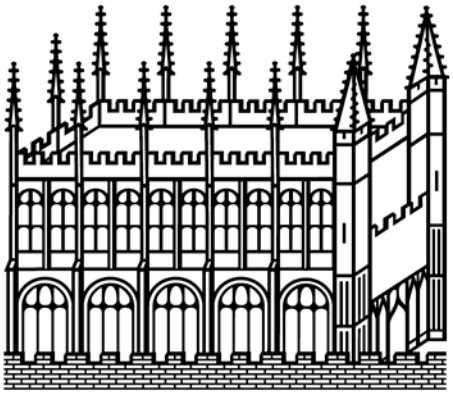

PRELIMINARY ARMY EXAMINATION MADE EASY

JOHN GIBSON, M.A.

THE

Preliminary Army Examination

MADE EASY.

BROMLEY, KENT.—QUERNMORE HOUSE.

ARMY, CIVIL SERVICE, LAW, MEDICAL, UNIVERSITY,

AND ALL PUBLIC EXAMINATIONS.

SPECIAL PREPARATION.

By JOHN GIBSON, M.A.,

First Class Classical Tripos, Cambridge, 1874; late Foundation Scholar and Prizeman of Trinity College; and for five years Assistant Master at Westminster School; Author of several Books for Students; and Public School Examiner. Assisted by

F. R. BURROWS, B.A.,

Trinity College, Oxford; 2nd Class Modern History Final Schools, and formerly Assistant Master at the International College, Isleworth.

In 1880, Mr. Gibson passed 29 pupils out of 30 sent up for these Examinations. The *one* exception had only read with him for a fortnight; of the others, several had previously "coached" with other tutors and failed; and yet with a few weeks' resident tuition at Quernmore House they passed their Examinations with credit.

A Pass is guaranteed in any ordinary case with Three Months' Resident Tuition, or Two Months' Correspondence, followed up by Two Months' Residence, or Two Months' attendance in Class followed by Six Weeks' Residence.

The following are copies of recent letters received from successful pupils:—

From a Resident Pupil.

Dear Mr. Gibson,

I am extremely pleased to be able to send you a successful result of my Examination; I feel that it was through your great kindness and valuable help that I succeeded. I believe my failure in the May Examination was entirely owing to my not being able to answer the questions put by the Examiners in a clear and concise manner. While I was with you I remedied that fault by the means of your kind help. I sincerely hope that all the others have been as successful as myself. I shall always remain very thankful to you and Mrs. Gibson for the kindness you showed me when at Bromley, and I will do my very best to procure you some pupils from C——. Hoping Mrs. Gibson and yourself are quite well, with kind regards to pupils.

I remain, dear Mr. Gibson, yours thankfully, ——.

P.S.—My father and mother desire me to give you their warmest thanks.

From a Postal Pupil.

My Dear Sir,

I am delighted to inform you that I have received a notice from the Law Society, saying the Committee are satisfied with my proficiency, &c.

I most heartily thank you for your assistance, which proved of such great service to me; and I shall have great pleasure in putting your name before anyone I may meet who wishes to pass the Preliminary at the first attempt, as I think your system perfection, and one which, if the pupil, determining to follow out your directions, ought never to fail; and I shall be happy if I can be the means of sending you any pupils. Again thanking you, I remain, dear Sir, ——.

From a Class Pupil.

Dear Mr. Gibson,

I am exceedingly glad to have the pleasure of informing you that after long patience I received notice on Saturday night from the Examiners of my pass. I think the method of preparation in your classes excellent; answering the questions in that joint way tends to give interest and emulation in the examination work, generally absent. I have strongly recommended you to several of my fellow-pupils going up for the same Examination 'in futuro'; and I shall certainly continue doing so. Might I trouble you to let me know, when you have time, the result of the Examination as regards the other pupils; but with such efficient tuition there is no doubt of their entire success.

With thanks, believe me to remain yours truly, ——.

The fees for Residence are paid monthly in advance; the tuition fees are only payable after the Examination has been successfully passed.

Mr. Gibson, after examining a Candidate privately, undertakes to tell him the exact time in which he will be able to pass his Examination.

LAW SOCIETY EXAMINATIONS.

INTERMEDIATE AND FINAL (PASS AND HONORS) EXAMINATIONS.

