 8 × 6 × 3

(3.) From £4894 . 17 . 6
 Sub. 4000 . 0 . 0
 5 + 3 = 8 | 894 . 17 . 6
111 . 17 . 2 $\frac{1}{4} \times 5 \times 3$

Ansrs. { A.'s £451 . 11 . 4
 B.'s 338 . 13 . 6
 C.'s 169 . 6 . 9 } £959 . 11 . 7 Proof.

Ansrs. { A.'s sh. 559 . 5 . 11 $\frac{1}{4}$
 B.'s sh. 335 . 11 . 6 $\frac{3}{4}$
 Proof, 894 . 17 . 6 } Proof, 894 . 17 . 6

(2.)... 13 | £3900
 Ans. { D.'s £ 300 × 3 × 4 × 5
 C.'s 900
 B.'s 1200
 A.'s 1500 } £3900 Proof.

(4.)... B. $\frac{3}{12}$ and C. $\frac{2}{12} = \frac{5}{12}$
 5 | £296 . 15 . 10
59 . 7 . 2 × 3 × 2
 B. pays £178 . 1 . 6 } Ansrs.
 C. pays 118 . 14 . 4 } £296 . 15 . 10 Proof.

CASE III.

EXERCISES, page 142.

(1.)... The sum of £1200 and £900 = 2100 whole capital.

Answers.

If £2100 : £301 . 17 . 6 :: { £1200 : £172 . 10 . 0 A.'s.
 900 : 129 . 7 . 6 B.'s.
£301 . 17 . 6 Proof.

(2.)... The sum of £3600, £1800, and 900 = £6300

If 63,00 : £787 . 10 :: $\frac{36,00}{7}$ $\frac{18,00}{4}$ $\frac{9,00}{4}$

7 | 3150
£450 . 0 A.'s share.
225 . 0 B.'s share.
112 . 10 C.'s share. } Ansrs.
£787 . 10 Proof.

(3.)... £1200 + £1500 + £2000 = £4700 whole capital.

4700)1262.5(·268617 = loss @ £

94 · · 1200 £
322 £322.340 = £322 . 6 . 9½ A. loses.
 282

405 ·268617
 376 1500 £
290 402.925 = £402 . 18 . 6 B. loses.
 282

80 ·268617
 47 2000 £
330 537.234 = £537 . 4 . 8½ C. loses.
 329
1

A.'s Capital... £1200 . 0 . 0	B.'s Capital... £1500 . 0 . 0
Deduct loss 322 . 6 . 9½	Deduct loss 402 . 18 . 6
<u>A. retires with £ 877 . 13 . 2½</u>	<u>B. retires with £1097 . 1 . 6</u>

C.'s Capital..... £2000 . 0 . 0
 Deduct his loss.. 537 . 4 . 8½
C. retires with..... £1462 . 15 . 3½

A. retires with £ 877 . 13 . 2½ }
 B. retires with £1097 . 1 . 6 } *Answers.*
 C. retires with £1462 . 15 . 3½ }

CASE IV.

EXERCISES, page 143.

(1.)... Profit on the Business..... £743 . 15 . 0

Interest on A.'s stock £1200 is £ 90 . 0 . 0
 B.'s stock 1500 ... 112 . 10 . 0
 C.'s stock 1800 ... 135 . 0 . 0
337 . 10 . 0

To be equally divided..... £406 . 5 . 0
 One-third to each is..... £135 . 8 . 4

A.'s ⅓ is £135 . 8 . 4 B.'s ⅓ is £135 . 8 . 4 C.'s ⅓ is £135 . 8 . 4
 Interest 90 . 0 . 0 Interest 112 . 10 . 0 Interest 135 . 0 . 0
A. draws £225 . 8 . 4 B. draws £247 . 18 . 4 C. draws £270 . 8 . 4

A. draws £225 . 8 . 4 }
 B. draws £247 . 18 . 4 } *Ansrs.*
 C. draws £270 . 8 . 4 }

(2.)...	Net Gain on the Business.....	£687 . 10 . 0	
	Deduct A.'s Salary.....	125 . 0 . 0	
	Sum to be divided	£562 . 10 . 0	
	Interest on A.'s Capital, £2000 is	£100 . 0 . 0	
	Ditto on B.'s Capital, 3000 ...	150 . 0 . 0	
		250 . 0 . 0	
	To be equally divided.....	312 . 10 . 0	
	One half of which is.....	£156 . 5 . 0	

A.'s Capital.....	£2000 . 0	B.'s Capital.....	£3000 . 0
Interest on which is	100 . 0	Interest on ditto	150 . 0
Salary.....	125 . 0	Share of Profits.	156 . 5
Share of Profits.....	156 . 5	B. draws.....	£3306 . 5
A. draws.....	£2381 . 5		

A. draws £2381 . 5 } *Ansrs.*
 B. draws £3306 . 5 }

(3.)...	Net Subject at Balancing.....	£3062 . 10	
	Original Stock.....	2500 . 0	
	Net Profit on the Business,	£ 562 . 10	

Interest on £2500 @ $8\frac{1}{3}$ per cent. is	£208 . 6 . 8
B.'s former Salary was.....	80 . 0 . 0
	£288 . 6 . 8

If $£288\frac{1}{3} : £562 . 10 :: 208\frac{1}{3}$

865

625

562 $\frac{1}{2}$

1250

3750

3125

312 . 10

865)351562 . 10

Ansrs.

	£406 . 8 . 7 $\frac{1}{4}$	A.'s Share of Profit.
Balance,	156 . 1 . 4 $\frac{3}{4}$	B.'s Share of ditto.
	562 . 10 . 0	

PROMISCUOUS EXERCISES.

Page 144.

(1.)...	January	31 days.			365
	February	28			92
	March	31			<u>365</u>
	April	2			365
		92			6850
					8220
					4110
					<u>273)500050</u>
					<u>£1825 Ans.</u>

days.
If 365 : £1370 :: 273 *days.*

(2.)	A. advanced	£700	} If	£1600	: £1160.15	::	{	£700	: £507.16.6 $\frac{3}{4}$	A.'s
	B. ditto	600		£	600	: £435.5.7 $\frac{1}{2}$		B.'s		
	C. ditto	300		£	300	: £217.12.9 $\frac{3}{4}$		C.'s		
		1600						Proof <u>£1160.15.0</u>		

A. has drawn	£500	. 0 . 0			
Share of Gain	507	. 16 . 6 $\frac{3}{4}$			
Cr. for	7	. 16 . 6 $\frac{3}{4}$			
His Capital	700	. 0 . 0		<i>1st Ans.</i>	
	£707	. 16 . 6 $\frac{3}{4}$			A. has still to draw.

B. has drawn	£450	. 0 . 0			
Share of Gain	435	. 5 . 7 $\frac{1}{2}$			
Dr. for	14	. 14 . 4 $\frac{1}{2}$			
His Capital	600	. 0 . 0			
	585	. 5 . 7 $\frac{1}{2}$		<i>2nd Ans.</i>	B. draws.

C. has drawn	£260	. 0 . 0			
Share of Gain	217	. 12 . 9 $\frac{3}{4}$			
Dr. for	42	. 7 . 2 $\frac{1}{4}$			
His Capital	300	. 0 . 0			
	257	. 12 . 9 $\frac{3}{4}$		<i>3rd Ans.</i>	C. draws.
	£1550	. 15 . 0			

(3.) A. advances £400 }
 12% ct. on which is } £48
 B. advances £800 }
 8% ct. on which is } 64

Ansrs.

112 : £180.19 :: 48 : £77.11 A.'s Gain.
 112 : 180.19 :: 64 : 103.8 B.'s ditto.
£180.19 Proof.

(4.) A.'s Share is $\frac{1}{8}$ or $\frac{2}{12}$
 B.'s ditto $\frac{1}{4}$ or $\frac{3}{12}$
 C.'s ditto $\frac{1}{8}$ or $\frac{4}{12}$

Sum of A., B., & C.'s sh. $\frac{9}{12}$

D.'s share is one fourth..... £960.12
 His share of loss..... 240.3

D. having $\frac{1}{4}$ of £3000 capital is..... £750.0.0
 Deduct the loss..... 240.3.0
509.17.0
 Off $6\frac{1}{4}$ % cent..... 31.17.4
 D has to receive £477.19.8

Ansrs.

A... 2 }
 B... 3 } If *sh.* 9 : £477.19.8 :: { 2 : £106.4.4 $\frac{1}{2}$ A. pays B.
 C... 4 } { 3 : 159.6.6 $\frac{1}{2}$ B.
9 { 4 : 212.8.9 C.
477.19.8 Proof.

(5.) Net Gain at Balancing £450.10
 £200 for 9 months..... £11.5.0
 150 for 6 months..... 5.12.6
 300 for 3 months..... 5.12.6
22.10
 To be equally divided 428.0
 One-half of which is B.'s Share, 1st Ans. 214.0
 A.'s Share of the above is 214.0
 Interest on his Advances 22.10
 A.'s share=2nd Ans..... 236.10
Proof, £450.10

BANKRUPTCY.

CASE I.

EXERCISES, page 145.

(1.)..... As $\begin{matrix} \text{Debts.} \\ \text{£1567.5} \end{matrix}$: $\begin{matrix} \text{Effects.} \\ 744.5625 \end{matrix}$:: 1

$$\begin{array}{r} 1567.5 \overline{)744.5625} \cdot 475 = 9/6 \text{ } \text{p} \text{ } \text{£. Ans.} \\ \underline{62700} \\ 117562 \\ \underline{109725} \\ 78375 \\ \underline{78375} \\ \hline \end{array}$$

(2.)..... $\begin{matrix} \text{Debts.} \\ 18723.375 \end{matrix}$ $\begin{matrix} \text{Effects.} \\ 10531.78750 \end{matrix}$ $\cdot 563 = 11/3 \text{ } \text{p} \text{ } \text{£ 1st Ans.}$

$$\begin{array}{r} 93616875 \\ \underline{117010000} \\ 112340250 \\ \underline{56697500} \\ 56170125 \\ \hline \end{array}$$

$$\begin{array}{r} 10/. \quad \frac{1}{2} \quad \text{£}1135.10 \text{ } \text{a} \text{ } 11/3 \text{ } \text{p} \text{ } \text{£} \\ \frac{1}{3} \quad \frac{1}{8} \quad \underline{\quad 567.15} \\ \quad \quad \quad \underline{\quad 70.19.4\frac{3}{4}} \end{array}$$

2nd Ans. $\underline{\underline{\text{£}638.14.4\frac{3}{4}}}$ the Sum I receive.

(3.)..... Goods & Inventory.....	£6275 . 10	
off 10 % cent.....	627 . 11	
		5647 . 19 . 0
Open Accounts.....	11057 . 12 . 8	
off 5/. % £, or ¼	2764 . 8 . 2	
		8293 . 4 . 6
Good Bills to the Amount of.....	4146 . 7 . 6	
		18087 . 11 . 0
Trustees' Commission 4 % cent.....	723 . 10 . 0	
Net Sum to be divided.....	£17364 . 1 . 0	

$$\begin{array}{r} 49756.5 \overline{)17364.05} \cdot 349 = 6/11\frac{3}{4} \text{ } \text{p} \text{ } \text{£. Ans.} \\ \underline{1492695} \\ 2437100 \\ \underline{1990260} \\ 4468400 \\ \underline{4478085} \\ \hline \end{array}$$

CASE II.

EXERCISES, page 146.

$$(1.) \frac{1}{8} \left| \begin{array}{r} \text{£}1120.16 \text{ @ } 2/6 \\ \hline \text{£ } 140. 2 \end{array} \right. \quad \frac{1}{10} \left| \begin{array}{r} \text{£}1120.16 \text{ @ } 3/. \\ \hline 112.1.7 \\ 56.0.9\frac{1}{2} \\ \hline \text{£ } 168.2.4\frac{1}{2} \end{array} \right. \quad \frac{1}{8} \left| \begin{array}{r} \text{£}1120.16 \text{ @ } 4/6 \\ \hline 140. 2 = 2/6 \\ 112. 1.7 = 2/. \\ \hline \text{£ } 252. 3.7 \end{array} \right.$$

$$(2.) \dots \frac{1}{2} \left| \begin{array}{r} \text{£}965. 10 \text{ @ } 11/3 \\ \hline 482. 15 = 10/. \\ 60. 6.10\frac{1}{2} = 1/3 \\ \hline \text{Ans. } \text{£}543. 1.10\frac{1}{3} \end{array} \right. \quad (3.) \frac{1}{2} \left| \begin{array}{r} \text{£}1809. 11. 8 \text{ @ } 12/6 \\ \hline 904. 15. 10 = 10/. \\ 226. 3. 11\frac{1}{2} = 2/6 \\ \hline \text{Ans. } \text{£}1130. 19. 9\frac{1}{2} \end{array} \right.$$

$$(4.) \dots \frac{1}{8} \left| \begin{array}{r} \text{£}13678. 15 \text{ @ } 2/9 \\ \hline 1709. 16. 10\frac{1}{2} = 2/6 \\ 170. 19. 8\frac{1}{4} = 3d. \\ \hline \text{1st Ans. } \text{£}1880. 16. 6\frac{3}{4} \end{array} \right. \quad \frac{1}{8} \left\{ \begin{array}{l} \frac{1}{10} \left| \begin{array}{r} \text{£}13678. 15 \text{ @ } 3/6 \\ \hline 1709. 16. 10\frac{1}{2} = 2/6 \\ 683. 18. 2 = 1/. \\ \hline \text{2nd Ans. } \text{£}2393. 15. 7\frac{1}{2} \end{array} \right. \\ \frac{1}{20} \left| \begin{array}{r} \text{£}13678. 15 \text{ @ } 3/6 \\ \hline 1709. 16. 10\frac{1}{2} = 2/6 \\ 683. 18. 2 = 1/. \\ \hline \text{2nd Ans. } \text{£}2393. 15. 7\frac{1}{2} \end{array} \right. \end{array} \right.$$

$$\frac{1}{8} \left| \begin{array}{r} \text{£}13678. 15 \text{ @ } 4/. \\ \hline \text{3rd Ans. } \text{£}2735. 15 \end{array} \right. \quad \frac{1}{8} \left\{ \begin{array}{l} \frac{1}{18} \left| \begin{array}{r} \text{£}13678. 15 \text{ @ } 4/7 \\ \hline 2279. 15. 10 = 3/4 \\ 854. 18. 5\frac{1}{4} = 1/3 \\ \hline \text{4th Ans. } \text{£}3134. 14. 3\frac{1}{4} \end{array} \right. \\ \frac{1}{18} \left| \begin{array}{r} \text{£}13678. 15 \text{ @ } 4/7 \\ \hline 2279. 15. 10 = 3/4 \\ 854. 18. 5\frac{1}{4} = 1/3 \\ \hline \text{4th Ans. } \text{£}3134. 14. 3\frac{1}{4} \end{array} \right. \end{array} \right.$$

PROMISCUOUS EXERCISES.

Page 146.

$$(1.) \begin{array}{r} \text{sixp. sixp.} \\ 25 : 40 :: \text{£}2942. 10 \\ \hline 5 \quad 8 \quad 8 \\ \hline 5)23540. 0 \\ \hline \text{Amount of his Debts } 4708. 0 \\ \text{Composition..... } 2942. 10 \\ \hline \text{Deficiency..... } \text{£}1765. 10 \end{array} \quad (2.) \frac{1}{4} \left| \begin{array}{r} \text{£}20450 \text{ @ } 8/9 \text{ @ } \text{£} \\ \hline 5112.10 = 5/. \\ 2556. 5 = 2/6 \\ 1278. 2.6 = 1/3 \\ \hline \text{£}8946.17.6 \text{ Ans.} \end{array} \right. \quad \begin{array}{l} \text{1st Ans.} \\ \text{2nd Ans.} \end{array}$$

(3.) The amount of £1 improved @ 10 % ct. for 10 years is £1 . 12 . 2

Am. Prin.
 $1.61)1.000(.621=12/5 \text{ \% } \text{£. Ans.}$

966
340
322
180
160
20

(4.) A. has owing him..... £1450 . 0 . 0
 Add 4½ years' Interest @ 7½ % cent. % annum 559 . 0 . 11
Amount..... £2009 . 0 . 11

£1450 @ 12/6 % £, is..... £906 . 5 . 0
 3 years' Interest at 5 % cent..... 135 . 18 . 9

1042 . 3 . 9
Ans. His loss is.....£ 966 . 17 . 2

(5.) £39500 @ 13/4 % £
 off ⅓ 13166 . 13 . 4

The composition is £26333 . 6 . 8 which improved at 10 % cent.
 % ann. for 3 years and 9 months, amounts to £37678 . 7 . 10
Amount of his Debts is 39500 . 0 . 0
Ans. The offer of 20/ % £ is therefore better by £ 1821 . 12 . 2

EXCHANGE.

I. WITH AMSTERDAM.

Page 149.

(1.)	<i>ban.</i>	<i>cur.</i>	<i>guilders.</i>	
	As 100	: 103½	:: 4420	
			103½	
			13260	
			4420	
			552.5	
			4558.125	<i>guild. stiv. pen.</i> =4558 . 2 . 8 <i>Ans.</i>

(2.)..... If $\frac{\text{cur.}}{207} : \frac{\text{ban.}}{200} :: \frac{\text{guild.}}{200} 3852.5$

$$\begin{array}{r} 207 \overline{) 770500.0} \\ \underline{3722.222} = 3722 . 4 . 7 \text{ Ans.} \end{array}$$

(3.)..... £586.5 @ 10 flor. 8 stiv. @ £ sterling.

$$\begin{array}{r} 10.4 \\ \underline{23460} \\ 58650 \\ \underline{6099.60} = 6099 \text{ guild. 12 stivers, Ans.} \end{array}$$

(4.)..... If $\frac{\text{cur.}}{835} : \frac{\text{ban.}}{800} :: \frac{\text{guild. cur.}}{800} 4588.675$

$$\begin{array}{r} 835 \overline{) 3670940.000} \\ \underline{4396.3353} \\ 40 \\ \text{Guilders Banco} \\ \text{Exch. } 35/10, \text{ or } 430d. \overline{) 175853.412} \\ \underline{408.961} = £408 . 19 . 2\frac{3}{4} \text{ Ans.} \end{array}$$

(5.)..... £1704.25 @ 10 flor. 6 stiv. 4 pen.
 10 florins.

$$\begin{array}{r} 17042.50 \\ 5 \text{ stiv.} \dots\dots\dots \frac{1}{4} \quad 426.0625 \\ 1 \text{ stiv. 4 pen.} \frac{1}{4} \quad 106.515625 \\ \underline{17575.078125} = 17575 \text{ guild. 1 stiv. 9 pen. Ans.} \end{array}$$

(6.)..... A British Sailor has..... £1 . 10 . 0
 A Dutch Sailor... 16 guilders.
 40d. Flem.

$$\begin{array}{r} \text{Exch. } 36/8 = 44,0 \overline{) 64,0} \\ 1.454 + = 1 . 9 . 1\frac{1}{11} \\ \text{The British Sailor is better by } \underline{\underline{0 . 0 . 10\frac{10}{11} \text{ Ans.}}} \end{array}$$

(7.)..... As $\frac{\text{ster.}}{45} 22\frac{1}{2}d. : \frac{\text{flem.}}{80} 40d. :: \frac{\text{ster.}}{16} 240d. = £1 \text{ sterling.}$

$$\begin{array}{r} 45 \overline{) 3840} \\ \underline{240} \\ 9 \overline{) 3840} \\ \underline{426\frac{2}{3}d.} = 35/6\frac{2}{3} \text{ Ans.} \end{array}$$

II. WITH HAMBURGH.

EXERCISES, page 151.

(1.)..... $\frac{\text{cur.}}{237} \text{ If } 118\frac{1}{2} : \frac{\text{ban.}}{200} : : 6160$

$$\begin{array}{r}
 237 \overline{)1232000(5198 \cdot 312} \\
 \underline{1185 \cdot \cdot} \quad \underline{5198 \text{ m. } 5 \text{ sh.}} \text{ Ans.} \\
 470 \\
 \underline{237} \\
 2330 \\
 \underline{2133} \\
 1970 \\
 \underline{1896} \\
 740 \\
 \underline{711} \\
 290 \\
 \underline{237} \\
 53 \\
 \underline{\quad}
 \end{array}$$

(2.)..... $\frac{33}{6} / 10 \quad 4162 \cdot 5$

$$\begin{array}{r}
 \frac{33}{6} / 10 \quad 4162 \cdot 5 \\
 \underline{203} \quad \underline{16} \\
 24977 \\
 \underline{4162} \\
 203 \overline{)66597} \\
 \underline{328 \cdot 064} = \text{£}328 \cdot 1 \cdot 3\frac{1}{2} \text{ Ans.}
 \end{array}$$

(3.)..... $\frac{\text{cur.}}{6} \text{ If } 120 : \frac{\text{ban.}}{5} : : \frac{\text{marks.}}{5} 17464$

$$\begin{array}{r}
 6 \overline{)87320} \\
 \underline{14553 \cdot 3} \\
 32d. = 1 \text{ mark.} \\
 \underline{291066} \\
 436600 \\
 \text{Exch. } 34/5 = 413d. \overline{)465706 \cdot 6} \\
 \underline{1127 \cdot 619} = \text{£}1127 \cdot 12 \cdot 4\frac{3}{4} \text{ Ans.}
 \end{array}$$

(4.)... If $\frac{\text{ster.}}{20/} : \frac{\text{flem.}}{34/9} :: \frac{\text{£}}{1093.15} \frac{\text{s}}{20}$

$$\begin{array}{r}
 21875 \\
 \underline{417} \\
 153125 \\
 21875 \\
 \hline
 87500 \\
 20 \overline{)9121875} \\
 \underline{4} \quad 456093 \cdot 75 \\
 \underline{8} \quad 114023 \cdot 4375 \\
 \hline
 14252 \cdot 9296875 = 14252 \cdot 14 \cdot 10\frac{1}{2} \text{ Ans.}
 \end{array}$$

(5.)..... If $\frac{\text{flem.}}{35/5} : \frac{\text{ster.}}{20/} :: \frac{\text{flem.}}{32d.} = 1 \text{ mark.}$

$$\begin{array}{r}
 425 \overline{)640} \\
 \underline{425} \quad 640 \\
 \text{Ans. } \underline{\underline{1/6\frac{6}{11}}}
 \end{array}$$

(6.)..... If $\frac{33/4}{400} : \frac{20/}{32} :: 32d.$

$$\begin{array}{r}
 40,0 \overline{)64,0} \\
 \underline{40,0} \quad 64,0 \\
 \text{Ans. } \underline{\underline{1/4}}
 \end{array}$$

$\frac{12,0 \text{ cur.}}{6} : \frac{10,0 \text{ ban.}}{5} :: \frac{1/7\frac{1}{5}}{5}$

III. WITH PARIS.

EXERCISES, page 152.

(1.)..... £364 . 7 . 6 @ 23 livres 10 sous.

$$\begin{array}{r}
 364 \cdot 375 \\
 \underline{23 \cdot 5} \\
 1821875 \\
 1093125 \\
 \underline{728750} \\
 \text{Sub. } \frac{1}{81} \quad 8562 \cdot 8125 \\
 \underline{105 \cdot 713} \\
 \underline{\underline{8457 \cdot 09}} = 8457 \text{ francs 9 cents. Ans.}
 \end{array}$$

- (2.)..... Off $\frac{1}{81}$ 9500·625 livres.
 $\frac{117\cdot291}{24\cdot25} \overline{)9383\cdot334}$ ($\underline{\underline{386\cdot942}} = \text{£}386 . 18 . 10, \text{ Ans.}$)
 7275
 21083
 19400
 16833
 14550
 22834
 21825
 1009, &c.
- (3.)..... $\frac{f. c. \quad fran. ct.}{24\cdot8} \overline{)2545\cdot41}$ ($\underline{\underline{102\cdot637}} + = \text{£}102 . 12 . 9, \text{ Ans.}$)
 248·
 654
 496
 1581
 1488
 93, &c.
- (4.)..... $\frac{liv. \quad liv.}{25\cdot7} \overline{)3222\cdot1375}$ ($\underline{\underline{125\cdot375}} = \text{£}125 . 7 . 6, \text{ Ans.}$)
 257· ·····
 652
 514
 1381
 1285
 963
 771
 1927
 1799
 1285
 1285
- (5.)..... $\text{£}364 . 7 . 6, \text{ exchange @ } 23 \text{ francs, } 50 \text{ cents.}$
 $\frac{364\cdot375}{23\cdot5} \overline{)1821875}$
 1093125
 728750
 $\underline{\underline{8562\cdot8125}} = \text{£}8562 \text{ francs, } 81 \text{ cents. Ans.}$

IV. WITH MADRID.

EXERCISES, page 153.

(1.)..... 5420 piastres 6 rials, exchange at $37\frac{1}{2}d.$

$$\begin{array}{r}
 30d. \frac{1}{8} \overline{)5420\cdot75} \\
 7\frac{1}{2}d. \frac{1}{4} \overline{)677\cdot59375} \\
 \hline
 169\cdot3984 + \\
 \hline
 846\cdot992 + = \underline{\underline{\pounds 846 . 19 . 10. Ans.}}
 \end{array}$$

(2.)..... $\pounds 675 . 2 . 11 @ 35d.$ £ piastre.

$$\begin{array}{r}
 20 \\
 \hline
 13502 \\
 12 \\
 \hline
 35d. \left\{ \begin{array}{l} 5 \overline{)162035} \\ 7 \overline{)32407} \end{array} \right. \\
 \hline
 \underline{\underline{Ans. 4629 piast. 4 ri. 19\frac{3}{7} mar.}}
 \end{array}$$

(3.)..... 8072 piast. 2 ri. 11 mar. exchange $38\frac{3}{4}d.$

$$\begin{array}{r}
 30d. = \frac{1}{8} \overline{)8072\cdot2903+} \\
 7\frac{1}{2}d. = \frac{1}{4} \overline{)1009\cdot0362} \\
 1\frac{1}{4}d. = \frac{1}{8} \overline{)252\cdot259} \\
 \hline
 42\cdot043 \\
 \hline
 \underline{\underline{1303\cdot338 = \pounds 1303 . 6 . 9\frac{1}{4}. Ans.}}
 \end{array}$$

(4.)..... vellon. plate. dollars.—
 $As 32 : 17 :: 8653\cdot6838—$

$$\begin{array}{r}
 16 = \frac{1}{2} \overline{)4326\cdot8419} \\
 1 = \frac{1}{18} \overline{)270\cdot4276} \\
 30d. \left\{ \begin{array}{l} \frac{1}{8} \overline{)4597\cdot2695 dol. @ 38\frac{3}{8}d.} \\ \frac{1}{4} \overline{)574\cdot6587—} \\ \frac{1}{10} \overline{)143\cdot6647} \\ \frac{1}{8} \overline{)14\cdot3664} \\ \frac{1}{8} \overline{)2\cdot3946} \end{array} \right. \\
 \hline
 \underline{\underline{735\cdot084 = \pounds 735 . 1 . 8\frac{1}{4}. Ans.}}
 \end{array}$$

V. WITH LISBON.

EXERCISES, Pages 153 and 154.

(1.)..... $\frac{1}{4}$ $\overline{4786\cdot450}$ @ $67\frac{1}{2}d.$
 $\frac{1}{8}$ $\overline{1196\cdot612} = 60$
 $\overline{149\cdot576} = 7\frac{1}{2}$
1346\cdot189 = £1346 . 3 , $9\frac{1}{2}$. *Ans.*

(2.)..... £1565 . 18 . 4 @ $67\frac{1}{2}d.$
 $\frac{20}{31318}$
 $\frac{12}{375820}$
 $67\frac{1}{2}$ $\frac{2}{375820}$
 $\frac{2}{135}$ $\frac{2}{751640}$
Ans. 5567 mil. 703 rees.

(3.)..... $\overline{7580\cdot310}$ @ $65d.$ $\frac{1}{4}$ milree.
 $\frac{400}{3032\cdot310}$
 $6d.$ $\frac{1}{4}$ $\overline{3032\cdot310}$
 $5d.$ $\frac{1}{1\frac{1}{2}}$ $\overline{758\cdot0775}$
 $\overline{63\cdot1731}$
821\cdot250 = £821 . 5 . 0. *Ans.*

(4.)..... 1800 moidores @ 27/ £2430
 A moid. = 4800 rees.
 $\frac{1440}{72}$
 $60d.$ $\frac{1}{4}$ $\overline{8640}$ milrees @ $64d.$ 2304
 $4d.$ $\frac{1}{15}$ $\overline{2160}$ Gain £126 *Ans.*
 $\overline{144}$
£2304

VI. WITH LEGHORN.

EXERCISES, page 154.

(1.)..... $\frac{1}{5}$ | 1580.75 piastres @ 49d.
 $\frac{1}{45}$ | 316.15 = 48d.
 | 6.586 = 1d.
 | 322.736 = £322 . 14 . 9 Ans.

(2.)..... £325 . 18 . 4
 20
 6518
 12
 Exch. 5,0d.)7822,0
 1564 dol. 8 soldi, Ans.

(3.)..... 4860 piastres, exchange 94d. Flem.
 94d.
 19440
 43740
 A guild.=40d.)456840d. Flem.
 Ans. 11421 guilders.

(4.)..... $\frac{1}{2}$ 2490 piastres, exchange $85\frac{3}{4}$ d. Flem.
 $85\frac{3}{4}$
 12450
 19920
 $\frac{1}{2}$ | 1245
 | 622.5
 A mark=32d. { 4 | 213517.5 Flem. pence.
 8 | 53379.375
 6672.421875 = 6672 mar. 6 sh. 9 ph. Ans.

VIII. WITH DUBLIN.

EXERCISES, page 155.

- (1.)..... Add $\frac{1}{12}$) £750 . 12 . 6 @ $8\frac{1}{2}$ ¢ cent.
 $\quad\quad\quad 62 . 11 . 0\frac{1}{2}$
Ans. £813 . 3 . 6 $\frac{1}{2}$ Irish.
- (2.)..... Off $\frac{1}{18}$) £1626 . 7 . 1 @ $8\frac{1}{3}$ ¢ cent.
 $\quad\quad\quad 125 . 2 . 1$
Ans. £1501 . 5 . 0 British.
- (3.)..... Add $\frac{1}{8}$) £875 . 13 . 0 @ $12\frac{1}{2}$ ¢ cent.
 $\quad\quad\quad 109 . 9 . 1\frac{1}{2}$
Ans. £985 . 2 . 1 $\frac{1}{2}$ Irish.
- (4.)..... Off $\frac{1}{18}$) £5000 . 0 . 0 Irish.
 $\quad\quad\quad 384 . 12 . 3\frac{9}{18}$
Ans. £4615 . 7 . 8 $\frac{4}{18}$ sterling.

IX. WITH LONDON.

EXERCISES, page 155.

- (1.)..... $\frac{4}{8}$ ¢ cent. $\frac{1}{200}$ | £350 . 10 . 0
 $\frac{1}{8}$ $\frac{1}{4}$ | $\quad\quad 1 . 15 . 0\frac{1}{2}$
 $\quad\quad\quad\quad\quad\quad\quad$ | $\quad\quad 0 . 8 . 9$
Ans. £352 . 13 . 9 $\frac{1}{2}$
- (2.)..... $\begin{matrix} da. & per\ ct. & da. \\ \text{If } 73 & : 1 :: 50 \\ & 50 \end{matrix}$
 $\begin{matrix} 73)50\cdot0(684=13/8\frac{1}{4} \text{ ¢ cent. ; or, about } \frac{2}{3} \\ \underline{438} \\ 620 \\ \underline{584} \\ 360 \\ \underline{292} \\ 68 \\ \underline{\quad} \end{matrix}$
 $\quad\quad\quad\quad\quad\quad\quad$ ¢ cent.

(3.)..... Off $\frac{1}{800}$) £10,00 @ $\frac{7}{8}$ p cent.	£1000
1 . 5	45 da.
Premium	73) <u>450·00</u>
£8 . 15 . 0	<u>£6 . 3 . 3$\frac{1}{2}$</u>
45 days.....	
6 . 3 . 3 $\frac{1}{2}$	
The Bill @ 45 da.....	
<u>£2 . 11 . 8$\frac{1}{2}$ Ans.</u>	

X. WITH AMERICA.

EXERCISES, page 155.

(1.).....	£480 sterling.
	40 sixpences.
	9) <u>19200</u>
Off $2\frac{1}{2}$ p cent. $\frac{1}{40}$	2133 $\frac{1}{3}$ dollars.
	53 $\frac{1}{3}$ discount.
	<u>Ans. 2080 dollars.</u>

(2.).....	<i>gross.</i>	As	106	:	<i>net.</i>	100	::	<i>dol. cents.</i>	3533·33
									100
									106) <u>353333·33</u>
									$\frac{1}{8}$ <u>3333·33</u> dol. @ 4/6
									666·666
									83·333
									<u>Ans. £ 750· sterling.</u>

(3.).....	£375 . 0
Add 5 p cent. $\frac{1}{20}$	<u>18 . 15</u>
	393 . 15
	40 sixpences.
	9) <u>15750</u>
	<u>Ans. 1750 dollars.</u>

CURRENCIES OF THE UNITED STATES.

EXERCISES, page 156.

(1.).....	£1475 . 10 currency.
Deduct $\frac{1}{4}$	<u>368 . 17 . 6</u>
	<u>Ans. £1106 . 12 . 6 sterling.</u>

(2.) As $\frac{\text{cur. } 166\frac{2}{3}}{5} : \frac{\text{ster. } 100}{3} :: \text{£}840.14.7$ Or, $\text{£}840.14.7$

$$\begin{array}{r} 3 \\ 5 \overline{)2522.3.9} \\ \underline{15} \\ 102 \\ \underline{75} \\ 272 \\ \underline{210} \\ 62 \\ \underline{45} \\ 17 \\ \underline{15} \\ 2 \end{array}$$

Ans. Sterling $\text{£} \underline{\underline{504.8.9}}$. $\frac{1}{2}$ 420. 7. 3 $\frac{1}{2}$
 $\frac{1}{8}$ 84. 1. 5 $\frac{1}{2}$
 $\text{£} \underline{\underline{504.8.9}}$

(3.) As $\frac{\text{cur. } 179\frac{7}{8}}{16} : \frac{\text{ster. } 100}{9} :: \text{£}1083.16$ Or, $\text{£}1083.16.0$

$$\begin{array}{r} 9 \\ 16 \overline{)9754.4} \\ \underline{144} \\ 834 \\ \underline{720} \\ 1144 \\ \underline{1080} \\ 64 \\ \underline{54} \\ 10 \\ \underline{9} \\ 1 \end{array}$$

Ans. Sterling $\text{£} \underline{\underline{609.12.9}}$. $\frac{1}{2}$ 541. 18. 0
 $\frac{1}{8}$ 67. 14. 9
 $\text{£} \underline{\underline{609.12.9}}$

XI. WITH THE WEST INDIES.

EXERCISES, page 156.

(1.)..... As $\frac{\text{cur. } 140}{7} : \frac{\text{ster. } 100}{5} :: \text{£}840.14.7$

$$\begin{array}{r} 5 \\ 7 \overline{)4203.12.11} \\ \underline{35} \\ 703 \\ \underline{70} \\ 312 \\ \underline{280} \\ 321 \\ \underline{280} \\ 41 \end{array}$$

Ans. $\text{£} \underline{\underline{600.10.5}}$

(2.)..... As $\frac{\text{ster. } 10,0}{5} : \frac{\text{cur. } 14,0}{7} :: \text{£}573.12.6$

$$\begin{array}{r} 7 \\ 5 \overline{)4015.7.6} \\ \underline{35} \\ 515 \\ \underline{350} \\ 165 \\ \underline{140} \\ 25 \\ \underline{21} \\ 4 \end{array}$$

10 $\frac{3}{4}$ cent. = $\frac{1}{10}$ 80. 6. 1 $\frac{3}{4}$
 Ans. $\text{£} \underline{\underline{883.7.7\frac{3}{4}}}$ currency.

(3.)..... $\frac{\text{cur. } 14,0}{7} : \frac{\text{ster. } 10,0}{5} :: \frac{1}{8} \overline{)4800}$ dollars @ 6/8
 $\text{£} \underline{\underline{1600}}$

$$\begin{array}{r} 5 \\ 7 \overline{)8000} \\ \underline{49} \\ 310 \\ \underline{245} \\ 650 \\ \underline{490} \\ 160 \end{array}$$

Add $2\frac{1}{2}$ $\frac{3}{4}$ cent. $\frac{1}{10}$ 1142. 17. 1 $\frac{5}{7}$ sterling.
 $1\frac{1}{4}$ do. $\frac{1}{2}$ 28. 11. 5 $\frac{1}{7}$ } premium.
 $14. 5. 8\frac{4}{7}$
 Ans. $\text{£} \underline{\underline{1185.14.3\frac{3}{7}}}$

SIMPLE ARBITRATION.

EXERCISES, page 158.

(1.) If 34 stiv. : $\overset{\text{flem.}}{36/3} :: 32 \text{ stiv.} = 1 \text{ dol.}$
 or, off $\frac{1}{17}$ $\frac{2/1\frac{10}{17}}$
Ans. $\underline{\underline{34/1\frac{7}{17}d. \text{ Flem. } \text{p} \text{ } \text{£ sterling.}}}$

(2.) If 32 stiv. : $\overset{\text{flem.}}{35/}$:: 33 stiv.
 Add $\frac{1}{32}$ $\frac{1/1\frac{1}{8}}$
Ans. $\underline{\underline{36/1\frac{1}{8}d. \text{ flem. } \text{p} \text{ } \text{£ sterling.}}}$

(3.) Exchange at 2 usance $\frac{33}{4}$
 Add, interest $\frac{1}{100}$ $\frac{4}{}$
Ans. $\underline{\underline{33/8}}$

(4.) If $\overset{\text{liv.}}{23} \overset{\text{s.}}{.15} : \overset{\text{flor.}}{10} \overset{\text{stiv.}}{.15} :: \overset{\text{francs.}}{3 \times 243}$
 $\frac{5700 \text{ den.}}{430}$ $\frac{40}{729}$
 $\frac{430}{729}$
 $570,0 \overline{)31347,0}$
 $\underline{\underline{54\frac{139}{90}}}$ or 55d. nearly. *Ans.*

(5.) If $\frac{34}{205} \text{ sh.} : 23.5 :: 100 \text{ marks.}$
 $\frac{1600}{1600} \text{ shel.}$
 $205 \overline{)37600.0}$
 183.41 liv.
 Sub. $\frac{1}{81}$ $\frac{2.26}{}$
Francs $\underline{\underline{181.15 \text{ cents.}}}$ *Ans.*

(6.) If $\overset{\text{fr.}}{23.95} : \overset{\text{ster.}}{240d.} :: \overset{\text{fr.}}{14.5} : \frac{145\frac{1}{4}d. \text{ p} \text{ } \text{pistole.}}$
 Divide by 4 $\frac{36\frac{1}{4} \text{ p} \text{ } \text{piastre.}}{}$ *Ans.*

(7.) If 64*d.* : 1000 ^{rees.} :: 37½*d.*

$$64 \left\{ \begin{array}{l} 8 \overline{) 37500} \\ 8 \overline{) 4687-4} \end{array} \right.$$

Ans. 585½ rees φ piastre.

(8.) If 425*d.* flem. : 240 ^{ster.} :: 50*d.*

400 rees.	5	1000 rees.
17,0000	17 $\overline{) 1200}$	5,0000

Ans. 70½ φ milree.

COMPOUND ARBITRATION.

EXERCISES, page 160.

(1.) $35/8 = 428*d.*$ Flem. = 240*d.* Ster.

3 Francs	=	52 <i>d.</i> Flem.
4 Piastres	=	14 Francs
How many pence	=	1 Piastre.

$$\frac{240 \times 52 \times 14}{428 \times 3 \times 4} = \frac{174720}{5136} = 34\frac{2}{107} *d.* \text{φ} \text{ piastre. Ans.}$$

(2.) $36/3 = 435*d.*$ Flem. = £1 Ster.

400 Rees	=	50 <i>d.</i> Flem.
A piastre = 272 Marv.	=	630 Rees
A ducat = 6½ Livres	=	198 Marv.
How many pounds	=	9610 Livres.

$$\frac{50 \times 630 \times 198 \times 9610}{435 \times 400 \times 272 \times 6\frac{1}{2}} = \text{£}204 . 5 . 3 \text{ circular draft.}$$

9610 livres, @ 50 liv. φ £ = 192 . 4 . 0 direct.
 Gain by the circular exchange, £ 12 . 1 . 3 Ans.

	<i>Antecedents.</i>	=	<i>Consequents.</i>		<i>Abridged.</i>
(3.)...	56 <i>d.</i> Flem.	=	3 Francs	1	= 3
	300 Francs	=	60 Ducats	5	= 1
	1 Ducat	=	100 <i>d.</i> Flem.	1	= 1
	50 <i>d.</i> Flem.	=	400 Rees.	1	= 8
	1000 Rees	=	64 <i>d.</i> Ster.	1	= 64
	How many pence	=	£560 Flem.		= 1

Then $\frac{3 \times 8 \times 64}{5} =$ circular exchange £307 . 4 . 0

£560 Flem. exch. 11 *flor.* 1 *stiv.* direct exch. 304 . 1 . 5 $\frac{1}{4}$
 Ans. Gain by the circular exchange £ 3 . 2 . 6 $\frac{3}{4}$

	<i>Antecedents.</i>	=	<i>Consequents.</i>		<i>Commission ded.</i>
(4.).....	54 <i>d.</i> Flem.	=	3 Francs	54	= 2·985
	300 Francs	=	36 Ducats	300	= 55·72
	1 Ducat	=	100 <i>d.</i> Flem.	1	= 99·5
	45 <i>d.</i> Flem.	=	400 Rees	45	= 398·
	1000 Rees	=	63 <i>d.</i> Ster.	1000	= 63·

How many pence Ster. = £1318 . 10 Flem.

The circular exchange amounts to £750 . 10 . 1 $\frac{3}{4}$

Direct exchange 742 . 16 . 4

The circular draft is better by £ 7 . 13 . 9 $\frac{3}{4}$ Ans.

COMPOUND INTEREST.

CASE I.

EXERCISES, page 162.

(1.) Amount of £1 for 30 years, @ 4 per cent. is £3·243397
 Mult. by 500 £
 Ans. The amount is £1621 . 13 . 11 $\frac{1}{2}$ = 1621·6985

(2.) Amount in..... 40 years, is £7·039988
 Mult. by the amount in 30 years 4·321942 Ans.
 Amount in 70 years 30·426+ = £30 . 8 . 6 $\frac{1}{4}$

(3.)... Amount of £1 for 14 years is £1·979931
600 £
 Amount £1187·9586
 Principal 600·
Interest.....£587 . 19 . 2 = 587·9586 *Ans.*

(4.)... Amount of £1 for 9 years is £1·551328
3500 £
7756640
4653984
 Amount in 9 years £5429·648
 Interest for 146 days or $\frac{2}{8}$ year 108·592
Ans. £5538·240 = £5538 . 4 . 9½

CASE II.

EXERCISES, page 163.

(1.) Amount of £1 = ^{Table I. £}1·4071)462·8416(328·932 + = £328 . 18 . 8
42213··· *Ans.*
40711
28142
125696
112568
131280
126639
46410
42213
4197 &c.

(2.) Amount of £1 = ^{Table I. £}1·9479)1558·32083(£800· *Ans.*
155832

(3.) Amt. of £1 = 2.653297 ^{Table I.} £ 1050.000000 (£395.734 = £395.14.8¼
 7959891 *Ans.*
25401090
 23879673
15214170
 13266485
19476850
 18573079
9037710
 7959891
10778190
 10613188
165002

(4.).. Amount of £1 = 1999 [£] 14000.000 (7003.501 = £7003 . 10 . 0¼
 13993 *Ans.*
7000
 5997
10030
 9995
3500
 1999
1501

CASE III.

EXERCISES, page 163.

(1.)..... ^{principal} 150.232.7 (1.551333 found under 5 p cent.
 150 *Ans.*
827
 750
770
 750
20
 15
5, &c.

(2.)..... 4.00)35.94
8.985 found under 5 p cent. *Ans.*

(3.)..... 104)180·0(1·73 *found under 4 ¾ cent. Ans.*

$$\begin{array}{r} 104 \\ \hline 760 \\ 728 \\ \hline 320 \\ 312 \\ \hline 8 \\ \hline \hline \end{array}$$

CASE IV.

EXERCISES, page 164.

(1.)..... 400)562·84
1·4071 found opposite 7 years. *Ans.*

(2.)..... 100)200·
2· found between 17 and 18 years.

$$\begin{array}{r} 18 \text{ years} = 2·025816 \quad 2·0000 \\ 17 \text{ years} = 1·947900 \quad 1·9479 \\ \hline \cdot077916 : \cdot0521 \quad \text{days.} \\ \hline \hline \end{array} :: 365 : 244 \text{ days.}$$

At 4 ¾ Cent. any sum doubles itself, in 17 years 244 days.
1st Ans.

$$\begin{array}{r} 15 \text{ years} = 2·078925 \quad 2·000000 \\ 14 \text{ years} = 1·979931 \quad 1·979931 \\ \hline \cdot098994 : \cdot020069 \quad \text{days.} \\ \hline \hline \end{array} :: 365 : 74 \text{ days.}$$

At 5 ¾ Cent. any sum doubles itself, in 14 years 74 days.
2nd Ans.

$$\begin{array}{r} 12 \text{ years} = 2·012196 \quad 2·000000 \\ 11 \text{ years} = 1·898298 \quad 1·898298 \\ \hline \cdot113898 : \cdot101702 \quad \text{days.} \\ \hline \hline \end{array} :: 365 : 326 \text{ days.}$$

At 6 ¾ Cent. any sum doubles itself, in 11 years 326 days.
3rd Ans.

(3.)..... 50)185·
3·700 found opposite 17 years.

ANNUITIES.

EXERCISES, page 165.

(1.)... Amount of £1., from Table..... £12·577892
 Multiply by $\frac{80}{100}$ £
 $\frac{1006·231}{100} = £1006 . 4 . 7\frac{1}{2}$

(2.)..... Amount of £1.
 18·2919) £1200·
 $\frac{£65·602}{18·2919} = £65 . 12 . 0\frac{1}{2}$ Ans.

(3.)..... 80)2645·275
 $\frac{33·0659375}{80}$ found under 5 p cent. Ans.

(4.)..... 60)800·
 11 years 13·486351 13·333333 found between 10 and 11 years.
 10 years 12·006107 12·006107
 If 1·480244 : 1·327225 :: 365 days : 327 days.
 Ans. 10 years 327 days.

(5.)... Amount of £1 @ 8 p cent. £45·7619
 Multiply by $\frac{1200}{100}$ £
 $\frac{54914·28}{100} = £54914 . 5 . 7\frac{1}{4}$ Ans.

(6.)..... Present value of £1., p Table III.
 15·622079) £1500·
 $\frac{96·018}{15·622079} = £96 . 0 . 4\frac{1}{2}$ Ans.

(7.)..... Table III. 5·786373)1000·
 $\frac{172·819}{5·786373} = £172 . 16 . 4\frac{3}{4}$ Ans.

(8.)..... 20) £1000·
 29 years = 52·966286 50·
 28 years = 49·967582 49·967582
 If 2·9987 : 0·032418 :: 365 days : 4 days.
 Ans. 28 years 4 days.

(9.)... Present value of £1. $\frac{£9.898641}{150} = \underline{\underline{£1484.15.11}}$ Ans.

(10.)... This question resolves itself into this:— In what time will £50 p annum amount to £1000.

$$50 \overline{)1000}$$

$$15 \text{ years} = 21.5786 \quad 20.$$

$$14 \text{ years} = 19.5986 \quad 19.5986$$

If $\frac{1.98}{1.98} : \frac{.4014}{.4014} :: 365 \text{ days} : 74 \text{ days}.$
 Ans. 14 years 74 days.

(11.)..... Present value p Table III.
 $12.085311)£500.$
 $\underline{\underline{41.372}} = £41.7.5\frac{1}{2}$ Ans.

(12.)..... Present value p Table III.
 $12.46221)£2000.$
 $\underline{\underline{160.485}} = £160.9.8\frac{1}{4}$ Ans.

FREEHOLDS.

CASE I.

EXERCISES, page 169.

(1.)..... Annuity $\frac{£50 \times 100}{5} = \underline{\underline{£1000}}$ Ans.

(2.)..... Yearly rent $\frac{£210 \times 100}{6\frac{1}{4}} = \underline{\underline{£3360}}$ Ans.

(3.)..... Yearly rent $\frac{£900 \times 100}{4\frac{1}{2}} = \underline{\underline{£20000}}$ Ans.

CASE II.

EXERCISES, pages 169 and 170.

(1.)... Sum to lay out $\frac{£900 \times 4\frac{1}{2} \text{ p cent.}}{100} = £40.10 \text{ Ans.}$

(2.)... A farm sold for $\frac{£3750 \times 6 \text{ p ct.}}{100} = £225 \text{ yearly rent. Ans.}$

(3.)... An estate bought for $£7500 \times 7\frac{1}{2} \text{ p cent.} = £562.10 \text{ rent.}$
Ans.

CASE III.

EXERCISES, page 170.

(1.)... An annuity of $\frac{£25 \times 100}{625} = 4 \text{ p cent. Ans.}$

(2.)... Yearly rent $\frac{£500 \times 100}{8000} = 6\frac{1}{4} \text{ p cent. Ans.}$

(3.)... Rent yearly $\frac{£1125 \times 100}{15000} = 7\frac{1}{2} \text{ p cent. Ans.}$

CASE IV.

EXERCISES, page 171.

(1.)..... 100
4
 $6\frac{1}{4} \text{ p cent.} \times 4 = 25) \overline{400} (16 \text{ years. Ans.}$
25
150
150

(2.)..... 100
2
 $7\frac{1}{2} \text{ p cent.} \times 2 = 15) \overline{200}$
150
50

 1st Ans $\underline{13\frac{1}{3} \text{ yrs.}}$ And $13\frac{1}{3} \times £187.10 = £2500$
2nd Ans.

REVERSIONARY ANNUITIES.

CASE I.

EXERCISES, page 173.

- (1.) The present value of £1 \bar{a} ann. for 23 yrs. = £13·488574
 Subtract the value for 8 years to come..... 6·463213
 $\underline{\hspace{10em}7\cdot025361}$
 Multiply by $\underline{\hspace{10em}280 \text{ £}}$
 $\underline{\hspace{10em}56202888}$
 $\underline{\hspace{10em}14050722}$
Ans. £1967 . 2 . 0 $\frac{1}{4}$ = $\underline{\underline{1967\cdot10108}}$
- (2.) \bar{a} annum £300 @ 5 \bar{a} cent. is.....£6000
 From which deduct A.'s possession... 2969·592 \bar{a} Table III.
 Value of B.'s reversion £3030 . 8 . 2 = $\underline{\underline{3030\cdot408}}$ *Ans.*
- (3.)... The value of the estate of £300 \bar{a} annum is £7500·
 Deduct the discount for 50 years..... 1055·344
 The value of 50 years' possession is..... 6444·656
 (supposing it to commence at present.)
 But the present value, at the expiration } £3058 . 18 . 1 $\frac{1}{2}$
 of 19 years, is }
 = *Ans.* $\underline{\underline{\hspace{10em}}}$

CASE II.

EXERCISES, page 173.

- (1.)... Amount of £1 for 14 years is £1·979931
 Multiply by $\underline{\hspace{10em}£6000}$
 $\underline{\hspace{10em}11879\cdot586}$
 ·05 rate \bar{a} cent.
Ans. £593 . 19 . 7 = $\underline{\underline{593\cdot97930}}$
- (2.)... By Table I. the amount of £1 is £1·9479
 Multiply by $\underline{\hspace{10em}£1000}$
 $\underline{\hspace{10em}1947\cdot9}$
 ·04 rate \bar{a} cent.
Ans. £77 . 18 . 4 = $\underline{\underline{77\cdot916 \text{ rent.}}}$

MISCELLANEOUS QUESTIONS.

Pages 174—180.

(1.)... A Woollendrapery sells 25 yards black @ 19/ ... £23 . 15 . 0
 14 do. blue @ 18/4... 12 . 16 . 8
 15 do. mixt @ 12/8... 9 . 10 . 0
 Amount 46 . 1 . 8
 Off $\frac{1}{20}$, or 5 % cent. 2 . 6 . 1
 Ans. £43 . 15 . 7

(2.)... A Shopkeeper sold,—
 15 Pieces Linen, ea. 52 yds.—780 yds. @ 2/8... £104 . 0 . 0
 6 do. Calicoes, 28 yds.—168 yds. @ 2/3... 18 . 18 . 0
 4 do. Gingham, 30 yds.—120 yds. @ 1/10 $\frac{1}{2}$ 11 . 5 . 0
 134 . 3 . 0
 Advance 7 $\frac{1}{2}$ % cent. for credit 10 . 1 . 2 $\frac{1}{2}$
 Ans. £144 . 4 . 2 $\frac{1}{2}$

(3.)... A Grocer mixes together, —

<i>cwt.</i>	<i>gr.</i>	3 . 2 Sugar @ 80/.	% cwt.	£14 . 0 . 0
		2 . 1 do. @ 75/.	% do.	8 . 8 . 9
		1 . 3 do. or 196 lb. @ 7 $\frac{1}{2}$ d.	6 . 2 . 6
7 . 2				Value of the mixture <u>£28 . 11 . 3</u>

Which for 7 cwt. 2 gr. comes to 76/2 % cwt. 1st Ans.
 2d. % shilling, or $\frac{1}{8}$... $\frac{12}{8\frac{1}{4}}$
 Value % cwt. $\frac{88}{10\frac{1}{4}}$
 Which is about 9 $\frac{1}{2}$ d. % lb. 2nd Ans.

(4.)... A Baker has on hand, &c. —
 Flour @ 66/. with 20 % cent. advance, must cost 55/.
 Then, the gain on 120 sacks, at 5/. is £30
 It requires 40 sacks, @ 15/. loss, to produce 30
 Ans. 40 sacks.

Proof.

160	Sacks Flour @ 66/.	is.....	£528
120	do. do. @ 50/.	£300
40	do. do. @ 70/.	140
			440
Add 20 % cent.			88
			528

(5.) A Bookseller orders from London, —
 20 Reams Demy Writing Paper @ 57/6 £57 . 10
 Freight and other Charges 1 . 14
 ————— £59 . 4
 He sells 18 reams, or 360 quires, @ 4/. £72 . 0
 And 40 outside quires, @ 2/..... 4 . 0
 ————— 76 . 0
 1st Ans. He gains £16 . 16

Which, on £59 . 4 is about $28\frac{3}{8}$ p cent.; or,
 $3\frac{1}{4}d.$ $\frac{23}{37}$ p shilling. 2nd Ans.

(6.)... Required the Prime Cost of Paper, &c. ?
 A Ton of Rags contains..... 2240 lb.
 Deduct Wastage $\frac{1}{4}$ 560
 Net 1680 lb.

 Price of rags, @ £35 for 1680 lb. is, for 15 lb. £0 . 6 . 3
 Expense of making a ream 7/6
 Duty on 15 lb. @ 3d..... 3/9
 ————— 0 . 11 . 3
 Ans. Prime cost, p ream.....£0 . 17 . 6

(7.)... A Paper-maker's Stock in Trade is £3000,
 Interest on which, @ 5 p cent. is £150
 30 Men, @ 11/. p week p annum ... 858
 Repairs and Expenses p ditto..... 250
 ————— £1258 . 0 . 0

He consumes, —
 12 Tons Rags, @ £40 p ton £480
 16 ditto, @ 30 480
 20 ditto, @ 20 400
 ————— 1360 . 0 . 0
 Whole Expense, including Materials..... £2618 . 0 . 0

Produce, —
 1200 Reams Demy Paper, @ 23/. £1380 . 0 . 0
 1700 Reams ditto, @ 18/. 1530 . 0 . 0
 2380 Reams Crown do. @ 13/. 1547 . 0 . 0
 ————— 4457 . 0 . 0
 Deduct Duty $22\frac{1}{2}$ p cent. ... 1002 . 16 . 6
 Net Proceeds of the Paper..... 3454 . 3 . 6
 Ans. He gains £836 . 3 . 6

(8.)... The Wastage of making Paper, &c.

A Ton of Rags, or 2240 lb. cost	£45 . 0	
Ded. for Wastage $\frac{1}{10}$ <u>224</u>		
Net Weight 2016 lb.		
Which @ 20 lb. p ream, is $100\frac{2}{3}$ reams		
@ 25/.		£126
Charges, 7/6. p ream	37 . 16	
Duty on 2016 lb. Paper, @ 3d.....	25 . 4	
	<u>108</u>	
Gain on the finest Rags p ton.....		<u>£18</u>

A Ton of coarse Rags, or 2240 lb. cost £30

Deduct Wastage $\frac{1}{7}$ 320

Net Weight 1920 lb.

Which, @ 18 lb. p ream is $106\frac{2}{3}$ reams

@ 20/.....		£106 . 13 . 4
Charges, 6/. p ream	32	
Duty on 1920 lb. Paper, @ 3d.	24	
	<u>86 . 0 . 0</u>	
Gain on the coarse Rags p ton.....		<u>£20 . 13 . 4</u>

A Ton of the coarsest Rags, or 2240 lb. cost £20

Deduct Wastage 448

Net 1792 lb.

Which, @ 15 lb. p ream, is $119\frac{7}{15}$

reams @ 15/.		£89 . 12 . 0
Charges, 5/. p ream.....	29 . 17 . 4	
Duty on 1792 lb. Paper @ 3d.....	22 . 8 . 0	
	<u>72 . 5 . 4</u>	
Gain on the coarsest Rags.....		<u>£17 . 6 . 8</u>

Ans. { The second quality of Rags is most profitable by £2 . 13 . 4
 { And the first quality more than the coarsest by 0 . 13 . 4

(9.)... A Stationer buys,—

5000 Quills, @ 12/6 p thousand ... £3 . 2 . 6

Expense of assorting them 0 . 7 . 6

	<u>£3 . 10 . 0</u>
Add 3d. p shilling	0 . 17 . 6
	<u>£4 . 7 . 6</u>

Ans. { Price of 100 of the best Quills 2/4
 { of 100 inferior ones 1/2

*Proof.*3000 Quills, @ 2/4 p hundred..... £3 . 10 . 01500 ditto, @ 1/2 p ditto 0 . 17 . 6

	<u>£4 . 7 . 6</u>
--	-------------------

(10.) ... A Builder finished a House,

Which cost	£3514 . 10
Annual Repairs.....	10 . 10
	Cost.....£3525

The Property is let as follows, —

Two Shops, @ £50 and 40 guineas.....	£92
First Story is rented @	65
Second ditto, @	50
Third ditto, @	40
Fourth ditto, @	35
	Amount of the Yearly Rents.....£282

Then, If £3525 : £282 :: £100 : 8 $\frac{1}{2}$ cent. Ans.

(11.) ... A Chapel is built to contain 2000 Persons, &c.

Ground 75 ft. x 70 ft. is 5250 square feet; or, 583 $\frac{1}{4}$ sq. yards, which, @ 21/. is	£612 . 10 . 0
Mason's Bill	783 . 15 . 0
Slater's do.....	128 . 16 . 6
Carpenter's do.....	1210 . 7 . 5
Plumber's do.....	83 . 16 . 3
Plasterer's do.....	89 . 17 . 8
Ironmonger's do.....	52 . 14 . 11
Lustres and Charges.....	68 . 2 . 3
	Amount of the Expenses.....£3030

The Chapel is let as follows, —

120 Seats rented @ 15/. each.....	£90 . 0
180 ditto @ 13/4	120 . 0
420 ditto @ 10/.....	210 . 0
480 ditto @ 8/.....	192 . 0
510 ditto @ 6/8	170 . 0
290 ditto @ 5/.....	72 . 10
2000	Amount of the Rents £854 . 10
	Ded. Minister's Stipend 400 . 0
	Net Proceeds.....£454 . 10

Which, on £3030, is 15 $\frac{1}{2}$ cent. Ans.

- (12.) ... A Dealer in Teas has on hand, —
 4 Chests Congou, weighing net each 3 *qr.*
 16 *lb.* or 400 *lb.* which, @ 3/9, is... £75
 Add 40 p cent. for Duty..... 30
 Amount..... £105 . 0 0
 Add a Year's Interest 5 . 5 . 0
 110 . 5 . 0
 And 20 p cent. for gain, or $\frac{1}{5}$ 22 . 1 . 0
 132 . 6 . 0
 Add the three months' Discount which
 the Bank takes off..... 1 . 13 . 6
 The Sum is £133 . 19 . 6
 Which, on 400 *lb.* is $6/8\frac{1}{2}$ p *lb.* nearly. *Ans.*

- (13.) ... A Dealer in Wines has a Pipe of Port con-
 taining 56 dozen, price 33/.
 p dozen £92 . 8 . 0
 Add 18 months' Interest, @ $7\frac{1}{2}$
 p cent. 10 . 13 . 1
 £103 . 1 . 1
 The Pipe 18 months hence, will contain only
 $54\frac{3}{4}$ doz. which, @ 38/. is... £103 . 1 . 6
 Deduct Cellar Rent and Charges 1 . 5 . 0
 101 . 16 . 6
Ans. Loss by keeping it..... £1 . 4 . 7

- (14.) ... A Linen Merchant buys, —
 680 *lb.* Dressed Flax, @ 2/9..... £93 . 10 . 0
 Spinning 680 *lb.* @ $1\frac{1}{4}$ spin. is 850 Spindles,
 which @ $16\frac{1}{2}$ *d.* is..... 58 . 8 . 9
 Weaving 850 Spindles, each $3\frac{1}{2}$ *yd.* is 2720
 yd. which, @ $5\frac{3}{4}$ *d.* is..... 65 . 3 . 4
 Bleaching 2720 yards Linen, @ 3*d.* is..... 34 . 0 . 0
 Prime Cost £251 . 2 . 1
 He sells, —
 680 yards, @ 2/3..... £76 . 10 . 0
 680 do. @ 2/2..... 73 . 13 . 4
 1360 do. @ 2/..... 136 . 0 . 0
 286 . 3 . 4
Ans. He gains..... £ 35 . 1 . 3

(15.)... An Ironmonger imports from Sweden, —

50 Tons Iron, @ £24. 10	£1225 . 0 . 0
Charges at shipping, $1\frac{1}{2}$ p cent.	18 . 7 . 6
Amount of the Invoice	£1243 . 7 . 6
Duty 7 p cent.	87 . 0 . 9
Freight 45/. p ton.	112 . 10 . 0
Insurance on £1294, to cover £1243.7.6 } @ 3 gs. p cent. Policy 71/6	44 . 6 . 9
Cartage of 50 tons, @ 1/1 p ton.	2 . 14 . 2
Cost, including Charges	£1489 . 19 . 2

Which comes to $29\frac{9}{4}$ p cwt. *Ans.*

(16.)... A Plumber contracts, &c.

2 m. 1 fur. 5 yd. is 3745 yd. of Pipe, wt. 22 lb.	
p yd. is 82390 lb. which, @ 5d., is	£1716 . 9 . 2
Expense of digging, &c. 3745 yd. @ 1/3.....	234 . 1 . 3
Ditto of Reservoir, 18 ft. by 12, and 9 deep, } is 756 ft. @ 9 lb. is 16804 lb. at $4\frac{1}{2}$ d. }	127 . 11 . 6
Other Charges	21 . 18 . 1
<i>1st Ans. Whole Expense</i>	£2100 . 0 . 0

5 p cent. on which is £105.

And on 200 inhabitants, comes to 10/6 each. *2nd Ans.*

(17.)... A Manufacturer of Linen purchases, —

360 Spindles* = 1440 hasps, or 5184000	
yd. Yarn. He weaves the Yarn in a	
1600 $\frac{3}{4}$ th Reed. Therefore, each yarn	
of Cloth requires, for Warp	3200 yd.
And $\frac{1}{8}$ less for Weft, or	2800 yd.
Each Yarn requires, in all	6000 yd. Yarn.
Therefore, 5184000 yd. Yarn will make...	864 yd. Linen.
Off 5 p cent. for Wastage	43 $\frac{1}{8}$
<i>Ans.</i>	820 $\frac{4}{8}$ yd. Linen.

* *Note.* A spindle of lint yarn contains 4 hasps; a hasp, 6 heers; a heer, 2 culs; a cul, 120 threads; and a thread, $2\frac{1}{2}$ yards, in length.

(18.)... A Maltster purchases,—

1200 Quarters Barley, @ 46/.	£2760
Interest for 6 months.....	69
	£ 2829 . 0
Duty on 10800 bus. Malt, @ 3/6...£1890 . 0	
Malt-house Rent	27 . 10
Servants' Wages	36 . 5
Other Charges	19 . 15
	1973 . 10
The Prime Cost of the Malt.....	£4802 . 10
10800 bus. Malt, sold @ 9/6, brings.....	5130 . 0
Ans. He gains	£327 . 10

(19.)... Four Tenants have a joint Lease, &c.

A. paid.....	£120 . 0
His share is $450l \div 4 =$	112 . 10
A. is in advance.....	£ 7 . 10
D. paid (balance) $450 - (120 + 100 + 75) =$ £155 . 0	
His share is	112 . 10
D. is in advance	42 . 10
	£50 . 0

B.'s share is	£112 . 10
He paid only	100 . 0
B. is deficient.....	£12 . 10
C.'s share is	£112 . 10
He paid only	75 . 0
C. is deficient.....	37 . 10
	£50 . 0

Therefore, as A. paid	£120 . 0
1st Ans. B. must pay A.....	7 . 10
	£112 . 10

And, as D. paid	£155 . 0
2nd Ans. B. must pay D.	5 . 0
3rd Ans. C. must pay D.	37 . 10
4th Ans. D. is in advance.....	£42 . 10 = £112 . 10

- (20.) A Cloth Merchant, &c.
 The Cloth is valued at 18/. p yard.
 Or 12 p cent. advance, or $\frac{1}{5}$, or 2/.
 1st Ans. Prime Cost of the Cloth 16/. p yard.
- B.'s Muslin cost him 2/6
 Add 12 $\frac{1}{2}$ p cent. or $\frac{3}{4}$
 2nd Ans. The Muslin must be rated @ 2/9 $\frac{3}{4}$ p yard.

- (21.) A Spirit Merchant barter with a Grocer, &c.
 The Rum cost 12/6
 Advanced $\frac{1}{5}$, or 2/6
 15/. p gallon.
- Therefore, the Grocer's Sugar cost 75/. p cwt.
 Should also be advanced $\frac{1}{5}$, or 15/.
 90/. p cwt.
 But it was raised only to 84/.
 The Rum Merchant gains 6/.

Which, on 84/. is equal to 7 $\frac{1}{7}$ p cent. or 6s. p cwt. = Ans.

- (22.)... A Merchant in purchasing Goods, &c.
 7 $\frac{1}{2}$ p cent. discount for 6 months is 15
 12 $\frac{1}{2}$ p cent. advance for ditto 25
 Ans. 40 p cent. p ann.

Or, allowing Interest on his Money, 35 p cent.

- (23.)... A Person in Trade, &c.
 His business yields him a profit of... 22 $\frac{1}{2}$ p cent.
 He borrows Money on Bond at 5
 He therefore clears 17 $\frac{1}{2}$ p cent.

Which, on £1500, is £262 . 10 a year, or £1837 . 10 Ans.

- (24.) A. purchased an Assortment of Goods, &c.
 Amount of the Sales.....£1250 . 10 . 0
 Discount for Cash, $7\frac{1}{2}\%$ ct. 93 . 15 . 9

 £1156 . 14 . 3
 Commission, $2\frac{1}{2}\%$ cent..... 28 . 18 . $4\frac{1}{4}$
 Freight and Charges..... 68 . 5 . 6

 97 . 3 . $10\frac{1}{4}$
 Ans. Net proceeds..... £1059 . 10 . $4\frac{3}{4}$

- (25.) The Invoice Price of the Goods, &c.
 Amount of the Invoice £985 . 16 . 8
 Discount, 5% cent. for Bill, @ 3 months... 49 . 5 . 10

 Net Cash of the Goods, @ 3 months' credit £936 . 10 . 10
 As A. did not receive the proceeds till 9
 months, he was 6 months in advance;
 Interest 23 . 8 . $3\frac{1}{4}$

 Amount £959 . 19 . $1\frac{1}{4}$
 Net proceeds 1059 . 10 . $4\frac{3}{4}$

 Ans. He gains £99 . 11 . $3\frac{1}{2}$

- (26.) A. owes B. £360, due in 9 months.
 $\frac{£80 \times 6 \text{ months sooner} = 480}{100 \times 3 \text{ ditto} = 300}$
 $360 - \frac{180}{=} = 18,0\overline{78,0}$
 $\frac{4\frac{1}{8} \text{ months. Ans.}}{=}$

- (27.) A Person purchases Goods, &c.
 May 10. Pays £350 $\times 117 = 40950$
 July 16. Pays 300 $\times 50 = 15000$
 Balance..... 400 4,00 $\overline{559,50}$

 1050 Ans. $\frac{140 \text{ days nearly, or on}}{=} 22\text{d January.}$

- (28.) A. owes B. £730, &c.
 July 4th, due at this date..... £730 . 0 . 0
 Interest till 4th October, 92 days, 9 . 4 . 0

 £739 . 4 . 0
 December 4., due at this date £470 . 0 . 0
 Discount from October 1., 64 da. 4 . 1 . 6

 465 . 18 . 6
 Amount to be divided into 3 Bills £1205 . 2 . 6

1817.	1st October, <i>First</i> Bill @ 4 months	£401 . 14 . 2
	Interest till 4th February, on £400,	6 . 14 . 9
	<i>1st Ans.</i> _____	£408 . 8 . 11
	<i>Second</i> Bill, @ 8 months	£401 . 14 . 2
	Int. till 4th June, 246 da. on £400,	13 . 9 . 7
	<i>2nd Ans.</i> _____	415 . 3 . 9
	<i>Third</i> Bill, @ 12 months	£401 . 14 . 2
	Int. till 4th Oct., 1 year, on £400,	20 . 0 . 0
	<i>3rd Ans.</i> _____	421 . 14 . 2
	<i>Amount</i>	£1245 . 6 . 10

(29.)... An Agent sells for his Employer,

Pun.	5—	530 gal. @ 3/9.....	£ 99 . 7 . 6	due 7th March.
	5—	543 ... 3/8.....	99 . 11 . 0	25th ditto.
	10—	1100 ... 3/6.....	192 . 10 . 0	4th May.
	5—	540 ... 3/9.....	101 . 5 . 0	18th June.
	5—	528 ... 4/	105 . 12 . 0	10th July.
	30	3241	£598 . 5 . 6	<i>Am. of Sales.</i>

To find the average Time.

March	7.....	£99	due at this date.
			<i>da.</i>
Ditto	25.....	$100 \times 18 = 1800$	
May	4.....	$192 \times 58 = 11165$	
June	18.....	$101 \times 103 = 10403$	
July	10.....	$106 \times 125 = 13250$	
		598 598)36618	
			61 days after 7th March.

Which makes the average Time to be the 7th May. *Ans.*

(30.)... C. is indebted to D., £1000, &c.

<i>First</i> Bill @ 3 months	£250 . 0 . 0
Interest	3 . 2 . 6
<i>1st Ans.</i> Sum.....	£253 . 2 . 6
<i>Second</i> Bill @ 6 months...£250 . 0 . 0	
Interest.....	6 . 5 . 0
<i>2nd Ans.</i> Sum.....	256 . 5 . 0
Carry forward.....	£509 . 7 . 6

	Brought forward	£ 509 . 7 . 6
<i>Third Bill</i> @ 9 months	£250 . 0 . 0	
Interest	9 . 7 . 6	
<i>3rd Ans.</i> Sum	259 . 7 . 6	
<i>Fourth Bill</i> @ 12 months.....	£250 . 0 . 0	
Interest.....	12 . 0 . 0	
<i>4th Ans.</i> Sum.....	262 . 10 . 0	
Sum of the Bills, to C.'s proposal.....	£1031 . 5 . 0	

<i>First Bill</i>	£250 . 0 . 0	
Add 3 months' discount	3 . 3 . 3	
<i>5th Ans.</i>	£ 253 . 3 . 3	

<i>Second Bill</i>	£250 . 0 . 0	
Add 6 months' discount	6 . 8 . 2	
<i>6th Ans.</i>	256 . 8 . 2	

<i>Third Bill</i>	£250 . 0 . 0	
Add 9 months' discount	9 . 14 . 10	
<i>7th Ans.</i>	259 . 14 . 10	

<i>Fourth Bill</i>	£250 . 0 . 0	
Add 12 months' discount	13 . 3 . 2	
<i>8th Ans.</i>	263 . 3 . 2	
Sum of the Bills, according to D.'s wish	£1032 . 9 . 5	

(31.)... An Undertaker, for digging a Canal, &c.

20 feet at top.	A mile is 1760 yards in length.
16	Mult. 6 yards breadth.
36 + 2 = 18 feet.	10560 sq. yards.
or 6 yards, mean breadth.	2 ¹ / ₃ yards deep.
	21120
	3520
	1st Ans. 24640 cubic yards.

Which, @ 1/3 ^p yard, comes to £1540. 2nd Ans.

(32.) ... A Gentleman received from his Friend, &c.
 Duty on 106 gallons Rum @ 11/4 is £60 . 1 . 4

	£60 . 1 . 4
	20
21/.	1201
3	3 fourpences.
63	3604(57 $\frac{13}{8}$ gall. Ans.
	315
	454
	441
	13

Or, by Proportion, thus :

As 21/. : 11/4 :: 106 : 57 $\frac{13}{8}$ gall. as above.

(33.) ... A Person owes the following Accounts, &c.

Aug. 4.	£63 . 15	due at this date.
Sept. 9.	48 . 10	in 36 da.=1746
Oct. 12.	27 . 5	69 =1877
	£139 . 10	Say £14,0)364,3

26 days after 4th
 August, average time of the above, or 30th Au-
 gust. Then from 4th June till 30th August is 87
 days, the time at which the bill must be drawn.

Ans.

(34.) ... A Traveller received in local Notes, &c.

17 five-pound notes amount to	£85 . 0
19 guinea-notes	19 . 19
23 pound-notes.....	23 . 0
In Bank notes.....	£127 . 19 . 0
A Bill of	£30 . 0 . 0
Off 35 days' discount	0 . 2 . 11
	£29 . 17 . 1

Another Bill of....	£27 . 10 . 0
Off 42 days' discount	0 . 3 . 2
	27 . 6 . 10

A third Bill of.....	£65 . 0 . 0
Off 56 days' discount	0 . 9 . 11 $\frac{1}{2}$
	64 . 10 . 0 $\frac{1}{2}$

Proceeds in Bills.....	121 . 13 . 11 $\frac{1}{5}$
Carry forward.....	£249 . 12 . 11 $\frac{1}{2}$

Brought forward.....£249 . 12 . 11½
 Deduct 45 days' premium £1 . 10 . 10½
 Stamp 0 . 4 . 2
 ----- 1 . 15 . 0½
Ans. A Bill for..... £247 . 17 . 11

Cash as above..... £127 . 19
 Proceeds of the Bills 122 . 10
 ----- 250 . 9 @ 45 days' premium.
 Mult. by 45 days.
 365)11270
 ----- 30/10½ *Commission.*

(35.) A Bankrupt obtains a discharge, &c.

3/4 in 6 mo.=20
 4/. " 10 " =40
 5/. " 16 " =80

 12/4 12½ | 140
 3 | 3

 37 | 420(11 mo. 10 da. *Ans.*
 407
 13
 30

 37)390(10 da.
 37
 20

(36.) ...An Agent sold Madder, &c.

Feb. 3. Madder @ 6 mo. £165 . 0 × 181 = 29865 ^{da.}
 10. Cotton @ 4 mo. 250 . 10 × 120 = 30060
 21. Ashes @ 3 mo. 187 . 10 × 89 = 16688

 £603 . 0 603)76613
Ans. The Note or Draft must be drawn... 127 days after date.

(37.) ... A Merchant having occasion to remit, &c.

A.'s Bill @ 3 months.....£73 . 13 . 4
 Discount..... 0 . 18 . 5
 ----- £72 . 14 . 11
 Carry forward..... £72 . 14 . 11

Brought forward.....	£72 . 14 . 11
B.'s Bill @ 2 months	£64 . 10 . 0
Discount.....	0 . 10 . 9
	63 . 19 . 3
C.'s Bill @ 4 months.....	£49 . 5 . 0
Discount.....	0 . 16 . 5
	48 . 8 . 7
Proceeds of the Bills.....	£185 . 2 . 9
Sum of the Bills, £187 . 8 . 4 com. $\frac{1}{2}$ % cent.	0 . 18 . 9
	£184 . 4 . 0
By Bill on London at <i>par</i>	156 . 12 . 0
<i>Ans.</i> Balance due the Merchant.....	£27 . 16 . 0

(38.).. A Shopkeeper sells @ $1\frac{1}{2}d.$ % shill. profit, &c.

$$1\frac{1}{2}d. = \frac{1}{8})100$$

$$\frac{12\frac{1}{2} \% \text{ cent. for 4 mo.}}{3}$$

% annum $37\frac{1}{2}$ % cent., which on £3600 is £1350 *Ans.*

Thus, $\frac{1}{4}$ for 25 % cent. is..... £900

$\frac{1}{2}$ for $12\frac{1}{2}$ % cent. is..... 450

$$\frac{37\frac{1}{2}}{\underline{\quad}}$$

£1350

(39.) A Spirit-dealer bought at an Excise Sale, &c.

130 gallons Gin @ 18/. is..... £117

110 ditto Jamaica Rum @ 16/. 88

Amount of the purchase..... £205

Add 20 % cent. *profit*..... 41

£246

130 gall. Gin, 1 to 5, gives 156 gall. @ 16/6 is 128 . 14 . 0

The sum which the *Rum* must bring..... £117 . 6 . 0

110 gall. Rum, 1 to 5, gives 132 gall. @ 17/9 $\frac{3}{4}$ is 117 . 6 . 0

Ans. 17/9 $\frac{3}{4}$ % gallon.

(40.) An Importer of Spirits purchases,

10 Pun. Rum qt. 1050 gall. @ 4/8 £245 . 0 . 0

Add 3 $\frac{1}{2}$ months' interest... 3 . 11 . 5 $\frac{1}{2}$

£248 . 11 . 5 $\frac{1}{2}$

Duty on 1050 gall. @ 11/4..... £595 . 0 . 0

Average Credit, 7 $\frac{1}{2}$ mo. interest 18 . 11 . 10 $\frac{1}{2}$

613 . 11 . 10 $\frac{1}{2}$

Cost, including interest..... £862 . 3 . 4

1050 gall. reduced 1 to 5 is 1260 gall. which,

@ 17/. is..... 1071 . 0 . 0

Ans. He gains..... £208 . 16 . 8

(41.).. A Baker bought
 250 qr. Wheat, amount \pounds invoice £887 . 10 . 0
 Discount $7\frac{1}{2}\%$ cent. for damage, 66 . 11 . 3
 Net invoice price..... £820 . 18 . 9
 Profit on which @ $12\frac{1}{2}\%$ cent... £102 . 12 . 4
 6 months' interest..... 20 . 10 . $5\frac{3}{4}$
 Granary rent..... 15 . 0 . 0
 _____ 138 . 2 . $9\frac{3}{4}$
 Amount..... £959 . 1 . $6\frac{3}{4}$
 Which, on 250 quarters, comes to £3 . 16 . 9 *nearly. Ans.*

(42.).. A Tobacconist has 4 cwt. 1 qr. 24 lb.
 Or 500 lb. Tobacco in leaf, @ 11d. £22 . 18 . 4
 Duty $\frac{2}{3}\%$ lb..... 56 . 5 . 0
 Expenses for manufacturing..... 3 . 10 . 0
 Produce..... £82 . 13 . 4

 150 lb. fine Twist @ $\frac{4}{6}$ is..... £33 . 15 . 0
 305 . . com. ditto @ $\frac{4}{.}$ is..... 61 . 0 . 0
 120 . . Stalks @ 13d. is..... 6 . 10 . 0
 _____ 101 . 5 . 0
Ans. He gains..... £18 . 11 . 8

(43.) A Draper sells Cloth @..... 24/.
 By Table II. p. 140, ded. $\frac{1}{8}$ or 4/.
 _____ 20/. \pounds yard, Prime Cost. 1st
 Add 50 \pounds cent. or $\frac{1}{2}$ 10/. *Ans.*
 _____ 30/. last selling Price. 2d Ans.

From..... 30/. £30 profit.
 Take..... 20/. 20
 Diff..... 10/.)600
 _____ 60 yards. 3rd Ans.

(44.) A Merchant received 18 guineas for Cloth, &c.

If $16\frac{2}{3} : 100 :: 3/6$ 18 guineas.
 5,0 30,0 21 shill.
 3
 5)105 3/6 | 378 shill.
 2 | 2
 1st Ans. 21 sh. \pounds yard. 7) 756 sixpences.
 _____ 108 yards. 2nd Ans.

(45.)... A Cabinet-maker, &c.

From.....	100	
Subtract.....	$7\frac{1}{2}$	
	<u>$92\frac{1}{2}$</u>	$: 100 :: £18 . 10$
	185	$\frac{200}{40}$
	37	$\frac{18 . 10}{40}$
		<u>$18 . 10$</u>
		$37)740$
Prime Cost.....	$£20$	
Add 25 % cent. or $\frac{1}{4}$	5	
	<u>$£25$</u>	<i>Ans.</i>

(46.)... A Gentleman purchased, &c.

1804. Nov. 11. Lands, price due now	£2600 . 0 . 0
1805. Aug. 2. Int. to this date, 264 da. £94 . 0 . $6\frac{1}{2}$	
Deduct Property Tax, 5 % cent. $4 . 14 . 0\frac{1}{4}$	
	<u>£89 . 6 . $6\frac{1}{4}$</u>
Paid at this date.....	1000 . 0 . 0
	<u>910 . 13 . $5\frac{3}{4}$</u>
Balance.....	£1689 . 6 . $6\frac{1}{4}$

1806. Jan. 24. Int. on bal. for 175 da. £40 . 9 . $11\frac{1}{4}$	
Deduct Tax, $6\frac{1}{4}$ % cent.	$2 . 10 . 7$
	<u>£37 . 19 . $4\frac{1}{4}$</u>
Paid at this date.....	500 . 0 . 0
	<u>462 . 0 . $7\frac{3}{4}$</u>
Balance	£1227 . 5 . $10\frac{1}{2}$

1806. June 11. Int. on bal. 138 da. £23 . 4 . 0	
Deduct Tax, $6\frac{1}{4}$ % cent.	$1 . 8 . 11\frac{1}{4}$
	<u>$21 . 15 . 0\frac{3}{4}$</u>
Paid at this date	500 . 0 . 0
	<u>478 . 4 . $11\frac{3}{4}$</u>
Balance.....	£749 . 0 . $11\frac{3}{4}$

1809. May 25. Int. on bal. 2 years	
and 348 days	£110 . 13 . $11\frac{1}{4}$
Deduct 10 % cent.	$11 . 1 . 2\frac{1}{2}$
	<u>99 . 10 . $11\frac{3}{4}$</u>
<i>Ans.</i> Balance due.....	<u>£848 . 11 . $11\frac{1}{2}$</u>

(47.)... A Banker discounts Bills, &c.

Interest on £100 for 3 mo. is	£1 . 5
Commission $\frac{1}{2}$ % cent.	0 . 10
Discount on each Bill	£1 . 15
From	100
	98 . 5 : 1 . 15 :: 100
	393 7
	100
	393)700
	1.7811 = 3 mo.
	4
	7.124 = $7\frac{1}{8}$ % ct.

Amount of Bills discounted.....	£1000000
5 % cent. or $\frac{1}{20}$ { is.....	£50000
2 % cent. or $\frac{1}{50}$ { is.....	20000
$\frac{1}{8}$ % cent. or $\frac{1}{125}$ is.....	1250
<i>Ans.</i> He gains by issuing his own Notes.....	£71250
by borrowing @ 5 % cent.....	21250
For the Interest of £1000000 @ 5 % cent. is	£50000

8.)... A young Gentleman, &c.

Amount of £1 for 12 years @ 5 % cent. is	£15.917126
Multiply by.....	500 £
Amount of £500 % annum is.....	£7958.563
Interest on which is.....	£397.928
The Estate brings % annum.....	500
Overspends a year, viz.	602.072
Yearly Expenses	£1500

He receives when 21 years of age.....	£7958.563
From the Sale of the Estate.....	10000
	Divide by 602.072 17958.563
	29.8279

19 yr.=30.5390 29.8279 the quotient.
 18 yr.=28.1323 28.1323=18 years.
 Diff. 2.4067 : 1.6956 :: 365 days

$$\begin{array}{r} 365 \\ \hline 84780 \\ 101736 \\ 50868 \\ \hline 2.4067)618.8940 \\ \hline 257 \text{ days.} \end{array}$$

Ans. 18 years and 257 days.

(49.)... A. receives from B. in Payment, &c.

Amount of the Bill	£357 . 12 . 0
C. fails, and B. pays in part	80 . 0 . 0
Balance of the Bill	277 . 12 . 0
B. in 11 mo. pays 10/ \pounds	138 . 16 . 0
	<u>138 . 16 . 0</u>
C. in 14 mo. pays 3/9 \pounds on £357 . 12 or	67 . 1 . 0
	<u>71 . 15 . 0</u>
B. in 17 mo. pays 3/6 \pounds on balance of Bill	48 . 11 . 7
	<u>23 . 3 . 5</u>

Interest on £277 . 12 for 11 mo. £12 . 14 . 5 $\frac{1}{2}$	
Ditto on 138 . 10 for 3 mo. 1 . 14 . 8 $\frac{1}{4}$	
Ditto on 71 . 15 for 3 mo. 0 . 17 . 11 $\frac{1}{4}$	
	<u>15 . 7 . 1</u>

Ans. A. loses.....£38 . 10 . 6

(50.)... The Capital of a Trading Co., &c.

39 Shares amount to.....	£28080
Of which A. holds 3 Shares or £2160	
Profit, 17 $\frac{1}{2}$ \pounds cent.	378
He receives for his Share	2538 . 0 . 0
Which will purchase in the 4 \pounds cent.	
Consols, @ 82 $\frac{3}{4}$	3067 . 1 . 4 <i>Stock.</i>
Then..... If 82 $\frac{3}{4}$: £4 :: 100 :: 4 $\frac{5}{8}$ nearly.	

Ans. 3067l. 1s. 4d. *Stock,* and 4 $\frac{5}{8}$ per cent. nearly.

(51.)... A had $\frac{7}{18}$, B. $\frac{5}{18}$, C $\frac{3}{18}$, and D. $\frac{1}{18}$ Share, &c.

Original Stock	£6000
Profit, $45\frac{1}{2}\%$ cent.....	2730
<hr/>	
The Capital at the Dissolution	£8730
Deduct D.'s Salary	105
To be divided.....	<u>£8625</u>

Of which D. has $\frac{1}{18}$, or... £539 . 1 . 3
 Add his Salary 105 . 0 . 0

	<u>£644 . 1 . 3</u>	} <i>Ans.</i>
C.'s $\frac{3}{18}$ comes to.....	1617 . 3 . 9	
B.'s $\frac{5}{18}$	2695 . 6 . 3	
A.'s $\frac{7}{18}$	3773 . 8 . 9	
<i>Proof</i>	<u>£8730 . 0 . 0</u>	

(52.)... Four merchants in Liverpool, &c.

Amount to be insured	£20000
Effected.....	17000
<hr/>	
Remainder	3000 @ 7 Guineas is £220 . 10
Policy, $5/6\%$ cent.....	8 . 5
Commission, $1/2\%$ cent.	15 . 0
Cost of Insurance	<u>£243 . 15</u>
Add Law Expenses	156 . 9
Sum the Broker receives	<u>£400 . 4</u>

B..... 4 shares.	9 £400 . 4 . 0
C..... 3	One share <u>£44 . 9 . 4</u> $\times 4 \times 3 \times 2$
D..... 2	
<u>9</u> shares.	

B. pays... £177 . 17 . 4	} <i>Ans.</i>
C. 133 . 8 . 0	
D..... 88 . 18 . 8	
<i>Proof</i> ... £400 . 4 . 0	

(53.)... Three Travellers met at the Foot of Ben Lomond, &c.

Note.—As each person is supposed to eat equally, we may divide each roll into three parts.

A..... 5 Rolls or 15 parts.
 B..... 3 Rolls or 9
 In all 24 parts.

From A.'s..... 15 parts
 Deduct his $\frac{1}{3}$ or 8
 To C. from A. 7 parts.

From B.'s..... 9 parts
 Deduct his $\frac{1}{3}$ or.... 8
 To C. from B. 1 part.

Ans. { The 4*d.* which C. paid, must therefore be divided in the
 proportion of 7 to 1, or A. receives 7 halfpence or... $3\frac{1}{2}d.$
 and B receives 1 halfpenny or... $\frac{1}{2}d.$
Proof..... 4*d.*

Or;

As the 8 rolls cost a shilling; A.'s 5 rolls cost $7\frac{1}{2}d.$, and B.'s 3, $4\frac{1}{2}d.$; A. should receive $3\frac{1}{2}d.$, and B. $\frac{1}{2}d.$

(54.)... The National Debt 820 millions, &c.

£820000000 $\times 20 = 16400000000$ *Shillings. 1st Ans.*
 Off $\frac{1}{21}$) 820000000 *Pounds.*
 39047619
780952381 *Guineas. 2nd Ans.*

<p>780952381 <u>129 gr. = 5 dwt. 9 gr.</u> 7028571429 9371428572 24 100742857149 2,0 419761904,7 . 21 gr. 12 209880952 . 7 dwt. <u>17490079 lb. 4 oz. 7 dwt. 21 gr.</u> Weight of the Debt in <i>Gold. 3rd Ans.</i></p>	<p>£820000000 <u>20 shil.</u> 16400000000 3 dt. 21 gr. = 93 gr. 24 152520000000 2,0 6355000000,0 12 3177500000 <u>264791666 lb. 8 oz.</u> Weight in <i>Silver. 4th Ans.</i></p>
---	---

12,0 | 82000000,0 pounds
 16 | 6833333 . 5
 28 | 427083 . 5 oz.
 4 | 15252 . 27 lb.
 2,0 | 381,3 cwt.
 Tons 190 . 13 . 27 . 5 oz.
 Weight in Bank Notes. 5th Ans.

1,00 | 7809523,81 guineas.
 6,0 | 780952,3
 10 | 130158 . 44 min.
 313 | 13015 . 8 ho.
 yr. 41 . 182 da. 8 ho. 44 min.
 To count the Guineas. 7th Ans.

1,00 | 820000000 pounds.
 20 shillings.
 1,00 | 164000000,00
 6,0 | 16400000,0
 10 | 2733333 . 20 min.
 313 | 273333 . 3 ho.
 yr. 873 . 84 da. 3 ho. 20 min.
 To count the Debt in Shillings. 6th Ans.

1,00 | 8200000,00 pound notes.
 6,0 | 820000,0
 10 | 136666 . 40 min.
 313 | 13666 . 6 ho.
 yr. 43 . 207 da. 6 ho. 40 m.
 To count the Debt in Notes. 8th Ans.

144 | 16400000000 shillings.
 9 | 113888888 . 128 in.
 30 1/4 | 12654320 . 8 feet.
 40 | 418324 . 19 yd.
 4 | 10458 . 4 po.
 acres 2614 . 2 ro. 4 po.
 19 yd. 8 ft. 128 sq. in.
 The Ground the Shillings would cover. 9th Ans.

144 | 780952381 guineas.
 9 | 5423280 . 61 in.
 30 1/4 | 602586 . 6 feet.
 40 | 19920 . 6 yd.
 4 | 498
 acres 124 . 2 ro. 6 yd.
 6 ft. 61 in.
 The Ground the Guineas would cover. 10th Ans.

820000000 notes.
 48 = 8 x 6
 144 | 39360000000 sq. in.
 9 | 273333333 1/3
 30 1/4 | 30370370 . 3 1/3 ft.
 40 | 1003979 . 5 1/2 yd.
 4 | 25099 . 19 po.
 acres 6274 . 3 ro. 19 per.
 5 1/4 yd. 3 1/3 ft.
 The Ground the Bank Notes would cover. 11th Ans.

12 | 16400000000 shil.
 3 | 1366666666 . 8 in.
 5 1/2 | 455555555 . 1 ft.
 40 | 82828282 . 4 yd.
 8 | 2070707 . 2 po.
 miles 258838 . 3 fur. 2 po.
 4 yd. 1 ft. 8 in.
 The Train the Shillings would form. 12th Ans.

$$\begin{array}{r} 12 \overline{) 780952381 \text{ guineas.}} \\ 3 \overline{) 65079365 . 1 \text{ in.}} \\ 5\frac{1}{2} \overline{) 21693121 . 2 \text{ ft.}} \\ 40 \overline{) 3944203 . 4\frac{1}{2} \text{ yd.}} \\ 8 \overline{) 98605 . 3} \\ \text{miles } 12325 . 5 \text{ fur. } 3 \text{ po. } 4\frac{1}{2} \text{ yd.} \\ \quad 2 \text{ ft. } 1 \text{ in.} \\ \text{The Train the } \textit{Guineas} \text{ would} \\ \text{form. } 13\text{th Ans.} \end{array}$$

$$\begin{array}{r} 20 \overline{) 4197619047 . 20\frac{1}{4} \text{ gold.}} \\ 12 \overline{) 209880952 . 7} \\ 12,00 \overline{) 174900,79 . 4} \\ 14575 + \text{Waggons to} \\ \text{carry the Debt in } \textit{Guineas.} \\ 14\text{th Ans.} \end{array}$$

$$\begin{array}{r} 12,00 \overline{) 2647916,66 . 8 \text{ silver.}} \\ 220660 - \text{Waggons to} \\ \text{carry the Debt in } \textit{Shillings.} \\ 15\text{th Ans.} \end{array}$$

$$\begin{array}{r} 12,0 \overline{) 82000000,0 \text{ notes.}} \\ 16 \overline{) 6833333 . 5 \text{ oz.}} \\ 12,00 \overline{) 4270,83 . 5} \\ 356 - \text{Waggons to carry} \\ \text{the Debt in } \textit{Bank Notes.} \\ 16\text{th Ans.} \end{array}$$

$$\begin{array}{r} 1475 \text{ waggons with } \textit{guineas.} \\ 30 \text{ ft. to each.} \\ 3 \overline{) 437250 \text{ ft.}} \\ 5\frac{1}{2} \overline{) 145750 \text{ yd.}} \\ 4,0 \overline{) 2650,0 \text{ po.}} \\ 8 \overline{) 662 . 20 \text{ po.}} \\ \text{miles } 82 . 6 \text{ fur. } 20 \text{ po.} \\ \text{The Distance the Waggons with} \\ \text{the } \textit{Guineas} \text{ would extend.} \\ 17\text{th Ans.} \end{array}$$

$$\begin{array}{r} 220660 \text{ waggons with shil.} \\ 30 \text{ ft. to each.} \\ 3 \overline{) 6619800 \text{ ft.}} \\ 5\frac{1}{2} \overline{) 2206600 \text{ yd.}} \\ 4,0 \overline{) 40120,0 \text{ po.}} \\ 8 \overline{) 10030 \text{ fur.}} \\ \text{miles } 1253 . 6 \text{ fur.} \\ \text{The Distance which the Wag-} \\ \text{gons with the } \textit{Shillings} \text{ would} \\ \text{extend. } 18\text{th Ans.} \end{array}$$

$$\begin{array}{r} 356 \text{ waggons} \\ 30 \text{ ft.} \\ 3 \overline{) 10680 \text{ ft.}} \\ 5\frac{1}{2} \overline{) 3560} \\ 4,0 \overline{) 64,7 . 1\frac{1}{2} \text{ yd.}} \\ 8 \overline{) 16 . 7} \\ \text{miles } 2 . 7 \text{ po. } 1\frac{1}{2} \text{ yd.} \\ \text{The Distance which the Wag-} \\ \text{gons with the } \textit{Bank Notes} \\ \text{would extend. } 19\text{th Ans.} \end{array}$$

$\begin{array}{r} \text{£}820000000 \\ 240 \\ \hline 328 \\ 164 \\ \hline 196800000000 \text{ pence.} \\ 11 \text{ dr.} \\ \hline 16 \mid 2164800000000 \text{ drams.} \\ 16 \mid 135300000000 \text{ ounces.} \\ 28 \mid 8456250000 \text{ lb.} \\ 4 \mid 302008928 \text{ gr.} \\ 2,0 \mid 7550223,2 \\ 2,00 \mid 37751,11.12 \\ \hline 18876 \text{ — Vessels to} \\ \text{carry the Debt in Penny-pieces.} \\ 20\text{th Ans.} \end{array}$

$\begin{array}{r} \text{£}820000000 \\ 40 \text{ sixp.} \\ \hline 9 \mid 32800000000 \\ 3644444444 \text{ doll.} \\ \hline 405 \text{ gr.} \\ \hline 18222222220 \\ \hline 14577777776 \\ \hline 7,000 \mid 1475999999,820 \text{ gr.} \\ 28 \mid 210857142 + \\ \hline 4 \mid 7530612 \\ \hline 2,0 \mid 188265,3 \text{ cwt.} \\ 2,00 \mid 941,32.13 \\ \hline 471 \text{ — Vessels to} \\ \text{carry the Debt in Dollars.} \\ 21\text{st Ans.} \end{array}$

Interest @ 4 ½ Cent.
 $\begin{array}{r} \frac{1}{2,0} \mid \text{£}82000000,0 \\ \text{off } \frac{1}{8} \mid 41000000 = 5 \text{ ½ Cent.} \\ \quad \quad \quad 8200000 = 1 \text{ ½ Cent.} \\ \hline \text{£ } 32300000 = 22\text{nd Ans.} \end{array}$

Interest @ 5 ½ Cent.
 $\begin{array}{r} \frac{1}{2,0} \mid \text{£}82000000,0 \\ \hline \text{£}41000000 \text{ 23rd Ans.} \end{array}$

Interest @ 6 ½ Cent.
 $\begin{array}{r} \frac{1}{2,0} \mid \text{£ } 82000000,0 \\ \text{add } \frac{1}{8} \mid 41000000 \\ \quad \quad \quad 8200000 \\ \hline \text{£ } 49200000 \text{ 24th Ans.} \end{array}$

mil.
 $8 \cdot 820 \text{ millions}$
 $102 \cdot 5 = \text{found between}$
 $37 \text{ and } 38 \text{ years.}$
 25th Ans. 37 years and 52 days,
 the time to pay off the debt
 by an annual fund of 8 mil-
 lions.

Thus :

$\begin{array}{r} 38 \text{ years} = 107 \cdot 709545 \\ 37 \text{ years} = 101 \cdot 628138 \\ \hline 6 \cdot 081407 \end{array} : \begin{array}{r} 102 \cdot 5 \\ 101 \cdot 628138 \\ \hline \cdot 871862 \end{array} :: 365 \text{ days.}$
 $\begin{array}{r} 365 \text{ days.} \\ \hline 4359310 \\ 5231172 \\ 2615586 \\ \hline 6 \cdot 081407 \mid 318 \cdot 229630 \\ \hline 52 \text{ days.} \end{array}$

Table II.

29.778078)820000000

£ 27537035 . 16 the annuity @ 4 % Cent. to pay off the Debt in 20 years. 26th Ans.

Table II.

33.065954)820000000

£ 24798921 . 11 . 6 the annuity @ 5 % Cent. 27th Ans.

6d. = $\frac{1}{4.5}$ | 273664000,0 @ 9d. % £.

3d. = $\frac{1}{2}$ | 68416000
34208000

102624,000.)820000,000

7.990333 found between 6 and 7 years.

7 years = 8.142008 7.990333

6 years = 6.801912 6.801912

As diff. 1.340096 : 1.188421 :: 365 days.

365

5942105

7130526

3565263

1.340096 | 433.773665

324 days. 28th Ans.

The Assessment of 9d. % £ would require to continue 6 years, 324 days.

whole property. *debt.*
If £273664,0000 : 82000,0000 :: £100

100

273664 | 8200000

30 % cent. nearly, or 6 shillings % £ to pay off the Debt at once. 29th Ans.

APPENDIX II.

SOLUTIONS

OF THE

EXERCISES IN CROSS MULTIPLICATION.

EXERCISES, page 204.

$$\begin{array}{r}
 \text{(1.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 3 . 4 \\ 2 . 1 \end{array} \\
 \text{by} \\
 \hline
 6 . 8 \\
 3 . 4 \\
 \hline
 \underline{\underline{6 . 11 . 4}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(2.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 4 . 5 \\ 3 . 2 \end{array} \\
 \text{by} \\
 \hline
 13 . 3 \\
 8 . 10 \\
 \hline
 \underline{\underline{13 . 11 . 10}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(3.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 5 . 6 \\ 4 . 3 \end{array} \\
 \text{by} \\
 \hline
 22 . 0 \\
 1 . 4 . 6 \\
 \hline
 \underline{\underline{23 . 4 . 6}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(4.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 6 . 5 \\ 5 . 4 \end{array} \\
 \text{by} \\
 \hline
 32 . 1 \\
 2 . 1 . 8 \\
 \hline
 \underline{\underline{34 . 2 . 8}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(5.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 7 . 6 \\ 6 . 5 \end{array} \\
 \text{by} \\
 \hline
 45 . 0 \\
 3 . 1 . 6 \\
 \hline
 \underline{\underline{48 . 1 . 6}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(6.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 8 . 7 \\ 7 . 6 \end{array} \\
 \text{by} \\
 \hline
 60 . 1 \\
 4 . 3 . 6 \\
 \hline
 \underline{\underline{64 . 4 . 6}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(7.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 9 . 8 \\ 8 . 7 \end{array} \\
 \text{by} \\
 \hline
 77 . 4 \\
 5 . 7 . 8 \\
 \hline
 \underline{\underline{82 . 11 . 8}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(8.)... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 10 . 9 \\ 9 . 8 \end{array} \\
 \text{by} \\
 \hline
 96 . 9 \\
 7 . 2 \\
 \hline
 \underline{\underline{103 . 11}} \text{ Ans.}
 \end{array}$$

$$\begin{array}{r}
 \text{(9.) ... Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \\ \textit{pt.} \end{array} \begin{array}{l} 11 \\ 11 \\ 11 \end{array} \\
 \text{by } \begin{array}{l} 11 \\ 11 \\ 11 \end{array} \\
 \hline
 131.11.1 \\
 10.11.11.1 \\
 10.11.11.1 \\
 \hline
 \underline{\underline{143.10.0.0.1 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(10.) Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \\ \textit{pt.} \end{array} \begin{array}{l} 12 \\ 10 \\ 6 \end{array} \\
 \text{by } \begin{array}{l} 7 \\ 8 \\ 9 \end{array} \\
 \hline
 90.1.6 \\
 8.7.0.0 \\
 9.7.10.6 \\
 \hline
 \underline{\underline{99.6.1.10.6 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(11.) Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \\ \textit{pt.} \end{array} \begin{array}{l} 14 \\ 6 \\ 9 \end{array} \\
 \text{by } \begin{array}{l} 9 \\ 0 \\ 3 \end{array} \\
 \hline
 131.0.9 \\
 3.7.8.3 \\
 \hline
 \underline{\underline{131.4.4.8.3 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(12.) Mult. } \begin{array}{l} \textit{ft.} \\ \textit{in.} \\ \textit{pt.} \end{array} \begin{array}{l} 15 \\ 4 \\ 3 \end{array} \\
 \text{by } \begin{array}{l} 12 \\ 6 \\ 4 \end{array} \\
 \hline
 184.3.0 \\
 7.8.1.6 \\
 5.1.5 \\
 \hline
 \underline{\underline{192.4.2.11 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(13.) Mult. } \begin{array}{l} \textit{yd.} \\ \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 6 \\ 2 \\ 6 \end{array} \text{ by } \begin{array}{l} \textit{yd.} \\ \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 4 \\ 2 \\ 3 \end{array} \\
 \hline
 3 \text{ feet.} \quad 3 \\
 20.6 \quad 14 \\
 14.0 \\
 9)287.0 \\
 \hline
 \underline{\underline{\textit{yds.} 31.8 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(14.) Mult. } \begin{array}{l} \textit{yd.} \\ \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 7 \\ 1 \\ 4 \end{array} \text{ by } \begin{array}{l} \textit{yd.} \\ \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 5 \\ 2 \\ 3 \end{array} \\
 \hline
 \text{by } \begin{array}{l} 3 \text{ feet.} \\ 3 \end{array} \\
 22.4 \quad 17.3 \\
 17.3 \\
 379.8 \\
 5.7 \\
 9)385.3 \\
 \hline
 \underline{\underline{\textit{yds.} 42.7.3 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(15.) Mult. } \begin{array}{l} \textit{yd.} \\ \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 750 \\ 16 \\ 6 \end{array} \\
 \hline
 3 \\
 2250 \\
 16.6 \\
 36000 \\
 1125 \\
 9)37125 \\
 \hline
 \underline{\underline{\textit{yds.} 4125 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{(16.) Mult. } \begin{array}{l} \textit{yd.} \\ \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 90 \\ 1 \\ 36 \end{array} \text{ by } \begin{array}{l} \textit{yd.} \\ \textit{ft.} \\ \textit{in.} \end{array} \begin{array}{l} 36 \\ 1 \\ 6 \end{array} \\
 \hline
 3 \text{ feet.} \quad 3 \\
 271 \quad 109.6 \\
 109.6 \\
 29539 \\
 135.6 \\
 9)29674.6 \\
 \hline
 \underline{\underline{3297.1.6 \textit{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 (17.) \dots\dots\dots \begin{array}{l} \text{ft.} \quad \text{in.} \\ 5 \cdot 9 \text{ long.} \\ 4 \cdot 6 \text{ broad.} \end{array} \\
 \hline
 23 \cdot 0 \\
 2 \cdot 10 \cdot 6 \\
 \hline
 25 \cdot 10 \cdot 6 \text{ sq. feet.} \\
 3 \cdot 3 \cdot 0 \text{ deep.} \\
 \hline
 77 \cdot 7 \cdot 6 \\
 6 \cdot 5 \cdot 7 \cdot 6 \\
 \hline
 \underline{\underline{84 \cdot 1 \cdot 1 \cdot 6 \text{ Ans.}}}
 \end{array}$$

$$\begin{array}{r}
 (18.) \dots \begin{array}{l} \text{yd.} \quad \text{ft.} \\ 76 \cdot 2 \text{ long.} \\ 3 \text{ feet.} \end{array} \\
 \hline
 \underline{\underline{230}}
 \end{array}
 \qquad
 \begin{array}{r}
 \text{yd.} \\
 35 \text{ broad.} \\
 3 \\
 \hline
 \underline{\underline{105}}
 \end{array}
 \qquad
 \begin{array}{r}
 \text{yd.} \quad \text{ft.} \quad \text{in.} \\
 3 \cdot 0 \cdot 9 \text{ deep.} \\
 3 \\
 \hline
 \underline{\underline{9 \cdot 9}}
 \end{array}$$

$$\begin{array}{r}
 230 \text{ long.} \\
 105 \text{ broad.} \\
 \hline
 24150 \text{ superficial measure.} \\
 9 \cdot 9 \text{ deep.}
 \end{array}$$

$$\begin{array}{r}
 217350 \\
 18112 \cdot 6 \\
 \hline
 235462 \cdot 6 \text{ solid feet.} \\
 9 \overline{) 78487 \cdot 6} \\
 \hline
 \underline{\underline{Ans. 8720 \cdot 21 \cdot 6 \text{ solid measure.}}}
 \end{array}$$

A solid yard = 27 $\left\{ \begin{array}{l} 3 \\ 9 \end{array} \right.$

$$\begin{array}{r}
 (19.) \dots\dots \begin{array}{l} \text{sq. yd.} \quad \text{ft.} \\ 9 \cdot 5 \\ 9 \\ \hline 86 \\ 171 = 28\frac{1}{2} \text{ fathoms.} \\ 86 \\ \hline 602 \\ 86 \\ \hline 688 \\ 27 \left\{ \begin{array}{l} 3 \\ 9 \end{array} \right. \overline{) 14706} \\
 \hline
 \underline{\underline{4902}} \\
 \hline
 \underline{\underline{544 \text{ yd. } 18 \text{ ft.} \text{ Ans.}}}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 (20.) \dots\dots 12 \text{ feet long.} \\
 9 \text{ broad.} \\
 \hline
 108 \\
 6 \text{ deep.} \\
 \hline
 648 \text{ solid feet.} \\
 1728 \text{ solid inch.} = 1 \text{ ft.} \\
 \hline
 5184 \\
 1296 \\
 4536 \\
 648 \\
 \hline
 \underline{\underline{1119744}} \\
 \underline{\underline{4038 \cdot 4 \text{ \&c. imp. gall.} \text{ Ans.}}}
 \end{array}$$

PROMISCUOUS EXERCISES.

Page 205.

(1.) Mult. $\begin{array}{r} \text{ft. in.} \\ 72.6 \text{ length.} \\ \text{by } 36.9 \text{ breadth.} \\ \hline 2610.0 \\ 54.4.6 \\ \hline 2664.4.6 \text{ floor.} \\ 2664.4.6 \text{ for ceiling.} \\ \hline 5328.9.0 \text{ Ans.} \end{array}$

(2.) Mult. $\begin{array}{r} \text{ft. in.} \\ 72.6 \text{ length.} \\ \text{by } 36.9 \text{ breadth.} \\ \hline 109.3 \\ \quad 2 \text{ sides.} \\ \hline 218.6 \\ 15.0 \text{ height.} \\ \hline 1097.6 \\ \text{sq. ft. } 218.0 \\ \text{A sq. yd.} = 9 \overline{)3277.6} \\ \text{sq. yds. } \underline{\underline{364.1.6}} \text{ Ans.} \end{array}$

(3.)..... $\begin{array}{r} \text{ft. in.} \\ 72.6 \text{ length.} \\ 36.6 \text{ breadth.} \\ \hline 2610.0 \\ 54.4.6 \\ \hline 2664.4.6 \\ 15.0.0 \text{ height.} \\ \hline \text{Cubic feet } \underline{\underline{39965.7.6}} \text{ Ans.} \end{array}$

(4.)... $\frac{9}{8}$ yard wide = 18 nails.
 $\begin{array}{r} 18 \\ 4^2 = 16 \overline{)324} \\ \text{Ans. } \underline{\underline{20\frac{1}{4}}} \text{ sq. quar} \end{array}$

(5.)..... $\begin{array}{r} \text{in. pt.} \\ 7.9 \\ 4.6 \\ \hline 31.0 \\ 3.10.6 \\ \hline 34.10.6 \\ 12 \\ \hline 418 \\ 12 \\ \hline 5022 \end{array}$

Length 12 feet.
 Breadth 6
 $\begin{array}{r} 72 \text{ square feet.} \\ 144 \\ \hline 288 \\ 1008 \\ \hline 10368 \text{ square inches.} \\ 12 \\ \hline 124416 \text{ parts.} \\ 12 \\ \hline 5022 \overline{)1492992} \text{ square parts.} \\ \text{Ans. } \underline{\underline{297}} + \text{ Bank notes.} \end{array}$

(6.)..... $\begin{array}{r} \text{dia.} \\ \text{As } 7 : 22 :: 42 \\ \underline{22} \\ 84 \\ \underline{84} \\ 7 \overline{)924} \\ \text{Inches } 132 \text{ circumference.} \\ \text{Mult. } \frac{1}{2} \text{ circumference } \underline{66} \\ \text{by } \frac{1}{2} \text{ diameter } \underline{21} \\ \underline{66} \\ 132 \\ \text{Ans. } \underline{\underline{1386}} \text{ guineas or shillings.} \end{array}$

(7.)..... $\begin{array}{r} \text{Feet } 4 \text{ long.} \\ \underline{2\frac{1}{2}} \text{ broad.} \\ 10 \\ \underline{1\frac{1}{2}} \text{ deep.} \\ \text{Cubic feet } 15 \\ 1728 \\ \underline{17280} \\ 8640 \\ \text{(2}\frac{1}{2}\text{)}^3 = 15\cdot625 \overline{)25920} \text{ cub. inches.} \\ \text{Ans. } \underline{\underline{1658\frac{2}{3}}} \text{ oranges.} \end{array}$

(8.)..... $\begin{array}{l} \text{inches.} \\ \text{Here } 1728 \div 282 = 6\frac{6}{77}, \text{ ale gallons.} \\ 1728 \div 231 = 7\frac{37}{77}, \text{ wine gallons.} \\ 1728 \div 277\cdot274 = 6\frac{32178}{1388437} \text{ imperial gallons.} \end{array} \left. \vphantom{\begin{array}{l} \text{inches.} \\ \text{Here } 1728 \div 282 = 6\frac{6}{77}, \text{ ale gallons.} \\ 1728 \div 231 = 7\frac{37}{77}, \text{ wine gallons.} \\ 1728 \div 277\cdot274 = 6\frac{32178}{1388437} \text{ imperial gallons.} \end{array}} \right\} \text{Ans.}$

(9.)..... Length, 60 cubits=90 feet or 30 yards.
 Breadth, 20 cubits=30 feet or 10 yards.
 Ans. 300 square yards.

(10.)..... Length, 300 cubits or 150 yards.
 Breadth, 50 cubits or 25 yards.
 $\begin{array}{r} \underline{750} \\ 300 \\ \underline{3750} \text{ square yards.} \\ \text{Height, } 30 \text{ cubits or } 15 \text{ yards.} \\ \text{Each horse } 10 \text{ yds. } \underline{56250} \text{ cubic yards.} \\ \text{Ans. } \underline{\underline{5625}} \text{ horses.} \end{array}$

(11.)..... Length ^{ft.} 120 by ^{sq. ft.} 30 = 3600
 Depth 6 feet.
 $6 \times 4 \times 3 = 72 \overline{) 21600}$
 Ans. 300 bales.

(12.)..... Length $3\frac{1}{2}$ feet.
 Breadth 2
 $7 \times 2 = 14$ sq. feet.
 Depth $20 \times 11 = 18.4$
 Ans. $32\frac{1}{8}$ sq. feet.

TIMBER MEASURING.

I. MEASURING BOARDS.

EXERCISES, page 206.

<p>(1.)... Mult. ^{ft.} 14 . 6 by ^{in.} 1 . 3 $\underline{14 . 6}$ $3 . 7 . 6$ Sq. feet <u>18 . 1 . 6</u> Ans.</p>	<p>(2.)... Mult. ^{ft.} 19 . 7 . 6 by ^{in.} 10 . 6 $\underline{16 . 4 . 3}$ $9 . 9 . 9$ Sq. feet <u>17 . 2 . 0 . 9</u> Ans.</p>
---	--

<p>(3.)... Mult. ^{ft.} 31 . 9 . 0 by ^{in.} 8 . 9 $\underline{21 . 2 . 0}$ $1 . 11 . 9 . 9$ Sq. feet <u>23 . 1 . 9 . 9</u> Ans.</p>	<p>(4.)... Mult. ^{ft.} 37 . 6 . 0 by ^{in.} 1 . 2 . 9 $\underline{37 . 6}$ $6 . 3 . 0$ $2 . 4 . 1 . 6$ Sq. feet <u>46 . 1 . 1 . 6</u> Ans.</p>
--	---

<p>(5.)... ^{ft.} 16 . 6 . 0 ^{in.} 1 . 9 . 6 $\underline{16 . 6 . 0}$ $12 . 4 . 6$ $8 . 3$ sq. feet. <u>29 . 6 . 9</u> Ans.</p>	<p>(6.)... ^{Sq. foot.} $7\frac{1}{2}$ 144 inches. $\underline{2}$ 2 $15 = \left\{ \begin{array}{l} 3 \overline{) 288} \\ 5 \overline{) 96} \end{array} \right.$ ^{ft.} $19\frac{1}{8}$ ^{in.} = $1 . 7\frac{1}{8}$ Ans.</p>
--	---

(7.)
$$\begin{array}{r} \text{in.} \quad \text{sq. in.} \\ 8\frac{3}{4} \quad 144 \\ \underline{4} \quad \underline{4} \\ 35 \quad)576 \\ \underline{16\frac{16}{8}} \text{ in.} = 1 \text{ ft. } 4\frac{16}{8} \text{ in.} \end{array}$$

(8.)...
$$\begin{array}{r} \text{ft. in.} \\ 13.2 \quad \text{length.} \\ \underline{1.7.6} \quad \text{breadth.} \\ 13.2 \\ 7.8.2 \\ \underline{6.7} \\ 21.4.9 \text{ at } 7\frac{1}{2}d. \text{ } \cancel{\text{per}} \text{ sq. ft.} \\ \underline{10.6} \\ 2.7\frac{1}{2} \\ 3 = 4 \text{ in } 9 \text{ pts.} \end{array}$$

$6d. = \frac{1}{2}$
 $1\frac{1}{2}d. = \frac{1}{4}$

$\text{Ans. } 13\frac{1}{4}\frac{1}{2} \text{ price.}$

(9.)...
$$\begin{array}{r} \text{ft.} \quad \text{in.} \quad \text{pt.} \\ 23.3.0 \\ \underline{1.1.6} \\ 23.3.0 \\ \underline{1.11.3} \\ 11.7.6 \\ \underline{26.1.10.6} \\ \text{4 planks.} \\ \underline{104.7.6.0} \end{array}$$

$$\begin{array}{r} \text{ft.} \quad \text{in.} \quad \text{pt.} \\ 23.3.0 \\ \underline{1.2.6} \\ 23.3.0 \\ \underline{3.10.6} \\ 11.7.6 \\ \underline{28.1.1.6} \end{array}$$

$$\begin{array}{r} \text{ft.} \quad \text{in.} \quad \text{pt.} \\ 23.3.0 \\ \underline{1.2.7.6} \\ 23.3.0 \\ \underline{3.10.6} \\ 1.1.6.9 \\ \underline{11.7.6} \\ 28.4.0.4.6 \\ \text{2 planks.} \end{array}$$

2 Planks..... feet 56 . 8 . 0 . 9 . 0
 4 Ditto..... 104 . 7 . 6 . 0
 1 Ditto..... 28 . 1 . 1 . 6

$2/. = \frac{1}{10}$ 189 . 4 . 8 . 3 @ $2/4\frac{1}{2}$ square foot. 1st Ans.
 $4d. = \frac{1}{8}$ 18 . 18
 $\frac{1}{2}d. = \frac{1}{8}$ 3 . 3
 7 . 10 $\frac{1}{2}$
 11 = 4 in 8 pts.

2nd Ans. £22 . 9 . 9 $\frac{1}{2}$ price.

II. MEASURING LOGS.

EXERCISES, page 207.

(1.) Mult. $\begin{array}{r} \text{ft. in.} \\ 31.0 \end{array}$ length.
 by $\begin{array}{r} 1.6 \end{array}$ mean breadth.
 $\begin{array}{r} 31.0 \\ 15.6 \\ \hline 46.6 \end{array}$
 by $\begin{array}{r} 1.6 \end{array}$ thickness.
 $\begin{array}{r} 46.6 \\ 23.3 \\ \hline 69.9 \end{array}$
Cubic ft. $\underline{\underline{69.9}}$ Ans.

(2.)... $\begin{array}{r} \text{ft. in.} \\ 24.6 \end{array}$ long.
 $\begin{array}{r} 1.0 \end{array}$ broad.
 $\begin{array}{r} 24.6 \\ 1.0 \end{array}$ thick.
Cubic ft. $\underline{\underline{24.6}}$ Ans.

(3.) Mult. $\begin{array}{r} \text{ft. in.} \\ 17.6 \end{array}$
 by $\begin{array}{r} 11 \text{ in.} \\ 16.0.6 \end{array}$
 by $\begin{array}{r} 11 \text{ in.} \\ 14.8.5.6 \end{array}$
Cubic ft. $\underline{\underline{14.8.5.6}}$ Ans.

(4.)... $\begin{array}{r} \text{ft. in. pt.} \\ 21.9.0 \\ 1.3.6 \\ \hline 21.9.0 \\ 5.5.3 \\ \hline 10.10.6 \\ 28.1.1.6 \\ 1.3.6 \\ \hline 28.1.1.6 \\ 7.0.3.4.6 \\ 1.2.0.6.9 \\ \hline 36.3.5.5.3 \end{array}$ Ans.

(5.) Length $\begin{array}{r} \text{ft. in. pt.} \\ 49.6.0 \end{array}$
 Breadth $\begin{array}{r} 9.6 \\ 37.1.6 \\ 2.0.9 \\ \hline 39.2.3 \end{array}$ sq. content.
 Depth $\begin{array}{r} 9.6 \\ 29.4.8.3 \\ 1.7.7.1.6 \\ \hline 31.0.3.4.6 \end{array}$
Cubic ft. $\underline{\underline{31.0.3.4.6}}$ Ans.

(6.) Length $\begin{array}{r} \text{ft. in. pt.} \\ 29.9.0 \end{array}$
 Breadth $\begin{array}{r} 1.6 \\ 29.9.0 \\ 2.5.9 \\ \hline 1.2.10.6 \\ 33.5.7.6 \end{array}$ sq. cont.
 Thickness $\begin{array}{r} 1.1.6 \\ 33.5.7.6 \\ 2.9.5.7.6 \\ 1.4.8.9.9 \\ \hline 37.7.9.11.3 \end{array}$
Cubic ft. $\underline{\underline{37.7.9.11.3}}$ Ans.

<p>(7.) Length $\begin{matrix} ft. & in. & pt. \\ 13 & 10 & 0 \end{matrix}$ Breadth $\begin{matrix} 2 & 1 & 3 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$27 \cdot 8 \cdot 0$ $1 \cdot 1 \cdot 10$ $3 \cdot 5 \cdot 6$</p> <hr style="width: 100%;"/> <p>Thickness $\begin{matrix} 29 & 1 & 3 \cdot 6 \text{ sq. con.} \\ 2 & 1 & 3 \cdot 0 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$52 \cdot 2 \cdot 7 \cdot 0$ $2 \cdot 5 \cdot 1 \cdot 3 \cdot 6$ $7 \cdot 3 \cdot 3 \cdot 10 \cdot 6$</p> <hr style="width: 100%;"/> <p><i>Solid feet</i> $\underline{\underline{61 \cdot 2 \cdot 11 \cdot 7 \cdot 4 \cdot 6}}$ <i>Ans.</i></p>	<p>(8.) Length $\begin{matrix} ft. & in. & pt. \\ 19 & 3 & 0 \end{matrix}$ Breadth $\begin{matrix} 1 & 0 & 3 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$19 \cdot 3 \cdot 0$ $4 \cdot 9 \cdot 9$</p> <hr style="width: 100%;"/> <p>$19 \cdot 7 \cdot 9 \cdot 9$ sq. con. Thickness $\begin{matrix} 1 & 0 & 3 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$19 \cdot 7 \cdot 9 \cdot 9$ $4 \cdot 10 \cdot 11 \cdot 5$</p> <hr style="width: 100%;"/> <p><i>Solid feet</i> $\underline{\underline{20 \cdot 0 \cdot 8 \cdot 8 \cdot 5}}$ <i>Ans.</i></p>
---	--

(9.)..... $\begin{matrix} ft. & in. & pt. \\ 20 & 5 & 0 \text{ long.} \\ 1 & 5 & 6 \text{ broad.} \end{matrix}$

$20 \cdot 5$
 $8 \cdot 6 \cdot 1$
 $10 \cdot 2 \cdot 6$

$29 \cdot 9 \cdot 3 \cdot 6$ square content.
 $10 \cdot 0 \cdot 0$ thick.

Solid feet $\underline{\underline{24 \cdot 9 \cdot 8 \cdot 11}}$ *Ans.*

<p>(10.)... 1st. $\begin{matrix} ft. & in. \\ 18 & 0 \\ 1 & 6 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$18 \cdot 0$ $9 \cdot 0$</p> <hr style="width: 100%;"/> <p>$27 \cdot 0$</p>	<p>2d. $\begin{matrix} ft. & in. & pt. \\ 15 & 6 & 0 \\ 1 & 8 & 6 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$15 \cdot 6 \cdot 0$ $10 \cdot 4 \cdot 0$ $7 \cdot 9$</p> <hr style="width: 100%;"/> <p>$26 \cdot 5 \cdot 9$</p>	<p>3d. $\begin{matrix} ft. & in. & pt. \\ 29 & 3 & 0 \\ 1 & 3 & 9 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$29 \cdot 3 \cdot 0$ $7 \cdot 3 \cdot 9$ $1 \cdot 9 \cdot 11 \cdot 3$</p> <hr style="width: 100%;"/> <p>$38 \cdot 4 \cdot 8 \cdot 3$</p>
--	---	---

<p>4th. $\begin{matrix} ft. & in. \\ 37 & 0 \\ 1 & 9 \end{matrix}$</p> <hr style="width: 100%;"/> <p>$37 \cdot 0$ $27 \cdot 9$</p> <hr style="width: 100%;"/> <p>$64 \cdot 9$</p>	<p>$\begin{matrix} ft. & in. & pt. \\ 27 & 0 & 0 \cdot 0 \text{ 1st log.} \\ 26 & 5 & 9 \cdot 0 \text{ 2d ditto.} \\ 38 & 4 & 8 \cdot 3 \text{ 3d ditto.} \\ 64 & 9 & 0 \cdot 0 \text{ 4th ditto.} \end{matrix}$</p> <hr style="width: 100%;"/> <p>$156 \cdot 7 \cdot 5 \cdot 3$ Mult. by $1 \cdot 8 \cdot 0 \cdot 0$ thickness.</p> <hr style="width: 100%;"/> <p>$156 \cdot 7 \cdot 5 \cdot 3$ $104 \cdot 4 \cdot 11 \cdot 6$</p> <hr style="width: 100%;"/> <p>$4/. = \frac{1}{8}$ $261 \cdot 0 \cdot 4 \cdot 9 \div \frac{4}{3}$ \approx solid foot. $3d. = \frac{1}{16}$ $52 \cdot 4$ <i>1st Ans.</i> $3 \cdot 5 \cdot 3$ $1\frac{1}{2} = 4 \text{ pts.}$</p> <hr style="width: 100%;"/> <p><i>2nd Ans.</i> $\underline{\underline{\pounds 55 \cdot 9 \cdot 4\frac{1}{4}}}$ <i>price.</i></p>
--	---

(11.) ... Length 14 feet=^{in.}168 }
 Breadth..... 11 } at 6/8=80d.
 Thickness..... 3 }

Then, 168 × 11 × 3 = 5544 cubic inches in a plank.

If ^{cub. in.}5544 : 80d. :: ^{cub. in.}1728

$$\begin{array}{r} 80 \\ 5544 \overline{)132840} \end{array}$$

Ans. 24 $\frac{2}{7}$ or 2/1 nearly.

(12.) Length 12 feet=144 inches }
 Breadth..... 9 ditto. } @ 2/8=32d.
 Thickness 1 $\frac{1}{4}$ ditto. }

144 × 9 = 1296 sq. inches in a plank.

144 × 9 × 1 $\frac{1}{4}$ = 1620 cubic inches in ditto.

As ^{sq. in.}1296 : 32d. :: ^{sq. in.}144 : 3 $\frac{5}{9}$ d. @ sq. foot. 1st Ans.

As ^{cub. in.}1620 : 32d. :: ^{cub. in.}1728 : 2/10 $\frac{2}{15}$ @ cubic foot. 2nd Ans.

(13.) off $\frac{1}{4}$ $\begin{array}{r} \text{ft.} \\ 12 \\ \underline{3} \\ 9 \end{array}$ $\begin{array}{r} \text{ft. in.} \\ 12 \ . \ 0 \\ \underline{9} \\ 9 \ . \ 0 \end{array}$

1st Ans. 1 $\frac{2}{3}$ @ sq.ft. $\frac{1}{2}$

As 4 $\frac{1}{2}$: 15d. :: ^{cub. in.}1728

$$\begin{array}{r} 144 \\ \underline{576} \\ 72 \\ \underline{648} \end{array}$$

$$\begin{array}{r} 15 \\ \underline{8640} \\ 1728 \\ 648 \overline{)25920} \end{array} \begin{array}{l} (40d. \text{ 2nd Ans.} \\ \underline{2592} \text{ (3/4 @ cub. ft.)} \end{array}$$

(14.) Length $\begin{array}{r} \text{ft. in.} \\ 14 \ . \ 0 \end{array}$ $\begin{array}{r} 6/8 \\ 10 \end{array}$
 Breadth $\begin{array}{r} 11 \\ \underline{10} \end{array}$ $\begin{array}{r} 3 \ . \ 6 \ . \ 8 \\ \underline{2} \end{array}$
 sq. content of 1 plank... $\begin{array}{r} 12 \ . \ 10 \\ \underline{10 \times 2} \\ 128 \ . \ 4 \\ \underline{2} \end{array}$ £6 . 13 . 4 price of 20 planks.
 sq. content of 20 planks $\begin{array}{r} 256 \ . \ 8 \\ \underline{\text{thickness}} \end{array}$ 3 in.
 solid content of 20 planks 64 . 2

Length 14 feet=168 inches. }
 Breadth..... 11 ditto } at 6/8 = 80d.
 Thickness..... 3 ditto }

168 × 11 = 1848 sq. in. in a plank.
 168 × 11 × 3 = 5544 solid in. in a plank.

sq. in. : 80d. :: *sq. in.* : 144 : 6 $\frac{1}{7}$ d. φ sq. foot. 1st Ans.

sol. in. : 80d. :: *sol. in.* : 1728 : 24 $\frac{1}{7}$ d. or 2/1 nearly, φ cub. foot. 2nd Ans.

(15.) 4)58
 14 $\frac{1}{2}$ in.

4)62
 15 $\frac{1}{2}$ in.

4)66
 16 $\frac{1}{2}$ in.

	<i>ft.</i>	<i>in.</i>	<i>pt.</i>
Mult.	19 .	4 .	0
by	1 .	2 .	6
	19 .	4 .	0
	3 .	2 .	8
		9 .	8
	23 .	4 .	4
by	1 .	2 .	6
	23 .	4 .	4
	3 .	10 .	8 . 8
		11 .	8 . 2
	28 .	2 .	8 . 10
			10 logs.
	<u>282 .</u>	<u>3 .</u>	<u>4 . 4</u>

	<i>ft.</i>	<i>in.</i>	<i>pt.</i>
Mult.	22 .	2 .	0
by	1 .	3 .	6
	22 .	2 .	0
	5 .	6 .	6
		11 .	1
	28 .	7 .	7
by	1 .	3 .	6
	28 .	7 .	7
	7 .	1 .	10 . 9
	1 .	2 .	3 . 9 . 6
	36 .	11 .	9 . 6 . 6
			2 × 7 = 14
	73 .	11 .	7 . 1
			7
	<u>517 .</u>	<u>9 .</u>	<u>1 . 7 = 14 logs.</u>

$$\begin{array}{r}
 \text{Mult. } \begin{array}{l} \text{ft.} \\ \text{in.} \\ \text{pt.} \end{array} \begin{array}{l} 30 . 1 . 6 \\ 1 . 4 . 6 \\ \hline 30 . 1 . 6 \\ 10 . 0 . 6 \\ 1 . 3 . 0 . 9 \\ \hline 41 . 5 . 0 . 9 \\ \text{by } 1 . 4 . 6 . 0 \\ \hline 41 . 5 . 0 . 9 \\ 13 . 9 . 8 . 3 \\ 1 . 8 . 8 . 6 . 4 . 6 \\ \hline 56 . 11 . 5 . 6 . 4 . 6 \\ \hline 6 \text{ logs.} \\ \hline 341 . 8 . 9 . 2 . 3 . - \\ \hline \hline
 \end{array}$$

$$\begin{array}{r}
 \text{10 logs} = \begin{array}{l} \text{cub. ft.} \\ \text{in.} \\ \text{pt.} \end{array} 282 . 3 . 4 \\
 \text{14 ...} = 517 . 9 . 1 \\
 \text{6 ...} = 341 . 8 . 9 \\
 \hline
 50)1141 . 9 . 2 \\
 \hline
 \text{1st Ans. } \underline{\underline{22\frac{41}{50} \text{ loads.}}}
 \end{array}$$

$$\begin{array}{r}
 \text{off } \frac{1}{8} | 22.82 \text{ @ } \text{£}14 . 17 . 6 \\
 \hline
 5 \text{£} \\
 114.10 = \text{£}5 \\
 2.852 = 2/6. \\
 \text{£}111.248 \text{ or} \\
 \text{2nd Ans. } \underline{\underline{\text{£}111 . 4 . 11\frac{1}{2} \text{ price.}}}
 \end{array}$$

III. MEASURING TREES.

EXERCISES, page 209.

$$\begin{array}{r}
 \text{(1.)..... Mult. } \begin{array}{l} \text{ft.} \\ \text{in.} \end{array} \begin{array}{l} 24 . 0 \\ 1 . 5 \text{ girt.} \\ \hline 24 . 0 \\ 10 . 0 \\ \hline 34 . 0 \\ \text{by } 1 . 5 \\ \hline 34 . 0 \\ 14 . 2 \\ \hline \text{Ans. } \underline{\underline{48 . 2}}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 4)68 \text{ in. girt.} \\
 \hline
 17 \text{ in. or } 1 \text{ ft. } 5 \text{ in.}
 \end{array}$$

$$\begin{array}{r}
 \text{(2.) Mult. } \begin{array}{l} \text{ft.} \\ \text{in.} \\ \text{pt.} \end{array} \begin{array}{l} 27 . 0 . 0 . 0 \\ 10 . 4 . 6 \\ \hline 22 . 6 . 6 . 0 \\ 9 . 0 . 0 \\ 1 . 1 . 6 \\ \hline 23 . 4 . 1 . 6 \\ \text{by } 10 . 4 . 6 \\ \hline 19 . 5 . 5 . 3 \\ 7 . 9 . 4 . 6 \\ - . 11 . 8 . 0 . 9 \\ \hline \text{Ans. } \underline{\underline{20 . 2 . 2 . 3 . 6 . 9}}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 \text{One end } 49 \text{ in.} \\
 \text{Other } 34 \text{ in.} \\
 2 \overline{)83} \text{ sum.} \\
 4 \overline{)41} . 6 \text{ mean girt.} \\
 \hline
 \underline{\underline{10 . 4 . 6}}
 \end{array}$$

(3.)... $2 \overline{)159}$ girt at both ends.
 $4 \overline{)79.6}$ mean girt.
19.10.6

<i>ft.</i>	<i>in.</i>	<i>pt.</i>
84 .	2 .	0 . 0
1 .	7 .	10 . 6
<hr/>		
84 .	2 .	0 . 0
49 .	1 .	2 . 0
5 .	10 .	1 . 8
3 .	6 .	1
<hr/>		
139 .	4 .	9 . 9
1 .	7 .	10 . 6
<hr/>		
139 .	4 .	9 . 9
81 .	3 .	9 . 8 . 3
9 .	8 .	2 . 0 . 1 . 6
5 .	9 .	8 . 4 . 10 . 6
<hr/>		
<i>Ans.</i> <u>230 . 10 . 7 . 1 . 9 . 4 . 6</u>		

(4.).. $4 \overline{)50}$ $4 \overline{)48}$ $4 \overline{)46}$ $4 \overline{)45}$ $4 \overline{)43}$ $4 \overline{)41}$
12.6 12 11.6 11.3 10.9 10.3

Mult. $14 \cdot 3 \cdot 0$
by $1 \cdot 0 \cdot 6$
14.3.0
 7.1.6
14.10.1.6
by $1 \cdot 0 \cdot 6 \cdot 0$
14.10.1.6
 7.5.0.9
15.5.6.6.9

<i>ft.</i>	<i>in.</i>
17 . 2	1 . 0
<u>17 . 2</u>	<u>1 . 0</u>
17 . 2	<u>17 . 2</u>

<i>ft.</i>	<i>in.</i>	<i>pt.</i>
19 .	4 .	0
<hr/>		
17 .	8 .	8
<hr/>		
18 .	6 .	4
<hr/>		
16 .	11 .	9 . 8
<hr/>		
17 .	9 .	0 . 10

Mult. $22 \cdot 4 \cdot 0$
by $11 \cdot 3$
20.5.8
 5.7
20.11.3
by $11 \cdot 3$
19.2.3.9
 5.2.9.9
19.7.6.6.9

$23 \cdot 5 \cdot 0$
 10.9
19.6.2.0
 1.5.6.9
20.11.8.9
 10.9.0
17.5.9.3.6
 1.3.8.9.6.9
18.9.6.1.0.9

$27 \cdot 7 \cdot 0$
 10.3
22.11.10
 6.10.9
23.6.8.9
 10.3.0
19.7.7.3.6
 5.10.8.2.3
20.1.5.11.8.3

	<i>ft.</i>	<i>in.</i>	<i>pt.</i>	
1st Tree.....	15 .	5 .	6 .	6 . 9 . 0
2d Tree.....	17 .	2 .	0 .	0 . 0 . 0
3d Tree.....	17 .	9 .	0 .	10 . 0 . 0
4th Tree.....	19 .	7 .	6 .	6 . 9 . 0
5th Tree.....	18 .	9 .	6 .	1 . 0 . 9
6th Tree.....	20 .	1 .	5 .	11 . 8 . 3

5/. = $\frac{1}{4}$ 108 . 11 . 2 . 0 . 3 . 0 solid feet in six trees.

4d. = $\frac{1}{15}$ 27 . 0 . 0
 1 . 16 . 0
 4 . 11 $\frac{1}{4}$ = 11 in. 2 pt.

Ans. £29 . 0 . 11 $\frac{1}{4}$

(5.)..... $\frac{in.}{4} 40$ girt. $\frac{sol. in.}{10 \cancel{2} = 100} 1728$
 $\frac{17 \frac{7}{8}}{100}$ inches. Ans.

(6.)..... $\frac{in.}{4} 46$
 $11.6 \times 11.6 = 132 \frac{1}{4}$ inches.

$1728 \times 7 \frac{1}{2} = 12960$

$132 \frac{1}{4}$ 12960
 $\frac{4}{529}$ $\frac{4}{4}$
 $\frac{529}{12}) 51840$
 $\frac{8 \cdot 168}{ft. 8 \cdot 2}$ Ans.

(7.)..... A solid foot = 1728 inches.

$20 \times 16 = 320$ $\frac{5}{864,0}$ (27 inches. Ans.
 $\frac{64}{224}$
 $\frac{224}{224}$

(8.)..... 4)74
 $\frac{74}{18 \cdot 5^2} = 342\frac{1}{2}$ ^{inches.} sq. of the quarter girt = 28 ft.
 6 in. 3 pt.

	ft.	in.	pt.	
	28	6	3	
	24	8	0	
	684	6	0	
	19	0	2	
12	703	6	2	
4/.	58	7	6	solid ft. at 4/9
6d.	11	12		
3d.	1	9		
		14	6	
		2	11 $\frac{1}{2}$	= 7 in. 6 pt.
	£13	18	5 $\frac{1}{2}$	

Again, by measuring the tree as a cylinder, we have the circumference 74 inches, and the *tabular number* answering to it is .0795775.

Then by Mensuration $\left\{ (74 \text{ in.})^2 \times .0795775 \times 24\frac{2}{3} \text{ ft.} \right\} \div 144$
 = 74.71461 solid feet the content of the tree, which \times by $4\frac{3}{4}s.$ =
 17l. 14s. 10 $\frac{3}{4}d.$ the price of the tree when sold.

By accurate measurement, the amount is £17 . 14 . 10 $\frac{3}{4}$
 By the common rule 13 . 18 . 5 $\frac{1}{2}$
 Gain £3 . 16 . 5 $\frac{1}{2}$ Ans.

(9.)..... 40 in. girt.
 deduct 2 in. for bark.

4	38	
	9 . 6	^{sq. in.} 90 . 3
		11 . 2
		992 . 9
		15 . 0 . 6
144	1007	9 . 6
		6 . 11 . 11 <i>Ans.</i>

(10.) 4)50
 $\frac{12 \cdot 6}{12 \cdot 0 = 1 \text{ foot.}}$
 ded. 6 for bark.
 $\frac{6}{6 \text{ feet.}}$

4)35 . 6
 $\frac{8 \cdot 10 \cdot 6 \text{ quarter girt.}}{8 \cdot 4 \cdot 6}$
 deduct 6 . 0 for bark.

$8 \cdot 4 \cdot 6 \times 8 \cdot 4 \cdot 6 = 70 \cdot 1 \cdot 8$ nearly.
 $\frac{5}{5}$

144)350 . 8 . 4
 $\frac{2 \cdot 5 \cdot 2}{6 \cdot 0 \cdot 0}$

Ans. 8 . 5 . 2 content of the whole tree.

ARTIFICERS' WORK.

EXERCISES, page 210.

(1.) 112 feet long. 18 yd. $\frac{1}{2}$ £8 . 15 . 0
 28 high. $\frac{2}{2}$
 $\frac{896}{224}$ $\frac{17 \cdot 10 \cdot 0}{7}$
 $\frac{\frac{1}{2} 3136}{1568}$ 6 ft. = $\frac{1}{27}$ $\frac{122 \cdot 10 \cdot 0 = 14 \text{ ro.}}{4 \cdot 7 \cdot 6 = 18 \text{ yd.}}$
 9 4704 sq. feet. $\frac{3 \cdot 2 \frac{3}{4} = 6 \text{ ft.}}$
 36 522 . 6 2nd Ans. £127 . 0 . 8 $\frac{3}{4}$ expense.
 roods $\frac{14 \cdot 18 \cdot 6}{1st \text{ Ans.}}$

(2.) 125 feet long.
 $8\frac{1}{2}$ broad.

$$\begin{array}{r} 1000 \\ \underline{62\frac{1}{2}} \\ 9\ 1062\frac{1}{2} \text{ sq. feet.} \\ 5/. = \frac{1}{4} \quad \underline{118 \text{ yd. } \frac{1}{2} \text{ foot.}} \\ 6d. = \frac{1}{10} \quad \underline{29 \ . \ 10} \\ \quad \quad \quad \underline{2 \ . \ 19 \ . \ 0} \\ \quad \quad \quad \quad \quad \quad \underline{3\frac{2}{3} = \frac{1}{2} \text{ foot.}} \\ \text{Ans. } \underline{\underline{\pounds 32 \ . \ 9 \ . \ 3\frac{2}{3}}} \end{array}$$

(3.) 54 feet long.
 35 broad.

$$\begin{array}{r} 270 \\ \underline{162} \\ 1890 \text{ sq. feet.} \\ \quad \quad \underline{9\frac{1}{2} \text{ feet deep.}} \\ \underline{17010} \\ \quad \quad \underline{945} \\ 27 \left\{ \begin{array}{l} 3 \ 17955 \text{ solid feet.} \\ 9 \ 5985 \end{array} \right. \\ 1/. = \frac{1}{20} \quad \underline{665 \text{ solid yd. at } 13\frac{1}{2}d.} \\ 1\frac{1}{2}d. = \frac{1}{8} \quad \underline{33 \ . \ 5 \ . \ 0} \\ \quad \quad \quad \underline{4 \ . \ 3 \ . \ 1\frac{1}{2}} \\ \text{Ans. } \underline{\underline{\pounds 37 \ . \ 8 \ . \ 1\frac{1}{2}}} \end{array}$$

(4.) 184 feet long.
 16 high.

$$\begin{array}{r} 1104 \\ \underline{184} \\ \frac{1}{8} \ 2944 \text{ square feet.} \\ \quad \quad \underline{981\frac{1}{8}} \\ 9 \ 3925\frac{1}{8} \\ \underline{36} \ 436 \ . \ 1\frac{1}{8} \\ \text{rods } \underline{\underline{12 \ . \ 4 \ . \ 1\frac{1}{8}}} \text{ Ans.} \end{array}$$

(5.) $9\frac{1}{2} \times 4\frac{1}{2} \times 3 = 128\frac{1}{4}$ inches, solidity of 1 brick.
 $240 \times 10 \times 1\frac{1}{8} = 2800$ solid feet in the wall

$$\begin{array}{r} 1728 \\ 128\frac{1}{4} \ 4838400 \text{ solid inches.} \\ \underline{4} \quad \quad \quad \underline{4} \\ 513 \ 19353600 \\ \text{Ans. } \underline{\underline{37726\frac{6}{19} \text{ bricks.}}} \end{array}$$

(6.) $250 \times 6 = 1500$
 $2\frac{1}{2} \times 1\frac{1}{2} = 3\frac{3}{4} = 400$ stones. 1st Ans.

$$\begin{array}{r} 1/. = \frac{1}{20} \quad \underline{1500 \text{ sq. feet, at } 13\frac{1}{2}d.} \\ 1\frac{1}{2}d. = \frac{1}{8} \quad \underline{75} \\ \quad \quad \quad \underline{9 \ . \ 7 \ . \ 6} \\ \text{2nd Ans. } \underline{\underline{\pounds 84 \ . \ 7 \ . \ 6}} \text{ expense.} \end{array}$$

(7.)..... Length 140 yd. \times 2 sides = 280 yd.
 Breadth 80 yd. \times 2 ends = 160

$\frac{440 \text{ yd.}}{3\frac{1}{8}}$
 Height $\frac{1320}{146\frac{2}{3}}$
 $\frac{1466\frac{2}{3}}{140 \text{ bricks.}}$
 $\frac{58640}{1466}$
 $94 = \frac{2}{3}$

Ans. 205334 bricks.

	<i>Length.</i> <i>ft. in.</i>	\times	<i>Breadth.</i> <i>ft. in.</i>	$=$	<i>Content.</i> <i>ft. in. pt.</i>
(8.)... 3 Pair Jambs.....	6 . 0	\times	2 . 0	$=$	36 . 0 . 0
Lintels for ditto.....	4 . 5	\times	1 . 3	$=$	16 . 6 . 9
3 Inner Hearths	3 . 1	\times	1 . 6	$=$	13 . 10 . 6
3 Outer ditto.....	3 . 8	\times	1 . 8	$=$	18 . 4 . 0
A pair Kitchen Jambs	8 . 8	\times	2 . 3	$=$	19 . 6 . 0
A Lintel for ditto.....	5 . 8	\times	1 . 3	$=$	7 . 1 . 0
A Hearth	4 . 0	\times	1 . 9	$=$	7 . 0 . 0

Ans. square feet 118 . 4 . 3

(9.)..... Length of the Roof $\frac{ft. \quad in.}{45 \quad . \quad 8}$
 Depth of each side $21 . 8 \times 2 = 43 . 4$

$\frac{1963 \quad . \quad 8}{15 \quad . \quad 2 \quad . \quad 8}$
 9)1978 . 10 . 8

Ans. 219 . 7 . 10 . 8

(10.) Length of each Floor... $\frac{ft. \quad in.}{45 \quad . \quad 0}$
 Breadth... 28 feet } $\frac{ft \quad in.}{28 \quad . \quad 9} = 1293 \quad . \quad 9$
 Allowance 0 . 9 in. }
 Deduct Stair, 12 feet by 8... = 96 . 0
 Each Floor, in superficial feet, is $\frac{1197 \quad . \quad 9}{3 \text{ Floors.}}$

$\frac{93593 \quad . \quad 3}{4/. = \frac{1}{5} \quad 399 \quad . \quad 2 \quad . \quad 3 \text{ sq. yd. at } 4/2}$
 $2d. = \frac{1}{24} \quad 79 \quad . \quad 16$
 $3 \quad . \quad 6 \quad . \quad 6$
 $0 \quad . \quad 1 \quad . \quad 0 \frac{1}{2} = 2 \text{ ft. } 3 \text{ in.}$
£ 83 . 3 . 6 $\frac{1}{2}$ expense of joisting.

Ansrs.
 399 sq. yd. 2 . 3
 35 sqrs. 93 $\frac{1}{8}$
 £149 . 14 . 5 $\frac{1}{2}$ flooring.
 £ 83 . 3 . 6 joisting.

$3/4 = \frac{1}{8}$	100 3593 . 3 <hr style="border: none; border-top: 1px solid black; margin: 0;"/> 35 . 93 $\frac{1}{8}$ squares, at 83/4 4 <hr style="border: none; border-top: 1px solid black; margin: 0;"/> 140 5 . 16 . 8 3 . 17 . 9 $\frac{1}{5}$ <hr style="border: none; border-top: 1px solid black; margin: 0;"/> £ 149 . 14 . 5 $\frac{1}{2}$ expense of flooring.
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(11.)..... 15 ft. × 6 in. = 7 $\frac{1}{3}$ 712 . 6

<i>ft.</i>	<i>in.</i>	<i>ft.</i>	<i>in.</i>	$\frac{2}{15}$	$\frac{2}{2}$	
22 .	6	7 .	6	15)1425	(95 deals.
33 .	9	6 .	3		135	<i>Ans.</i>
<hr style="border: none; border-top: 1px solid black; margin: 0;"/>		<hr style="border: none; border-top: 1px solid black; margin: 0;"/>			75	
742 .	6	45 .	0		75	
16 .	10 . 6	1 .	10 . 6		<hr style="border: none; border-top: 1px solid black; margin: 0;"/>	
759 .	4 . 6	46 .	0 . 6		<hr style="border: none; border-top: 1px solid black; margin: 0;"/>	
46 .	10 . 6					
712 .	6 . 0					

(12.)..... Length of the Window Sash *ft.* *in.*
 Breadth..... 6 . 8
 3 . 10

$2/6 = \frac{1}{8}$	20 . 0 5 . 6 . 8 <hr style="border: none; border-top: 1px solid black; margin: 0;"/> 25 . 6 . 8 ÷ 2/10 3 . 2 . 6 0 . 6 . 3 0 . 2 . 1 0 . 1 . 7 = 6 in. 8 pt. <hr style="border: none; border-top: 1px solid black; margin: 0;"/> <i>Ans.</i> £3 . 12 . 5
---------------------	---

(13.) 5 Beams, 2 feet long, 10 inches broad, and 9 thick = 67 . 7 $\frac{1}{2}$
 72 Scantlings, 10 ft. long, 9 in. broad, and 6 deep = 135 . 0
Ans. cubic feet 200 . 7 $\frac{1}{2}$

(14.)..... 200 Cubic feet, at 3/9 £37 . 10 . 0

60 feet × 21 = 1260 feet, or 12 $\frac{3}{8}$ squares	£2 . 19 . 6 $\frac{2}{7}$	}	<i>Ans.</i>
20 yd. × 7 yd. = 140	0 . 5 . 4 $\frac{2}{7}$		

12 $\frac{3}{8}$	37 . 10 . 0	140 {	20 37 . 10 . 0
5	5		7 1 . 17 . 0
63	187 . 10 . 0		

1st *Ans.* £2 . 19 . 6 $\frac{2}{7}$ square.
 2nd *Ans.* 5/4 $\frac{2}{7}$ yd.

(15.)..... Length of the Roof..... 46 . 6
 Depth, 21 . 3 × 2 sides 42 . 6

$$\begin{array}{r} 1953 . 0 \\ 23 . 3 \\ \hline 100 \overline{)1976 . 3} \\ 5/. \frac{1}{4} \overline{)19 . 76\frac{1}{4}} \end{array}$$

squares at 65/.
 1st Ans. 3

57
 4 . 15
 $2 . 9 . 6\frac{3}{4} = 76\frac{1}{4}$ feet.
 2nd Ans. £64 . 4 . 6 $\frac{1}{4}$ price.

(16.)... Length of Roof..... $\begin{matrix} ft. & in. \\ 48 & . 6 \end{matrix}$ 7964 slates.
 Depth..... 18 . 3 3 . 5 £
 Allowance 0 . 9

$$\begin{array}{r} 19 . 0 \times 2 = 38 . 0 \\ 9 \overline{)1843 . 0} \\ 36 \overline{)204 . 7} \\ 5 . 24 . 7 \text{ rods.} \\ 18 \text{ yd.} = \frac{1}{2} 1400 \text{ slates.} \\ 7000 \text{ for 5 rods.} \\ 6 \text{ yd.} = \frac{1}{3} 700 = 18 \text{ yards.} \\ 6 \text{ ft.} = \frac{1}{9} 233\frac{1}{3} = 6 \text{ do.} \\ 1 \text{ ft.} = \frac{1}{6} 25\frac{5}{6} = 6 \text{ feet.} \\ 4\frac{1}{8} = 1 \text{ foot.} \end{array}$$

27 . 8740 = £27 . 17 . 6
 expense.
 2nd Ans.

1st Ans. 7964 slates.

(17.)... Length of Roof $\begin{matrix} ft. & in. \\ 42 & . 9 \end{matrix}$
 Depth 18 feet 12 sides = 36 . 0

$$\begin{array}{r} 1 \cdot 00 \overline{)15 \cdot 39 . 0} \\ 2/. = \frac{1}{10} \overline{)15 . 39} \end{array}$$

squares, at 2 guineas.
 1st Ans. 2

30
 1 . 10
 $16 . 7 = 39$ feet.
 2nd Ans. £32 . 6 . 7

(21.)... $\frac{1}{40} \overline{)127 \text{ feet @ } 6\frac{1}{2}d.}$

$$\begin{array}{r} \frac{1}{12} \overline{)3.3.6} \\ \underline{5.3\frac{1}{2}} \end{array}$$

Ans. £3 . 8 . 9 $\frac{1}{2}$ expense.

(22.)... $7 \times 3\frac{1}{2} = \overset{ft. \quad in.}{24 . 6}$

12 windows.

9 $\overline{)294}$ square feet.

$\overline{)32\frac{2}{3}}$ sq. yds. @ 10d.

10d.

12 $\overline{)326\frac{2}{3}}$ pence.

Ans. 27/2 $\frac{2}{3}$ expense.

(23.) Length of the 2 sides, 72 feet by 12 feet high... 864

2 ends, 48 feet by ditto..... 576

Square feet in the sides and ends 1440

Length of floor $\left. \begin{array}{l} 36 \\ \text{Roof } 36 \end{array} \right\} 72 \text{ feet by } 24 \text{ feet broad... } \underline{1728}$

Ans. 3168 sq. ft.

(24.)..... $\overset{ft. \quad in.}{\text{Length of the log... } 12 . 0}$

Thickness..... 1 . 6

23 in. Content of 1 plank 18 . 0 superficial feet.

deduct 2 Multiply by 21 planks.

21 draughts. Ans. 378 superficial feet.

(25.)..... Each side 14 feet by 5 is 70 feet.

2 sides 2 140 square feet.

Each end 7 feet by 5 is 35

2 ends 2

Bottom 14 feet by 7.... 70

98

The cistern contains 308 sq. feet.

$\frac{1}{2} \overline{)308}$ square feet.

$\frac{1}{12} \overline{)7\frac{1}{2}}$ lbs. $\text{@ } \text{ } \frac{1}{8}$ foot.

$$\begin{array}{r} 2156 \\ \underline{154} \end{array}$$

$\frac{1}{80} \overline{)2310}$ lbs. lead @ $4\frac{1}{4}d.$

$$\begin{array}{r} \frac{1}{18} \overline{)38.10.0} \\ \underline{2.8.1\frac{1}{2}} \\ \underline{£40.18.1\frac{1}{2}} \end{array}$$

$\frac{1}{12} \overline{)308}$ sq. ft. @ $1/8$

Carpenter's Bill £25 . 13 . 4 1st Ans.

Plumber's 40 . 18 . 1 $\frac{1}{2}$ 2nd Ans.

Whole charge £66 . 11 . 5 $\frac{1}{2}$

(26.).....Floor 57 ft. 6 in. by 28 ft. = ^{sq. ft.}1610
 ----- = 230 deals.

A deal 10 ft. 6 in. by 8 in. = 7 ft. 1st Ans.

A square = ^{feet. feet.}100)1610 square feet.

16 squares 10 feet @ 6 guineas.

10 feet = ¹⁰126/. = 6 guineas.

$\begin{array}{r} 96 \\ 192 \\ \hline 2016 \\ 12 . 7\frac{1}{4} \\ \hline 2,0)202,8 . 7\frac{1}{4} \\ \hline \underline{\underline{\pounds 101.8 . 7\frac{1}{4}}} \end{array}$	or, $\begin{array}{r} \frac{10}{10})\pounds 6 . 6 \text{ } \text{p square.} \\ 4 \times 4 = 16 \text{ squares.} \\ \hline 25 . 4 \\ 4 \\ \hline 100 . 16 \\ 12 . 7\frac{1}{4} \\ \hline \underline{\underline{\pounds 101 . 8 . 7\frac{1}{4}}} \end{array}$
--	--

2nd Ans.

(27.).....Length of the room 33 . 9

Breadth... 24 . 8

58 . 5

Multiply by the 2 sides and ends.

Circuit of the room 116 . 10

Height 9 . 9

1051 . 6

87 . 7 . 6

As $\frac{21}{7} \text{ in.} : \frac{12}{4} \text{ in.} :: 1139 . 1 . 6$

4

7)4556 $\frac{1}{2}$

3)651 feet of paper.

off 1 $\frac{1}{2}$ d. or $\frac{1}{8}$ 217 yards @ 10 $\frac{1}{2}$ d. 1st Ans.

27 . 1 $\frac{1}{2}$

2,0)18,9 . 10 $\frac{1}{2}$

2nd Ans. £9 . 9 . 10 $\frac{1}{2}$

(28.).....A kiln 18 feet by 18 = 324 square feet.

New one 3 times larger.

Breadth 24 ft. $\left\{ \begin{array}{l} 12)972 \\ 2)81 \end{array} \right.$

Ans. 40 $\frac{1}{2}$ feet in length.

SQUARE ROOT.

EXERCISES, page 213.

<p>(1.)..... 60 84(78 <i>Ans.</i> $7^2 = 49 \dots$ 148)1184 1184 <u> </u></p>	<p>(2.)..... 36 36 99(603 <i>Ans.</i> $6^2 = 36 \dots$ 1203)3699 3609 <u> </u> 90, &c.</p>
---	---

<p>(3.)..... 1 66 92 64(1292 <i>Ans.</i> $1^2 = 1 \dots$ 22)66 44 249)2292 2241 <u> </u> 2582)5164 5164 <u> </u></p>	<p>(4.)..... 19 44 81(441 <i>Ans.</i> $4^2 = 16 \dots$ 84)344 336 <u> </u> 881)881 881 <u> </u></p>
--	---

<p>(5.).... 2 03 46 16 96(14264 <i>Ans.</i> $1^2 = 1 \dots$ 24)103 96 282)746 564 2846)18216 17076 <u> </u> 28524)114096 114096 <u> </u></p>	<p>(6.) 4 28 52 31 20 64(207008 <i>Ans.</i> $2^2 = 4 \dots$ 407)2852 2849 <u> </u> 414008)3312064 3312064 <u> </u></p>
--	--

<p>(7.)..... 1 23 43 21(1111 <i>Ans.</i> $1^2 = 1 \dots$ 21)23 21 221)243 221 2221)2221 2221 <u> </u></p>	<p>(8.)..... 5 49 90 25(234.5 <i>Ans.</i> $2^2 = 4 \dots$ 43)149 129 <u> </u> 464)2090 1856 <u> </u> 4685)23425 23425 <u> </u></p>
---	--

(9.)..... $\cdot 0003 \overline{)27} \overline{)54} (\cdot 01809$ *Ans.*

$$\begin{array}{r} 1 \\ 28 \overline{) 227} \\ \underline{224} \\ 3609 \overline{) 35400} \\ \underline{32481} \\ 2919 \end{array}$$

(10.)..... $\cdot 44) \cdot 666$ *Ans.*

$$\begin{array}{r} 36 \\ 126 \overline{) 844} \\ \underline{756} \\ 1326 \overline{) 8844} \\ \underline{7956} \\ 13326 \overline{) 88844} \\ \underline{79956} \\ 8888 \end{array}$$

(11.)..... $13 \overline{)20} \cdot 11 (36 \cdot 333$ *Ans.*

$$\begin{array}{r} 3^2 = 9 \dots \dots \\ 66 \overline{) 420} \\ \underline{396} \\ 723 \overline{) 2411} \\ \underline{2169} \\ 7263 \overline{) 24211} \\ \underline{21789} \\ 72663 \overline{) 242211} \\ \underline{217989} \\ 24222 \end{array}$$

(12.)..... $\sqrt{\frac{169}{196}} = \sqrt{\frac{13^2}{14^2}} = \frac{13}{14}$ *Ans.*

$\sqrt{\frac{289}{361}} = \sqrt{\frac{17^2}{19^2}} = \frac{17}{19}$ *Ans.*

APPLICATION.

EXERCISES, page 213.

(1.)..... 3
 $\frac{12}{6^2 = \frac{36}{36}} (6$ *Ans.*

(2.)..... 48
 $\frac{4}{1^2 = 1} \overline{)192} (13 \cdot 856$ *Ans.*

(3.)..... 64
 $\frac{49}{5^2 = \frac{25}{3136}} (56$ *Ans.*
 $106 \overline{) 636}$
 $\underline{636}$

$$\begin{array}{r} 23 \overline{) 92} \\ \underline{69} \\ 268 \overline{) 2300} \\ \underline{2144} \\ 2765 \overline{) 15600} \\ \underline{13825} \\ 27706 \overline{) 177500} \\ \underline{166236} \\ 11264 \end{array}$$

(4.)..... 64
 $\frac{49}{\text{As } 113 : 56 :: 49 : 24\frac{1}{3}}$ *inches. short end. 1st Ans.*
 $\text{As } 113 : 56 :: 64 : 31\frac{2}{3}}$ *nearly, long end. 2nd Ans.*

(5.)... $2\overline{)72\cdot25}$ ($16\cdot5$ *Ans.*)
 $1^2 = 1$
 $26\overline{)172}$
 156
 $325\overline{)1625}$
 1625

(6.)... 1 acre = $4\overline{)35160}$ ($208\cdot713$ *Ans.*)
 $2^2 = 4$
 $408\overline{)3560}$
 3264
 $4167\overline{)29600}$
 29169
 $41741\overline{)43100}$
 41741
 1359

(7.)... 1 acre = 160 *perches.*
 3 acres.
 $2^2 = 4$ 480 ($21\cdot9$ *Ans.*)
 $41\overline{)80}$
 41
 $429\overline{)3900}$
 3861
 39

(8.)... 19 acr. 30 per. = 3070 ($55\frac{1}{2}$ *Ans.*)
 $5^2 = 25$ *nearly.*
 $105\overline{)570}$
 525
 45

(9.)... 12 feet.
 12
 144
 $4\frac{1}{2}$ qr.
 576
 72
 $qr. 3\overline{)648}$
 216 ($14\cdot7$ *nearly* =
 $1^2 = 1$ 14 ft. 8 in. *Ans.*)
 $24\overline{)116}$
 96
 $287\overline{)2000}$
 2009

(10.) $(18\frac{1}{2})^2 = 342\cdot25$
 As $8 : 342\cdot25 :: 7$
 7
 $8\overline{)2395\cdot75}$ *Ans.*
 $299\cdot46875$ ($17\cdot305$ in.)
 $1^2 = 1$
 $27\overline{)199}$
 189
 $343\overline{)1046}$
 1029
 $34605\overline{)178750}$
 173025
 5725

(11.)... $6^3 = 216$
 $3^3 = 27$
 4 As $216 : 3$ hours :: 216
 108 *same time, Ans.*
 2
 216

(12.)..... Mult. 30
 by $\frac{30}{900}$
 $\frac{2}{1800}$ ($42 \cdot 426 = 42 \cdot 10$ *Ans.*)
 16
 82) $\frac{200}{164}$
 844) $\frac{3600}{3376}$
 8482) $\frac{22400}{16964}$
 84845) $\frac{543600}{509076}$
 $\frac{34524}{\underline{\underline{\hspace{1.5cm}}}}$

(13.)... Height 108^2 feet = 11664
 Width 81^2 feet = 6561
 $\frac{1}{82} \frac{25}{135}$ feet. *Ans.*
 $1^2 = 1$
 23) $\frac{82}{69}$
 265) $\frac{1325}{1325}$

(14.)... $84 \text{ yd.} = 252^2 = 63504$
 $150^2 = 22500$
 $\frac{4}{10} \frac{04}{202 \frac{1}{2}}$ feet nearly. *Ans.*
 $2^2 = 4$
 402) $\frac{1004}{804}$
 $\frac{200}{\underline{\underline{\hspace{1.5cm}}}}$

(15.) $40^2 = 1600$ *feet.*
 $32^2 = 1024$
 $\frac{5}{76}$ (24 feet.)
 $\frac{4}{44}$
 44) $\frac{176}{176}$
 $\frac{\underline{\underline{\hspace{1.5cm}}}}{\underline{\underline{\hspace{1.5cm}}}}$

$$\begin{array}{r}
 \text{feet.} \\
 40^2 = 1600 \\
 24^2 = 576 \\
 \hline
 10 \overline{)24} (32 \\
 \quad 9 \quad 24 \\
 \hline
 62 \overline{)124} \quad 56 \text{ feet. Ans.} \\
 \quad \underline{124} \\
 \hline
 \hline
 \end{array}$$

(16.).....

$$\begin{array}{r}
 49^2 = 2401 \\
 44^2 = 1936 \\
 \hline
 4 \overline{)65} (21 \cdot 563858 = 21 \cdot 4 \cdot 112 \cdot 39 \text{ Ans.} \\
 \quad \text{mil. fur. yds.} \\
 2^2 = 4 \\
 \hline
 41 \overline{)65} \\
 \quad \underline{41} \\
 425 \overline{)2400} \\
 \quad \underline{2125} \\
 4306 \overline{)27500} \\
 \quad \underline{25836} \\
 43123 \overline{)166400} \\
 \quad \underline{129369} \\
 \quad \underline{37031} \\
 \hline
 \hline
 \end{array}$$

CUBE ROOT.

EXERCISES, page 216.

(1.).....

$$\begin{array}{r}
 1^3 = 1 \\
 \hline
 1^2 \times 300 = 300 \\
 1 \times 2 \times 30 = 60 \\
 \quad 2^2 = 4 \\
 \hline
 364 \times 2 = 728 \\
 \hline
 \hline
 1 \overline{)728} (12 \text{ Ans.} \\
 \quad \underline{728} \\
 \hline
 \hline
 \end{array}$$

(2.).....

$$\begin{array}{r}
 7^3 = 343 \\
 \hline
 7^2 \times 300 = 14700 \\
 7 \times 2 \times 30 = 420 \\
 \quad 2^2 = 4 \\
 \hline
 15124 \times 2 = 30248 \\
 \hline
 \hline
 373 \overline{)248} (72 \text{ Ans.} \\
 \quad \underline{30248} \\
 \hline
 \hline
 \end{array}$$

(3.).....

$$\begin{array}{r}
 41|063|625(\underline{345} \text{ Ans.}) \\
 3^3=27 \\
 \hline
 3^2 \times 300=2700 \\
 3 \times 4 \times 30=360 \\
 4^2 = 16 \\
 \hline
 3076 \times 4=12304 \\
 \hline
 1759625 \\
 \\
 34^2 \times 300=346800 \\
 34 \times 5 \times 30=5100 \\
 5^2 = 25 \\
 \hline
 351925 \times 5= \underline{1759625}
 \end{array}$$

(4.).....

$$\begin{array}{r}
 27|270|901(\underline{301} \text{ Ans.}) \\
 3^3=27 \\
 \hline
 30^2 \times 300=270000 \\
 30 \times 1 \times 30=900 \\
 1^2 = 1 \\
 \hline
 270901 \times 1= \underline{270901}
 \end{array}$$

(5.).. ...

$$\begin{array}{r}
 \cdot 010|648(\underline{.22} \text{ Ans.}) \\
 2^3=8 \\
 \hline
 2^2 \times 300=1200 \\
 2 \times 2 \times 30=120 \\
 2^2 = 4 \\
 \hline
 1324 \times 2= \underline{2648}
 \end{array}$$

(6.).....

$$\begin{array}{r}
 1|141|166|125(\underline{104.5} \text{ Ans.}) \\
 1^3=1 \\
 \hline
 10^2 \times 300=30000 \\
 4 \times 10 \times 30=1200 \\
 4^2 = 16 \\
 \hline
 31216 \times 4= 124864 \\
 \hline
 16302125 \\
 \\
 104^2 \times 300=3244800 \\
 104 \times 5 \times 30=15600 \\
 5^2 = 25 \\
 \hline
 3260425 \times 5= \underline{16302125}
 \end{array}$$

$$\begin{array}{r}
 (7.) \dots \qquad \qquad \qquad 3^3 = \frac{56 \cdot 5(3 \cdot 837)}{27} \text{ Ans.} \\
 3^2 \times 300 = 2700 \\
 8 \times 3 \times 30 = 720 \\
 \qquad \qquad 8^2 = 64 \\
 \hline
 3484 \times 8 = \frac{27872}{1628000}
 \end{array}$$

$$\begin{array}{r}
 38^2 \times 300 = 433200 \\
 38 \times 3 \times 30 = 3420 \\
 \qquad \qquad 3^2 = 9 \\
 \hline
 436629 \times 3 = \frac{1309887}{318113000}
 \end{array}$$

$$\begin{array}{r}
 383^2 \times 300 = 44006700 \\
 383 \times 7 \times 30 = 80430 \\
 \qquad \qquad 7^2 = 49 \\
 \hline
 44087179 \times 7 = \frac{308610253}{9502747}
 \end{array}$$

$$\begin{array}{r}
 (8.) \dots \dots \dots \qquad \qquad 9^3 = \frac{900(965)}{729} \text{ Ans.} \\
 9^2 \times 300 = 24300 \\
 9 \times 6 \times 30 = 1620 \\
 \qquad \qquad 6^2 = 36 \\
 \hline
 25956 \times 5 = \frac{155736}{15264000}
 \end{array}$$

$$\begin{array}{r}
 96^2 \times 300 = 2764800 \\
 96 \times 5 \times 30 = 14400 \\
 \qquad \qquad 5^2 = 25 \\
 \hline
 2779225 \times 5 = \frac{13896125}{1367875}
 \end{array}$$

$$(9.) \dots \dots \dots \qquad \sqrt[3]{\frac{1331}{3375}} = \sqrt{\frac{11^3}{15^3}} = \frac{11}{15} \text{ Ans.}$$

$$(10.) \quad \sqrt[3]{\frac{343}{512}} = \sqrt[3]{\left(\frac{7}{8}\right)^3} = \frac{7}{8}, \text{ and } \sqrt[3]{\frac{729}{2197}} = \sqrt[3]{\left(\frac{9}{13}\right)^3} = \frac{9}{13} \text{ Ans.}$$

(5.)..... A globe ^{cubic in.} $15\overline{)625}$ (25 inches. *Ans.*)
 $2^3 = 8$
 $2^2 \times 300 = 1200$ $\overline{7625}$
 $2 \times 5 \times 30 = 300$
 $5^2 = 25$
 $\overline{1525} \times 5 = \underline{\underline{7625}}$

(6.).... Amount ft. $288 \times 216 \times 48 = 2\overline{)985}984$ (144 feet. *Ans.*)
 $1^3 = 1$
 $1^2 \times 300 = 300$ $\overline{1985}$
 $1 \times 4 \times 30 = 120$
 $4^2 = 16$
 $\overline{436} \times 4 = 1744$
 $14^2 \times 300 = 58800$ $\overline{241984}$
 $14 \times 4 \times 30 = 1680$
 $4^2 = 16$
 $\overline{60496} \times 4 = \underline{\underline{241984}}$

(7.)..... A gallon contains 277·27 cubic inches.
A hogshead $\overline{83181}$ 63 gals.
 166362
 $\overline{17468} \cdot 01$ (25·9 inches. *Ans.*)
 $2^3 = 8$ or 26 in. nearly.
 $2^2 \times 300 = 1200$ $\overline{9468}$
 $2 \times 5 \times 30 = 300$
 $5^2 = 25$
 $\overline{1525} \times 5 = 7625$
 $25^2 \times 300 = 187500$ $\overline{1843010}$
 $25 \times 9 \times 30 = 6750$
 $9^2 = 81$
 $\overline{194331} \times 9 = \underline{\underline{1748976}}$
 $\underline{\underline{94031}}$

(8.).... A bushel, new measure = 2218.19 cubic inches.
 A quarter contains..... 8 bushels.

$$\begin{array}{r}
 \text{Multiply by } \frac{17745.52}{64} \text{ quarters.} \\
 \hline
 7098208 \\
 10647312 \\
 \hline
 1)135)713)28(104.33 \text{ \&c.} \\
 1^3 = 1 \qquad \qquad \qquad \text{or } 104\frac{1}{3} \text{ inches.} \\
 \hline
 10^2 \times 300 = 30000 \qquad \qquad \qquad \text{Ans.} \\
 10 \times 4 \times 30 = 1200 \\
 4^2 = 16 \\
 \hline
 31216 \times 4 = 124864 \\
 \hline
 104^2 \times 300 = 3244800 \qquad \qquad \qquad 10849280 \\
 104 \times 3 \times 30 = 9360 \\
 3^2 = 9 \\
 \hline
 3254169 \times 3 = 9762507 \\
 \hline
 1086773 \text{ \&c.}
 \end{array}$$

(9.).... $\frac{\text{weight.}}{\text{As } 17 \text{ lb.}} : \frac{\text{diameter.}}{4.25 \text{ in.}} :: \frac{\text{weight.}}{64 \text{ lb.}}$

$$\begin{array}{r}
 \frac{76.7656}{64} + \\
 \hline
 3070624 \\
 4605956 \\
 \hline
 17)4913.0184 \\
 \hline
 289.010 + (6.6 + \text{ inches. } \text{Ans.} \\
 6^3 = 216 \\
 \text{Divisor } 73010 \\
 11916 \times 6 = 71496 \\
 \hline
 1514 \text{ rem.}
 \end{array}$$

(10.).... A cubical altar $1 \times 2 = 2.000(1.259 + \text{ cubits. } \text{Ans.}$

$$\begin{array}{r}
 1^3 = 1 \\
 \hline
 1000 \\
 1^{\text{st}} \text{ divisor } \dots 364 \times 2 = 728 \\
 \hline
 272000 \\
 2^{\text{d}} \text{ divisor } \dots 45025 \times 5 = 225125 \\
 \hline
 46875000 \\
 3^{\text{d}} \text{ divisor } 4721331 \times 9 = 42489979 \\
 \hline
 4385021
 \end{array}$$

(11.) A cistern 125 inches long.

$$125^3 = 1953125$$

3 times larger.

$$5\ 859\ 375 (180 \cdot 2 + \text{inches long. } 1st\ Ans.)$$

$$1^3 = 1 \dots$$

$$\underline{4859}$$

1st divisor ... $604 \times 8 = 4832$

$$\underline{27375000}$$

2d divisor $9730804 \times 2 = 19461608$

Remainder $\underline{\underline{7913392}}$

64 inches breadth.

$$\underline{262144} \text{ cube.}$$

3 times as large.

$$786 | 432 (92 \cdot 3 + \text{inches broad.})$$

$$9^3 = 729$$

2nd Ans.

$$\underline{57432}$$

1st divisor $24844 \times 2 = 49688$

$$\underline{7744000}$$

2d divisor $2547489 \times 3 = 7642467$

Remainder $\underline{\underline{101533}}$

27 inches in depth.

$$\underline{19683} \text{ cube.}$$

3 times as large.

$$59 | 049 (38 \cdot 9 + \text{inches deep.})$$

$$3^3 = 27$$

3rd Ans.

$$\underline{32049}$$

1st divisor $3484 \times 8 = 27872$

$$\underline{4177000}$$

2d divisor ... $443541 \times 9 = 3991869$

Remainder $\underline{\underline{185131}}$

(12.)A bin..... length 17 feet.
 cube $\overline{4913}$
 4* times as large.
 $\overline{19652}$ (26.9+ feet long.
 $2^3 = 8$ 1st Ans.
 $\overline{11652}$
 1st divisor1596 $\times 6 =$ $\overline{9576}$
 $\overline{2076000}$
 2d divisor209901 $\times 9 =$ $\overline{1889109}$
 Remainder $\overline{\overline{186891}}$

Breadth 10 feet.
 cube $\overline{1000}$
 4 times.
 $\overline{4000}$ (15.8 + feet broad.
 $1^3 = 1$ 2nd Ans.
 $\overline{3000}$
 1st divisor475 $\times 5 =$ $\overline{2375}$
 $\overline{625000}$
 2d divisor 71164 $\times 8 =$ $\overline{569312}$
 $\overline{\overline{55688}}$

Depth 8 feet.
 cube $\overline{512}$
 4 times.
 $\overline{2048}$ (12.7 feet deep. 3rd Ans.
 $1^3 = 1$
 $\overline{1048}$
 1st divisor.....364 $\times 2 =$ $\overline{728}$
 $\overline{320000}$
 2d divisor ...45769 $\times 7 =$ $\overline{\overline{320830}}$ nearly.

* As the present Bin contains $122\frac{1}{2}$ qrs., and the new one is to contain 490 qrs., which is 4 times larger, we multiply the *cube* of the several dimensions by 4.

ANSWERS
TO
ALL THE QUERIES
PROPOSED IN
THE COMMERCIAL ARITHMETIC.

DEFINITION. *Page 15.*

- (1.) Q. *What is Arithmetic ?*
A. ARITHMETIC explains the properties of numbers, and shows the method of computing by them.
- (2.) Q. *Is Arithmetic both a science and an art ?*
A. Yes, as a science, it explains the properties of numbers ; and, as an art, teaches the method of computing by them.
- (3.) Q. *What is an Integer ?*
A. An integer is a whole number, as distinguished from a fraction ; as 1, 5, 30, &c.
- (4.) Q. *What is a Fraction ?*
A. A fraction is a part or division of any unit or integer, as $\frac{1}{4}$, $\frac{1}{5}$, $\frac{7}{12}$, &c.
- (5.) Q. *What is a Mixed Number ?*
A. A whole number with a fraction annexed, as $3\frac{1}{4}$, $4\frac{1}{2}$, $16\frac{3}{8}$, &c.
- (6.) Q. *What is a Prime Number ?*
A. A number which can be measured only by itself, or unity, as 2, 3, 5, 7, 11, 13, 17, &c.
- (7.) Q. *What is a Composite Number ?*
A. It is a number produced by multiplying two or more numbers together ; as 3×12 , or 4×9 , or 6×6 , are all component numbers of 36.
- (8.) Q. *What is a Common Measure ?*
A. A common measure is a number, which can divide two or more numbers, without a remainder : — as 4 measures 12 and 16.
- (9.) Q. *What is an Aliquot Part ?*
A. It is such a part as is contained in an integer an exact number of times : thus, 2, 4, 5, and 10, are aliquot parts of 20.
- (10.) Q. *What do Notation and Numeration teach ?*
A. Notation teaches to express numbers by figures ; and Numeration, to read the value of numbers expressed by figures.
- (11.) Q. *What does a figure in the third place of the TABLE stand for ?*
A. A figure in the third place, expresses so many hundreds.

- (12.) Q. *What does a figure in the fourth and seventh place stand for ?*
 A. A figure in the fourth place expresses *thousands*, and a figure in the seventh place so many *millions*.
- (13.) Q. *What does a figure in the ninth and twelfth place stand for ?*
 A. A figure in the ninth place expresses *hundreds of millions*, and in the twelfth place so many *hundreds of thousands of millions*.
- (14.) Q. *By what characters are all numbers represented ?*
 A. All numbers are represented by the ten following characters, viz. 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.
- (15.) Q. *What are these characters called ?*
 A. The nine first are called significant figures, or digits, to distinguish them from the *cipher*, which of itself has no value.

QUERIES IN ADDITION.

Page 26.

- (1.) Q. *What is Addition ?*
 A. ADDITION is that operation, by which we find the *sum* of two or more given numbers.
- (2.) Q. *How do you set down Integers to be added ?*
 A. I write the numbers under each other ; units under units, tens under tens, and so on : and draw a line under them.
- (3.) Q. *Why do you carry by 10 in adding integers ?*
 A. Because numbers increase in a ten-fold proportion from right to left, and therefore 10, in any column, is equal to one in the next column towards the left hand.
- (4.) Q. *How do you write Compound Numbers to be added ?*
 A. I write numbers of the same name under each other, as pence under pence, shillings under shillings, and pounds under pounds.
- (5.) Q. *How do you prove Addition ?*
 A. I repeat the operation, beginning at the top of the columns, adding downwards. If both results agree, I presume the work is right.

QUERIES IN SUBTRACTION.

Page 35.

- (1.) Q. *What is Subtraction ?*
 A. SUBTRACTION is that operation by which we find the *difference* between two given numbers.
- (2.) Q. *What are the two numbers called ?*
 A. The greater number is called the *minuend*, and the less the *subtrahend*.

- (3.) Q. *How do you set down integers to be subtracted ?*
 A. I place the less number under the greater, units under units, tens under tens, &c.
- (4.) Q. *When the upper figure is less than the under one, how do you proceed ?*
 A. I add 10 to the upper figure, and carry 1 for it to the next figure in the lower line, and proceed as before.
- (5.) Q. *Since you add 10 to the upper figure ; how do you carry only 1 to the next figure in the lower line ?*
 A. Because, from the nature of numbers, 1 in any column towards the left is equal to 10 in the column towards the right.
- (6.) Q. *How do you set down compound numbers to be subtracted ?*
 A. I place like denominations under like, as pence under pence, shillings under shillings, and pounds under pounds.
- (7.) Q. *How do you proceed when the under-number of any denomination exceeds that in the upper ?*
 A. I add as many to the upper-number, as will make 1 of the next higher.
- (8.) Q. *How do you prove Subtraction ?*
 A. I add the difference to the *less number*, and the sum will be equal to the *greater*.

 QUERIES IN MULTIPLICATION.

Page 46.

- (1.) Q. *What is Multiplication ?*
 A. MULTIPLICATION is that operation by which we find the amount of any two numbers, when the one is to be reckoned as many times as there are units in the other.
- (2.) Q. *What names are given to the numbers in this Rule ?*
 A. The number to be multiplied is called the *multiplicand*, that by which we multiply the *multiplier* ; both of which are often called *factors* ; and the result of these two, is called the *product*.
- (3.) Q. *How do you multiply integers when the multiplier consists of several figures ?*
 A. I multiply by each figure separately, observing to place the *first* figure of each product directly under the figure I am multiplying by.
- (4.) Q. *How do you multiply, when ciphers are annexed to any or both factors ?*
 A. I may neglect the ciphers in multiplying, and annex them to the product.
- (5.) Q. *How do you multiply, when the multiplier is a composite number ?*
 A. I may either multiply in the usual manner, or by the component parts of the multiplier.

- (6.) Q. *How do you multiply compound numbers ?*
 A. I multiply the several denominations of the multiplicand, beginning at the lowest, and carry as in Addition.
- (7.) Q. *How do you prove Multiplication in the above cases ?*
 A. In *integers*, I make the former *multiplier* the multiplicand, which will give the same product as before ; and in *compound numbers*, I divide by the *multiplier*, which will give the multiplicand.
- (8.) Q. *How do you find the value of any number of articles, as yards, lbs. or the like ?*
 A. I multiply the price of a *yard, lb., &c.* by the number given.
- (9.) Q. *How do you find the weight or measure of any number of articles ?*
 A. I multiply the weight or measure of a single article by the given number.
- (10.) Q. *How do you find the amount of work done, interest incurred, provisions consumed, or any other thing increased by length of time ?*
 A. I multiply the given rate ~~per~~ day, month, or year, by the given number of days, months, or years.
- (11.) Q. *How do you find how many of any lower denomination are contained in a given number of a higher ?*
 A. I multiply by as many of the lower denomination, as make one of the next higher ; adding the number of the lower name, if any.

 QUERIES IN DIVISION.

Page 57.

- (1.) Q. *What is Division ?*
 A. DIVISION is that operation by which we find how often one number is contained in another ; and is a short method of performing Subtraction.
- (2.) Q. *What names are given to these numbers ?*
 A. The number to be divided is called the *dividend* ; that by which we divide the *divisor* ; and the number of times the divisor is contained in the dividend the *quotient*, and what is over the *remainder*.
- (3.) Q. *When the divisor is not above 12, how do you divide ?*
 A. I divide the short way, setting down only the quotient figures below the dividend.
- (4.) Q. *How do you divide when the divisor is a composite number ?*
 A. I divide by its component parts, in the short way.
- (5.) Q. *How do you divide when a fraction is annexed to the divisor ?*
 A. I multiply both divisor and dividend by the under figure of the fraction, adding the upper figure to the product of the divisor ; then I divide the product.

- (6.) Q. *How do you prove Division ?*
 A. I multiply the quotient by the *divisor*, and add the remainder (if any) to the product : the sum will be equal to the *dividend*.
- (7.) Q. *How do you divide compound numbers ?*
 A. I divide the highest denomination, and what is over, I reduce to the next lower name, adding the number of that name (if any) in the dividend ; I divide this as before, and so on till the last.
- (8.) Q. *How do you find the quantity of a single parcel or share ?*
 A. I divide the amount, by the number of parcels or shares.
- (9.) Q. *How do you find the value, weight, or measure of a single parcel or share ?*
 A. I divide the value, weight, or measure of the whole, by the number of articles.
- (10.) Q. *How do you find how much work is done, provisions consumed, interest incurred, &c. in a single day, or any other portion of time ?*
 A. I divide the whole work, consumption or interest, by the number of days.
- (11.) Q. *How do you find how many of a higher denomination are contained in a given number of a lower ?*
 A. I divide by as many of the lower denomination as make one of the higher.

 QUERIES IN SIMPLE PROPORTION.

Page 68.

- (1.) Q. *What does Simple Proportion, or the Rule of Three teach ?*
 A. SIMPLE PROPORTION teaches to find a fourth number in proportion of three given numbers.
- (2.) Q. *How are the questions in this Rule distinguished ?*
 A. Into direct, and inverse proportion.
- (3.) Q. *What is meant by Direct Proportion ?*
 A. DIRECT PROPORTION is when *more* requires *more*, or *less* requires *less* ; as when the number of workmen is increased, the quantity of work done in a certain time will be greater ; or, if the number of workmen be diminished the quantity of work will be less.
- (4.) Q. *What is Inverse Proportion ?*
 A. INVERSE PROPORTION is when *more* requires *less*, or *less* requires *more* ; as, when the number of men at work is increased, the time requisite to do any piece of work will be less ; or, if the number of workmen be diminished, the time required for the work will be greater.
- (5.) Q. *How do you state the question ?*
 A. I first write down that term which is of the same kind with the answer ; on the right of it I place that term of

which the time, weight, measure, &c. is required, and on the left the remaining term.

(6.) Q. *How do you work the question ?*

A. I consider from the nature of the question, whether the *answer* will be greater or less than the middle term. If *greater*, I multiply the middle term by the greater of the other two terms, and divide the product by the less ; but if the answer will be *less*, I multiply by the less number, and divide by the greater.

(7.) Q. *How do you abridge the terms ?*

A. When the question is stated, if any of the terms which are to be multiplied together, and the term by which I divide can be measured by any number, divide them by that number, and use the quotients instead of the original terms.

(8.) Q. *How do you prove questions in this Rule ?*

A. I change the order of the stating, by reversing the question.

QUERIES IN PRACTICE.

Pages 80, 81.

(1.) Q. *What is Practice ?*

A. PRACTICE is a short and expeditious method of calculating the value of goods by taking the aliquot parts of the price.

(2.) Q. *How do you calculate the value of any number of articles when the price is an aliquot part of a penny, shilling, or pound ?*

A. I divide the quantity by that aliquot part, and the quotient gives the answer in that name, of which the price is an aliquot part, which if pence or shillings, I reduce to pounds.

(3.) Q. *How do you know the value of remainders, in dividing by aliquot parts ?*

A. If I am dividing by an aliquot part of a *pound*, the remainder is pounds, which I reduce to shillings, and if there be still a remainder, I reduce it to pence, and so on ; but if I am dividing by an aliquot part of a *shilling*, or of a *penny*, the remainder will be shillings or pence accordingly.

(4.) Q. *How do you calculate, when the price is a simple number ; as pence or shillings, but not an aliquot part ?*

A. I divide the price into two or more aliquot parts, and add the result for the answer ; or, I may multiply the quantity by the price, and the product gives the answer in the same name as the price, which, if *pence* or *shillings*, I reduce to pounds.

(5.) Q. *How do you calculate, when the price is shillings and lower denominations ?*

- A. I take aliquot parts for the price as before; or I may multiply by the shillings, and take aliquot parts for the lower names, their sum will give the answer in shillings, which I reduce to pounds.
- (6.) Q. *How do you calculate when there is a difficult fraction in the price?*
- A. I multiply the price by the under-figure of the fraction, adding the upper figure, and take parts for the price thus multiplied: I then divide the result by the under-figure of the fraction, for the answer.
- (7.) Q. *How do you calculate when there is a fraction in the quantity?*
- A. I proceed as before; and for the fraction I take a proportionate part of the price; or I may multiply the price by the upper-figure of the fraction, and divide the product by the under-figure, and this quotient I add to the former result for the answer.
- (8.) Q. *How do you calculate when the quantity is in several denominations?*
- A. I multiply the price by the highest denomination, and take parts for the lower names. Their sum is the answer in the name as the price.

QUERIES IN VULGAR FRACTIONS.

DEFINITIONS. Page 88.

- (1.) Q. *What is a Vulgar Fraction?*
- A. A FRACTION is a part or division of an unit or integer, as $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$, &c.
- (2.) Q. *How many parts does a fraction consist of?*
- A. Two; a numerator, and denominator.
- Q. *What do the numerator and denominator point out?*
- (3.) A. The denominator shows into how many parts the unit (of which the fraction is a part) is divided; and the numerator, how many of these parts are expressed.
- (4.) Q. *Explain this by an example?*
- A. If we take the fraction $\frac{3}{4}$, the denominator 4 points out that the unit is divided into four equal parts; and the numerator 3 shows, that three of these parts are to be taken as the value of the fraction.
- (5.) Q. *How many kinds of fractions are there?*
- A. There are three: Proper, Improper, and Compound fractions.
- (6.) Q. *What is a proper fraction?*
- A. A fraction which is less than unity or 1, and is known by its numerator being less than its denominator; as $\frac{3}{4}$, $\frac{5}{8}$, $\frac{7}{8}$, &c.
- (7.) Q. *What is an improper fraction?*

- A. A fraction which is equal to, or greater than unity; and is known by its numerator being equal to, or greater than its denominator, as $\frac{4}{4}$, $\frac{8}{8}$, or $\frac{5}{4}$, $\frac{9}{8}$, &c.
- (8.) Q. *What is a compound fraction?*
 A. It is a fraction, or part of another fraction, as $\frac{1}{2}$ of $\frac{1}{3}$ or, $\frac{3}{2}$ of $\frac{7}{8}$, &c.
- (9.) Q. *Explain this by an example.*
 A. Suppose A has $\frac{1}{3}$ of a ship or any other property; if I purchase $\frac{1}{2}$ of his share; then my share will be $\frac{1}{2}$ of $\frac{1}{3}$; which is $\frac{1}{6}$ th; or $\frac{3}{4}$ of $\frac{7}{8}$ is equal $\frac{21}{32}$.
- (10.) Q. *When are fractions equal to unity?*
 A. All fractions, whose numerators and denominators are the same, as $\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, $\frac{8}{8}$, &c. are equal to unity, and to one another.
- (11.) Q. *When are fractions greater than unity?*
 A. All fractions, whose numerators are greater than their denominators, as $\frac{3}{2}$, $\frac{9}{8}$, &c. are greater than unity; for $\frac{3}{2} = 1\frac{1}{2}$; and $\frac{9}{8} = 1\frac{1}{8}$.
- (12.) Q. *Is the value of a fraction altered, if both terms be multiplied by the same number, or divided by a number which measures both?*
 A. No; for $\frac{2}{4}$ multiplied by 2, produces $\frac{4}{8}$, and divided by their common measure 4, give $\frac{1}{2}$, which is equal in value to $\frac{2}{4}$ or $\frac{4}{8}$.
- (13.) Q. *How is a whole number expressed in the form of a fraction?*
 A. By placing 1 for its denominator; thus, 5 may be expressed $\frac{5}{1}$.

QUERIES IN REDUCTION OF FRACTIONS.

Page 92.

- (1.) Q. *How do you reduce mixed numbers to improper fractions?*
 A. I multiply the integer by the denominator of the fraction, and to the product add the numerator; under which I place the denominator.
- (2.) Q. *How do you reduce improper fractions to whole or mixed numbers?*
 A. I divide the numerator by the denominator.
- (3.) Q. *How do you reduce a fraction to its lowest terms?*
 A. I divide both terms of the fraction, as often as possible, by any number that will divide them both, without a remainder; or I may divide both terms by their greatest common measure, which brings the fraction to its lowest terms at once.
- (4.) Q. *How do you find a common measure to two given numbers?*
 A. I divide the greater term by the less, and the last divisor by the remainder continually, till nothing remains. The last divisor is the greatest common measure.

- (5.) Q. *How do you reduce fractions of different denominators to similar fractions of equal value?*
 A. I multiply both terms of each fraction by every denominator except its own.
- (6.) Q. *How do you reduce a compound fraction to a simple one?*
 A. I multiply the numerators together for the numerator of the simple fraction, and the denominators for the denominator.
- (7.) Q. *How do you reduce lower denomination to fractions of higher?*
 A. I place the given number for the numerator, and as many as make one of the higher for the denominator.
- (8.) Q. *How do you find the value of fractions?*
 A. I reduce the *numerator* to the next lower denomination; and divide by the denominator. If there be a remainder, I reduce it to the next denomination, and divide as before; and so on, as far as necessary.

QUERIES IN ADDITION OF FRACTIONS.

Page 93.

- (1.) Q. *How do you add simple fractions?*
 A. I first reduce them to the same denominator, then add the numerators, and under their sum I place the common denominator.
- (2.) Q. *How do you add compound fractions?*
 A. I reduce them to simple fractions, and proceed as before.
- (3.) Q. *How do you add mixed numbers?*
 A. I first add the fractions by themselves, and then add their sums to the whole numbers.
- (4.) Q. *How do you add fractions of different denominations?*
 A. I first reduce them to their value, and then add them.
- (5.) Q. *What is the reason that fractions of different denominators must be reduced to those of the same, before you can add them?*
 A. The reason why fractions must be reduced to a common denominator is, that none but similar or like parts can be added, and when fractions are reduced to the same denominators, the *numerators* signify like parts.

QUERIES IN SUBTRACTION OF FRACTIONS.

Page 95.

- (1.) Q. *How do you subtract simple fractions?*
 A. I reduce them to the same denominator; then subtract the numerator of the *less* fraction from the numerator of the *greater*.

- (2.) Q. *How do you subtract compound fractions?*
 A. I reduce them to simple fractions, and proceed as before.
- (3.) Q. *How do you subtract mixed numbers?*
 A. I first reduce the fractions to a common denominator, and then subtract the fraction annexed to the *less number* from the fraction of the *greater*, borrowing the value of the denominator, if necessary.
- (4.) Q. *How do you subtract fractions of different denominations?*
 A. I first reduce them to their value, and then subtract the value of the *less number* from that of the *greater*.
- (5.) Q. *How do you subtract a fraction from an integer?*
 A. I subtract the numerator from the denominator; and place the remainder above the denominator; I then prefix this fraction to the integer diminished by *unity*.
- (6.) Q. *What is the reason why fractions must be brought to the same denominator before you can subtract them?*
 A. As none but like parts can be added, so none but like parts can be subtracted; and therefore there is the same reason in *Subtraction* for reducing fractions, as in *Addition*.

QUERIES IN MULTIPLICATION OF FRACTIONS.

Page 96.

- (1.) Q. *How do you multiply a Fraction by a fraction?*
 A. I multiply their numerators together for the numerator of the *product*, and their denominators for the denominator of it.
- (2.) Q. *How do you multiply a whole number by a fraction?*
 A. I multiply the whole number by the numerator, and divide the product by the denominator.
- (3.) Q. *How do you multiply a whole number by a mixed number?*
 A. I multiply it first by the integer, and then by the fraction; and add the products.
- (4.) Q. *How do you multiply a mixed number by a fraction?*
 A. I multiply the mixed number by the numerator, and then divide by the denominator.
- (5.) Q. *How do you multiply when both factors are mixed numbers?*
 A. I reduce both factors to improper fractions, and multiply the numerators together for the numerator of the *product*, and the *denominators* for the denominator.
- (6.) Q. *What is the reason that the PRODUCT is less than the multiplicand, when we multiply by a fraction?*
 A. As Multiplication is the taking of the *multiplicand*, as often as there are units in the *multiplier*, therefore if the multiplier be less than *unity*, the *product* will, in the same proportion, be less than the multiplier.

QUERIES IN DIVISION OF FRACTIONS.

Page 97.

- (1.) Q. *How do you divide a Fraction by a fraction?*
 A. I invert the DIVISOR, by placing the denominator for the numerator, and the numerator for the denominator, and proceed as in *multiplication*.
- (2.) Q. *How do you divide a whole number from a fraction?*
 A. I multiply the whole number by the denominator of the divisor, and divide the product by the numerator.
- (3.) Q. *How do you divide a fraction by a whole number?*
 A. I multiply the denominator by the divisor, and place the product under the numerator.
- (4.) Q. *How do you divide a mixed number by an integer?*
 A. I divide the dividend by the divisor, and annex the fraction of the dividend to the remainder. The mixed number thus formed I reduce to an improper fraction, and multiply its denominator by the divisor.
- (5.) Q. *How do you divide, when both divisor and dividend are mixed numbers?*
 A. I first reduce each of them to an improper fraction, then invert the divisor, and proceed as in multiplication.
- (6.) Q. *What is the reason that the QUOTIENT is greater than the dividend, when we divide by a proper fraction?*
 A. In Division, the *quotient* shews how often the divisor is contained in the dividend; therefore, if any number be divided by a fraction less than unity, the quotient will be greater than the dividend; for it is obvious than any number contains more *halves*, more *thirds*, or the like, than it contains units.

QUERIES IN DECIMALS.

Page 100.

- (1.) Q. *What is a Decimal Fraction?*
 A. A DECIMAL is a fraction, whose denomination is 10, 100, 1000, &c. or a unit with as many ciphers as the numerator has places.
- (2.) Q. *How are decimals distinguished from integers?*
 A. By having a dot prefixed to them, called the decimal point.
- (3.) Q. *What effect have ciphers on a decimal?*
 A. Ciphers prefixed to a decimal decrease its value in a ten-fold proportion; that is, when one cipher is prefixed, the decimal will be only 10th part of its former value; when two ciphers are prefixed, it will then be the 100th part of

its first value, and so on; but its value is neither increased nor decreased by *annexing* ciphers.

- (4.) Q. *How are decimals distinguished?*
 A. Into two kinds, *finite* and *infinite*; or, as they are sometimes called, terminate and interminate decimals.
- (5.) Q. *How are interminate decimals classed?*
 A. Interminate decimals are divided into two classes; *repeating* and *circulating* decimals.

QUERIES IN REDUCTION OF DECIMALS.

Page 106.

- (1.) Q. *How do you reduce a Vulgar Fraction to a Decimal?*
 A. I annex ciphers to the numerator, and divide by the denominator; but if it be necessary to annex more than one cipher before I can divide, I prefix a cipher to the *quotient* for each cipher thus annexed.
- (2.) Q. *In reducing vulgar fractions to decimals, how are finite decimals known?*
 A. By the quotient or decimal having no remainder.
- (3.) Q. *How do you know a repeating decimal?*
 A. From the quotient repeating the same figure. If the figure repeat from the decimal *point*, the decimal is called a *pure repeater*; if there be figures before the repeater, it is called a *mixed repeater*, and the repeating figure is marked with a dot or dash above it.
- (4.) Q. *How do you know a circulating decimal?*
 A. From the quotient repeating two or more figures continually; if the figures circulate from the decimal point, the decimal is called a *pure circulate*; if there are figures before the circle, it is called a *mixed circulate*; and the figures which circulate are marked with a point or dash.
- (5.) Q. *How do you reduce lower denominators to decimals of higher, as shillings and pence to the decimal of a pound?*
 A. I annex ciphers to the lower name, and divide it by as many as make one of the next higher. If there be several denominations given, I begin at the lowest and reduce it to the next higher; to this result I prefix the number belonging to it, and reduce to the next higher name; and so on till the last.
- (6.) Q. *How do you proceed when the decimal would extend to many places?*
 A. I extend the decimal only to three, four, or five places, according to the nature of the articles, and degree of accuracy required, and reject the rest as inconsiderable; for the answer I obtain is exact enough for any purpose in business.

- (7.) Q. *How do you find the value of a decimal?*
 A. I multiply the given decimal, by the value of the different denominations, always pointing off from the right as many places as were in the preceding multiplicand. The figures pointed off give the answer.
- (8.) Q. *How do you reduce a FINITE decimal to a vulgar fraction?*
 A. I place the given decimal for the numerator, and an unit with as many ciphers annexed to it, as there are ciphers in the decimal for the denominator.
- (9.) Q. *How do you reduce a PURE repeater, or circulate, to a vulgar fraction?*
 A. I place 9 for the denominator of the repeater, and 9 for every figure in the circle.
- (10.) Q. *How do you reduce a MIXED repeater, or circulate, to a vulgar fraction?*
 A. I first subtract the *Finite part* from the whole decimal; the remainder is the numerator; and then place 9 below each figure of the circle, with a cipher for every finite place, for the denominator.
- (11.) Q. *How do you value by INSPECTION the decimal of £1.*
 A. I double the first decimal place for shillings; if the second place be 5, or above, I reckon a shilling more, and subtract 5 from the second place; then the remainder, with the third place, are farthings, abating 1 for 25, and 2 for 40.
- (12.) Q. *How do you value by INSPECTION the decimal of a Cwt.?*
 A. To the first three figures of the given decimal I add the first figure, then I divide the sum by 9 (mentally); the quotient gives the answer in *lbs.*

 QUERIES IN ADDITION OF DECIMALS.

Page 107.

- (1.) Q. *How do you write Decimals to be added?*
 A. I set them down, so that like places may stand under each other, and the *decimal-points* in one straight line.
- (2.) Q. *How do you add FINITE decimals?*
 A. I sum them up, as if they were integers.
- (3.) Q. *How do you add when the decimals REPEAT?*
 A. I extend the repeaters one place more than the longest finite ones, and carry by 9 on the right hand.
- (4.) Q. *Why do you extend the repeaters a place beyond the longest finite decimals, and carry by 9, at the right-hand figure?*
 A. Because by this operation, like things come to be added; for the finite decimals are tenth parts, but repeaters signify *ninth* parts.

QUERIES IN SUBTRACTION OF DECIMALS.

Page 108.

- (1.) Q. *How do you place Decimals to be subtracted?*
 A. I place the less number under the greater, so that like places stand under each other, as in Addition.
- (2.) Q. *How do you subtract FINITE decimals?*
 A. I subtract as in integers, and make the decimal point, in the *difference* directly under the other two points.
- (3.) Q. *How do you subtract REPEATERS?*
 A. I extend them as in Addition, and borrow 9 on the right, if necessary.

QUERIES IN MULTIPLICATION OF DECIMALS.

Page 111.

- (1.) Q. *How do you multiply finite Decimals?*
 A. I proceed as in integers; and from the right of the product, point off as many decimal places as there are in both factors.
- (2.) Q. *How do you proceed if the product has not so many decimal places, as are necessary to be pointed off?*
 A. I prefix ciphers to make up the deficiency.
- (3.) Q. *Why do you point off as many decimal places in the PRODUCT, as there are in both factors?*
 A. The reason is, that the operation here is the same as in Multiplication of Vulgar Fractions; for since each decimal place in either factor diminishes its value ten times, it must equally diminish the value of the product.
- (4.) Q. *How do you multiply when one of the factors REPEATS?*
 A. I multiply by the *finite* factor, and carry by 9 on the right; then extend the products equal, and add them as in Addition when repeaters occur.
- (5.) Q. *How do you multiply when both factors REPEAT?*
 A. I reduce either of them as is most convenient, to a vulgar fraction, and take parts of the multiplicand for it.
- (6.) Q. *How do you multiply by 10, 100, 1000, or the like?*
 A. I have only to remove the decimal *point* as many places to the right as there are ciphers in the multiplier, annexing ciphers, if necessary, to make up the number of places.
- (7.) Q. *How do you multiply decimals, and retain in the product only such a number of places as may be required?*
 A. I invert the multiplier, and make the units' figure stand under that place of decimals which is required in the product; I then begin each line of the product by the multiplication of that figure in the multiplicand, which

stands above that figure by which I am multiplying, including the carriage from the right; I then write down the products, so that their right-hand figures may stand under each other.

QUERIES IN DIVISION OF DECIMALS.

Page 114.

- (1.) Q. *How do you divide FINITE Decimals?*
A. I proceed as in integers; and if there be a remainder I annex ciphers, and continue the division to as many decimal places as are necessary.
- (2.) Q. *How do you fix the DECIMAL POINT in the quotient?*
A. I point the quotient so, that there may be as many decimal places in the divisor and quotient together, as in the dividend.
- (3.) Q. *How do you proceed when there are more decimals in the divisor than in the dividend?*
A. I annex as many ciphers to the dividend, as will make them equal before I begin to divide.
- (4.) Q. *How do you proceed, if, after the division is finished, the quotient has not so many decimals as the RULE requires?*
A. I prefix to the quotient as many ciphers as make up the deficiency.
- (5.) Q. *Why do you point off as many places in the quotient, as the number in the dividend exceeds those in the divisor?*
A. Because the quotient multiplied by the divisor gives the dividend; and therefore the number of decimal places in the dividend, must be equal to those in the divisor and quotient taken together.
- (6.) Q. *How do you divide when the dividend REPEATS?*
A. I proceed as before, but after all the figures of the dividend are used, I annex the repeating figure to the remainder instead of ciphers.
- (7.) Q. *How do you proceed when the divisor, or both divisor and dividend repeat?*
A. I multiply both divisor and dividend, by any figure that will exterminate the repeater, and proceed as before.
- (8.) Q. *How do you divide by 10, 100, 1000, or the like?*
A. I only remove the *decimal point* as many places to the left as there are ciphers in the divisor; prefixing ciphers, if necessary, to make up the number of places.
- (9.) Q. *How do you divide any number by a PURE REPEATER?*
A. I multiply by 9, and divide by the repeating figure.
- (10.) Q. *How do you contract division, when both factors consist of several places?*
A. Having found the first figure of the product in the com-

mon way; for each after figure, I divide the last remainder, omitting a figure of each step on the right of the divisor, but including the carriage.

QUERIES IN COMMISSION AND BROKERAGE.

Page 117.

- (1.) Q. *What is commission or Brokerage?*
 A. Commission and Brokerage are allowances of so much p Cent , or $\text{p } \pounds 100$, to an Agent or Broker, for transacting any kind of business for his employers.
- (2.) Q. *How do you compute the brokerage on any sum?*
 A. As this allowance is always less than 1 p Cent . or $\pounds 1$. $\text{p } \pounds 100$, I divide the sum by 100, the quotient is equal to 1 p Cent . of which I take aliquot parts of $\pounds 1$. for the given rate.
- (3.) Q. *How do you calculate the Commission on any sum?*
 A. I may either multiply the sum by the rate p Cent . and divide the product by 100; or I may take aliquot parts of 100 for the rate.

QUERIES IN INTEREST.

Page 124.

- (1.) Q. *What is Interest?*
 A. INTEREST is an allowance given to the lender of money, by the borrower, for the use he has had of the *Cash*.
- (2.) Q. *What is the Principal?*
 A. The principal is the sum lent.
- (3.) Q. *What is the Amount?*
 A. The sum of both principal and interest.
- (4.) Q. *How much is the legal interest in Britain?*
 A. Five p Cent , or one twentieth part of the sum, which is one year's interest of it, and a like proportion for a greater or less time.
- (5.) Q. *Is any other rate than 5 p cent . allowed in Britain?*
 A. The rate of interest may be under 5 p Cent . if so stipulated between the parties; for bankers give less; but more than 5 p cent . is called usury, and prohibited by the British laws.
- (6.) Q. *When no rate of interest is mentioned, what rate is understood?*
 A. Five p Cent . is always understood, and is due on all debts after the term of credit has expired.
- (7.) Q. *How do you calculate interest for years?*
 A. I divide the sum by 20; the quotient is one year's in-

terest at 5 p Cent., which I multiply by the number of years for the answer: and for any other rate I take a proportional part of this sum.

(8.) Q. *How do you calculate the interest for months?*

A. I multiply the sum by the number of months, and the product is the interest in *pence* at 5 p Cent.

(9.) Q. *How do you calculate interest for days?*

A. I multiply the sum by the number of days, and divide by 365 for the interest, in *shillings*; or by 7300 for the interest in *pounds*, at 5 p Cent. For any other rate I take a proportional part of the interest at 5 p Cent.

(10.) Q. *How do you calculate interest on a debt where partial payments are made?*

A. I multiply the sum, and the several *balances* in their order, by the number of days between each payment, and divide the sum of the products by 7300, for the interest at 5 p Cent.

(11.) Q. *How do you calculate interest on accounts current?*

A. I first find the interest of the sums on the *Dr.* side of the account, and then those on the *Cr.* side, reckoning the time from the day on which the sums became due, to the time the account is brought up. I then subtract the sum of interest on the one side, from that of the other, and the difference is the interest, to be carried to the proper side of the account-current.

QUERIES IN DISCOUNTING BILLS.

Page 127.

(1.) Q. *What is meant by discounting a Bill?*

A. To discount a Bill means to procure *cash* for it, before it becomes due.

(2.) Q. *How is this done?*

A. By indorsing the bill to a person or banker, who pays the money, deducting interest for the time it has to run.

(3.) Q. *How do you calculate the discount of a Bill?*

A. If the time which the Bill has to run is to be reckoned in months, the discount is a penny p £ each month; but if the time is days, I find the number of days, from the time the bill was discounted till it fall due. I then find the interest for that time, which is the discount.

(4.) Q. *How do you find the proceeds?*

A. I deduct the discount from the sum of the bill, the remainder is the *proceeds*, or sum to be paid to the holder of the bill.

(5.) Q. *How do you find the present value of any sum, due at a future period?*

- A. I state by *proportion* thus : as £100, with its interest (for the time), is to 100; so is the given sum to its *present value*.

QUERIES IN EQUATION OF TIME.

Page 128.

- (1.) Q. *What is Equation of Time ?*
 A. EQUATION of TIME, is to find the average or *equated* time, at which two or more sums, due at different dates, may be paid at once.
- (2.) Q. *How do you find the average time ?*
 A. I multiply each sum by the time it has to run before it is due, and divide the sum of the products by the amount of the debt. The *quotient* gives the average time of payment.

QUERIES IN MARINE INSURANCE.

Page 132.

- (1.) Q. *What is INSURANCE ?*
 A. INSURANCE is a contract of indemnity, by which one Party engages for a stipulated Sum, to insure another party against a risk to which he is exposed.
- (2.) Q. *What are the PARTIES called ?*
 A. The Person who takes upon him the risk, is called the *Insurer* or *Underwriter*, and the party protected by him, the *Insured*, or *Assured*.
- (3.) Q. *What is meant by the PREMIUM ?*
 A. The *Sum* to be paid to the Insurer is called the Premium, and which is generally so many guineas or Cent.
- (4.) Q. *What is meant by the POLICY ?*
 A. The *Policy* is the paper or parchment containing the conditions of the contract.
- (5.) Q. *What is meant by AVERAGE ?*
 A. Average is a contribution made at Sea, and is distinguished into *general* and *particular* average.
- (6.) Q. *What is general Average ?*
 A. General Average, is a proportionable contribution paid by all the proprietors of a ship, freight, and cargo, for losses which are made, with a view to general safety; such as throwing goods overboard, or cutting away masts to prevent shipwreck.
- (7.) Q. *What is a particular Average ?*
 A. Particular Average, is a contribution made by Underwriters, for such damages or losses as may happen from

the common accidents of the sea ; and which is sustained or paid by the proprietors of the article that suffers the damage.

(8.) Q. *How do you calculate the Premium ?*

A. I calculate as in the Rule of Commission ; and if the rate be given in *guineas*, I add $\frac{1}{20}$ th part to the result for the answer.

(9.) Q. *How do you find how much will cover any sum ?*

A. I add together the *rate* of premium, policy duty, and commission ; I then subtract this *sum* from 100, and say, as the remainder is to 100 " so is the given sum to the amount to be insured.

(10.) Q. *How do you find the net cost of an Insurance when there is a return of premium allowed ?*

A. I first find the full cost of the sum as in the preceding cases ; and then from the amount I deduct the RETURN as so much p Cent.

(11.) Q. *How do you compute average losses ?*

A. I state by Proportion thus : As the whole value of any article is to the whole loss, so is each person's share of that article to his proportional average of the loss ; or so is £100 to the average loss p Cent.

QUERIES IN STOCKJOBING.

Page 136.

(1.) Q. *What are Stocks or Public Funds ?*

A. Stocks, or Public Funds, are the debts of Government, created by loans, for which interest is paid from revenues set apart for the purpose.

(2.) Q. *What is meant by the Funding System ?*

A. The Funding System is the mode of raising supplies for the State, by borrowing money from individuals or Public Bodies, and levying taxes for the payment of the interest.

(3.) Q. *How are the different Funds distinguished ?*

A. The different Funds are distinguished according to the terms on which they were established ; *thus*, some are called the *Three p Cents.*, some the *Four p Cents.*, and some the *Five p Cents.*

(4.) Q. *Is the term STOCK never applied but to the Debts of Government ?*

A. Yes : It is likewise applied to the Capitals of the Bank of England, and of the East India and South Sea Companies, &c.

(5.) Q. *In what respects do the debts of Government differ from other Contracts ?*

- A. They differ inasmuch as the Public Creditor or Stockholder can only claim his interest; but he may sell his stock; that is, he may transfer his claim to any other person, and thus obtain his capital, more or less, according to the price of stock at the time he sells out.
- (6.) Q. *How is STOCK usually transferred?*
 A. Generally through the medium of a Broker, who receives $\frac{1}{8}$ % Cent., or 2s. 6d. on every £100 of *Stock* bought or sold.
- (7.) Q. *How do you find the cost of any quantity of Stock?*
 A. I may multiply the price by the quantity, and divide by 100, or state by Proportion thus: As £100 stock is to the price of £100; so is the quantity of stock to the cost.
- (8.) Q. *How do you find what quantity of Stock a given sum will purchase?*
 A. I multiply the sum to be laid out by 100, and divide the product by the rate or price.
- (9.) Q. *How do you find what sum must be laid out in the purchase of Stock to produce a proposed income?*
 A. I state by proportion thus: As the rate of interest which the Stock yields is to £100, so is the given income to the quantity of stock to be purchased: I then find the cost of the stock.
- (10.) Q. *How do you find the rate of interest, which money produces in the PUBLIC FUNDS?*
 A. I state by proportion, thus: As the given price or value of £100 is to the rate % Cent. of that Fund, so is £100 to the rate of interest which the money yields.

QUERIES IN GAIN OR LOSS.

Page 140.

- (1.) Q. *What is the use of the Rule of GAIN and Loss?*
 A. This Rule is used by Merchants in calculating how to rate their goods, so as to gain or lose so much % Cent.
- (2.) Q. *How do you find the gain or loss % cent. on goods bought or sold at a certain price?*
 A. I state thus: As the prime cost is to the sum gained or lost; so is 100 to the rate % Cent.
- (3.) Q. *How do you find the price at which an article should be sold to gain or lose so much % Cent.?*
 A. I take parts of the prime cost for the rate % cent., and add the result in case of gain, but subtract it in case of loss.
- (4.) Q. *How do you find the prime cost of goods which have been sold at a certain rate % Cent. of gain or loss?*

- A. I state by proportion thus: As 100, with the gain $\frac{p}{100}$ cent. added to it, or loss subtracted from it, is to 100; so is the price for which the article was sold to the prime cost.
- (5.) Q. *How do you find a proportional rate $\frac{p}{100}$ Cent. on an advanced price?*
- A. I state, As the *price*, whose rate $\frac{p}{100}$ Cent. is given, is to 100, with the proposed gain added, or loss subtracted; so is the given price to a *fourth number*, which, if greater than 100, the difference shews the gain, but if less, the loss, $\frac{p}{100}$ Cent.

QUERIES IN PARTNERSHIP.

Page 144.

- (1.) Q. *What is Partnership?*
- A. PARTNERSHIP is when two or more persons unite in trade, and agree to share the profits, or sustain the losses, arising from the business, according to the *terms* of their contract.
- (2.) Q. *When the Partners are equally in advance, how is the Gain or Loss divided?*
- A. I divide the Gain or Loss by the numbers of Partners.
- (3.) Q. *When the Company's Capital is divided into a number of shares, how are their shares of the proceeds ascertained?*
- A. I first divide the Proceeds by the number of shares, and then multiply the *quotient* by the number of shares each partner holds.
- (4.) Q. *When each Partner is to share in proportion to his stock, how do you ascertain his proportion of the proceeds?*
- A. I state thus: As the whole Sum in the Concern is to the gain or loss, so is each partner's stock to his share of the proceeds.
- (5.) Q. *When each Partner is allowed only interest for his unequal advances as to time, how do you proceed?*
- A. I subtract the amount of the *Interest* of their several advances from the Net Profits on the Business; and then divide the remainder *equally* between the Partners; to which I add the *interest* of his Capital.

QUERIES IN BANKRUPTCY.

Page 146.

- (1.) Q. *What is a Bankrupt?*
- A. A BANKRUPT is a Merchant or Banker, or any other person in trade, who cannot make good his payments, and has

therefore a commission of bankruptcy taken out against him.

(2.) Q. *How do you find how much a Bankrupt's effects will pay \pounds pound?*

A. I state thus: As the amount of his debts is to the net sum realised from his effects; so is £1. to the composition \pounds pound; or *decimally thus*, Divide the effects by the amount of his debts, the quotient gives the decimal part of a pound, which value by inspection.*

(3.) Q. *How do you calculate how much a Creditor will receive for his claim at a certain rate \pounds pound?*

A. If the rate \pounds pound be an aliquot part of £1., divide the sum by that aliquot part: if it be not an aliquot part, divide it into two or more aliquot parts, as in *Case III. of Practice*.

* *Vide* CONTRACTION II. Page 105.

QUERIES IN COMPOUND INTEREST.

Page 164.

(1.) Q. *What is the meaning of Compound Interest?*

A. COMPOUND INTEREST means, that interest is to be charged, not only on the sum originally lent, or debt due; but that the interest is to be accumulated with the principal, at the term when it is payable, and interest on the amount, as a new principal, till the debt is paid.

(2.) Q. *Can a person legally lend his money so as to have Compound interest for it?*

A. Although it be contrary to law to charge compound interest on money allowed to remain unpaid for years; yet the lender of money may raise his interest when due or annually, and lend it out again; and so in effect improve his money at the rate of compound interest.

(3.) Q. *How do you find the AMOUNT or INTEREST of any sum improved at compound interest?*

A. I take the amount of £1. from the given time and rate from *Table 1.** and multiply it by the given sum. The *product* gives the *amount*: For *the interest* I deduct the principal from the amount.

(4.) Q. *How do you find the PRINCIPAL or PRESENT VALUE of any sum which will increase to any proposed amount?*

A. I divide the given *sum* by the amount of £1. for the given rate and time, taken from *Table I.*

(5.) Q. *How do you find the RATE of compound interest, at which a sum will increase to any proposed amount?*

A. I divide the *amount* by the principal, and the quotient is

found in *Table I.*, opposite to the given time, and under the rate $\%$ Cent. required.

- (6.) Q. *How do you find the TIME in which a sum will increase to any given amount?*
 A. I divide the *amount* by the principal as before, and look for the quotient in *Table I.* under the given rate $\%$ Cent., opposite to which is the number of years.

* The Tables here referred to are given in pages 166, 167, 168. of the "ARITHMETIC."

QUERIES IN FREEHOLD ESTATES.

Page 172.

- (1.) Q. *How many things are to be considered in Freeholds?*
 A. In FREEHOLD ESTATES, or perpetual annuities, there are three things to be considered: 1st, the price or value of the freehold; 2nd, the yearly rent or annuity; and 3d, the rate of interest.
- (2.) Q. *How do you find the VALUE or PRICE which ought to be given for a Freehold?*
 A. I multiply the annual rent by 100, and divide by the rate of interest: the quotient gives the answer.
- (3.) Q. *How do you find the ANNUAL RENT, which a Freehold ought to produce, to afford a certain rate of interest to the purchaser?*
 A. I multiply the purchase-money by the proposed rate $\%$ Cent. to be cleared, and divide by 100: the quotient gives the annual rent.
- (4.) Q. *How do you find what RATE of interest a purchaser draws from a Freehold?*
 A. I multiply the annual rent by 100, and divide by the sum paid for the purchase: the quotient gives the rate $\%$ Cent.
- (5.) Q. *How do you find how MANY YEARS' purchase should be given for a Freehold, so as to allow the purchaser a certain rate of interest?*
 A. I divide 100 by the proposed rate of interest to be obtained by the purchase: the quotient gives the number of years.
- (6.) Q. *How do you find what rate of interest a person has by purchasing a Freehold at so many years' purchase?*
 A. I divide by the number of years' purchase; the quotient gives the rate $\%$ Cent.
-

QUERIES IN REVERSIONARY ANNUITIES.

Page 173.

(1.) Q. *What are Reversionary Annuities ?*

A. An ANNUITY is said to be in reversion, when the purchaser on paying the price does not immediately enter upon possession, the annuity or reversion not commencing till some time after.

(2.) Q. *How do you find the value of a Freehold in reversion ?*

A. I find the value of the ESTATE as if possession were to commence presently : then by *Table III*. I find the present value of the rent for the time prior to the commencement : I subtract this value from the first, and the remainder is the value of the Reversion.

(3.) Q. *How do you find the yearly rent or income of a Freehold, to allow the purchaser a certain rate $\frac{1}{2}$ Cent. ?*

A. I find the amount of the PRICE of the reversion for the time prior to the commencement by *Table I.* ; then I find the annuity which that sum will purchase.

THE END.

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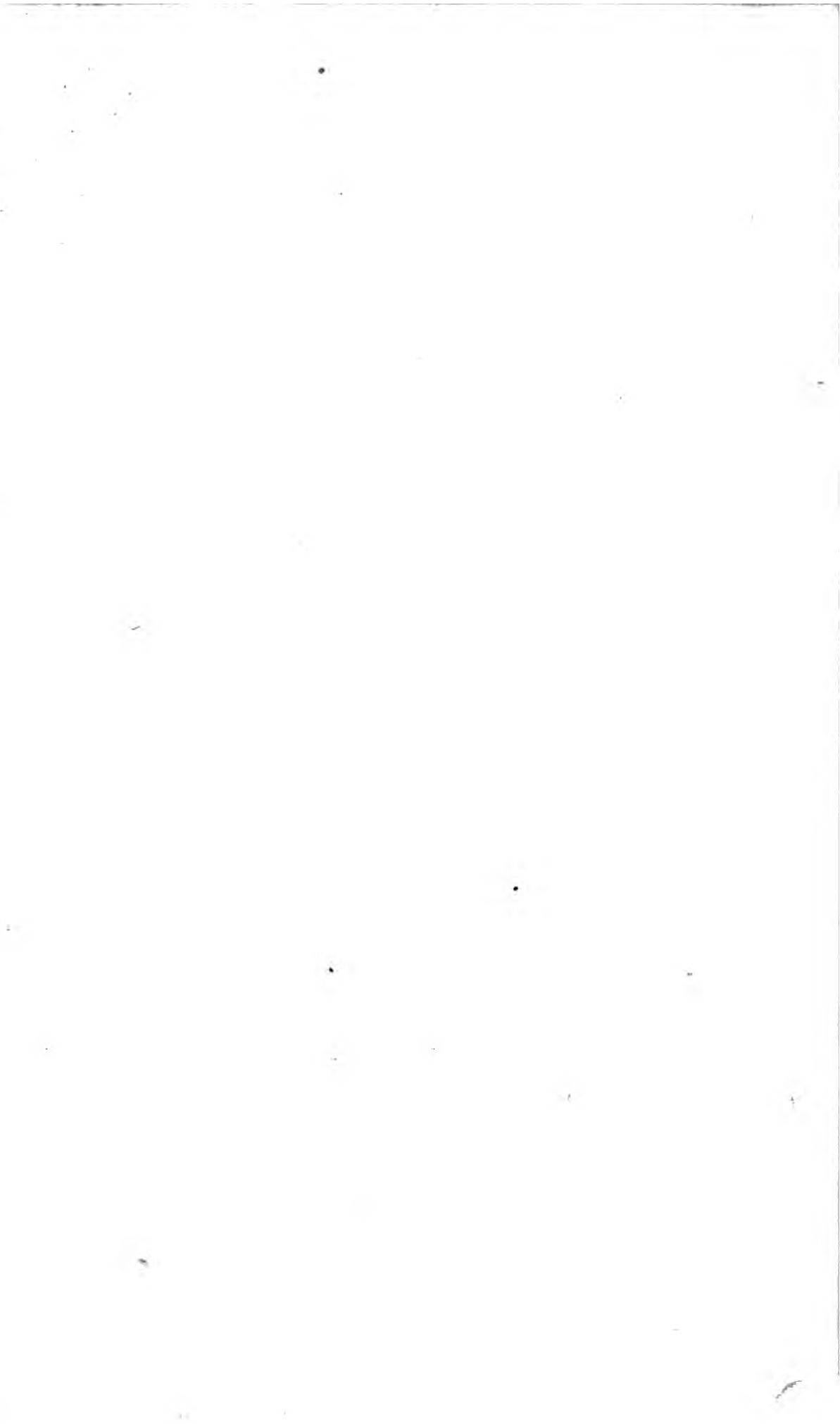
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