Mr. Albert Gibson, Solicitor (Honors Easter Term, 1874), Author of Guide to Stephen's Commentaries, &c., &c., continues to prepare Pupils for these Examinations. His Classes and Postal Preparation continue throughout the year, except for one month during Summer. For terms and full particulars application should be made to 35, Southampton Buildings, Chancery Lane; or St. Mary Cray, near Chislehurst, and applicants wishing for a personal interview should in the first instance write for an appointment.

[N.B.—*At the November Intermediate Examination*, 1880, *out of* 17 *Pupils sent up* 16 *passed, and out of* 26 *sent up for the Final* 22 *passed, three taking Honors. In* 1880 *and* 1879 *fourteen Pupils secured Honors, including a* First, Second, Third, Fourth *and a* Fifth *Prizeman. Students intending to read with Mr. Gibson are advised as to the work to pursue until they commence with him —for this the fee of One Guinea is payable, the payment going towards reduction of the fees if the intention to read is carried out.*]

THE

Preliminary Army Examination

MADE EASY:

A COMPLETE GUIDE TO SELF-PREPARATION FOR THE ABOVE.

BY

JOHN GIBSON, M.A.,

FIRST CLASS CAMBRIDGE CLASSICAL TRIPOS, 1874, FOUNDATION SCHOLAR AND PRIZEMAN, TRIN. COLL. CAM.;

Joint Editor of "Preliminary Law Examination Made Easy," "Latin Grammar Made Easy," "French Grammar Made Easy," "Gibson's Guide to Preliminary Law Examination," "Westminster Ovid," "Specimen Essays," &c.

LONDON:

EDWARD STANFORD, 55 CHARING CROSS, S.W.

1881.

PREFACE.

THE success which has attended the publication of my 'Preliminary Law Examination Made Easy' has induced me to publish a similar guide for the Army Entrance Examinations. I have tried, in the following pages, to lay down a thorough and systematic plan, such as, if faithfully followed out, may enable a candidate to present himself at his examination without any apprehension of failure. I am persuaded that the large percentage of failures in these Preliminary Examinations is mainly due to the want of system and care in preparation. Candidates, as a rule, if left to themselves, do not know either how to read or what to read; they read in the wrong way and the wrong books. I have endeavoured in this little work to supply a complete guide to self-preparation for the Preliminary Army Examination; and, to judge from the success that has hitherto attended my own pupils, who have followed out a similar course, it is my firm conviction that anyone who conscientiously adheres to the hints laid down herein will have no difficulty in satisfying the Examiners as to his proficiency.

I have addressed the Reader personally all through, so as to give greater interest in the work.

With these few remarks I leave my little book in the hands of the public.

JOHN GIBSON, M.A.

Quernmore House,
Bromley, Kent.

Preliminary Army Examination
MADE EASY.

INTRODUCTORY.

THE Preliminary Army Examinations for entrance to Sandhurst are held four times a year—in the months of February, April, August, and September, in London, Edinburgh, and Dublin. Notice is given from time to time by the Civil Service Commissioners of the days and places of examination. Intending Candidates must apply to the Secretary of the Civil Service Commission for an Order for Examination, by filling up an Application Form, which runs as follows:—

SIR,

I request that I may be admitted to the Preliminary Examination for admission to the Royal Military College, Sandhurst, which is appointed to commence on the * (*here, fill in the day of the month and the year*). I desire to be examined in † (*Here insert London, Edinburgh, or Dublin, as the case may be*).

The modern language which I select is ‡ (*Here insert the modern language selected*).

I am, Sir,

Your obedient servant,

Name in full

Address § (*Insert here the Address to which the Order for Examination should be sent*).

Date

To the Secretary,
Civil Service Commission,
London, S.W.

A fee of £1 is required from every Candidate admitted to the Examination.

Instructions as to how this fee should be paid accompany the Order.

The Subjects of Examination, as at present arranged, are :—

1. Mathematics, comprising: (*a*) Arithmetic, including vulgar and decimal fractions, proportion, and simple interest. (*b*) Geometry, not beyond the standard of the First Book of Euclid.
2. French, German, or some other modern language; the examination being limited to a translation from the language and grammatical questions.
3. Writing English correctly, in a good legible hand, from dictation.
4. The elements of Geometrical Drawing; including the construction of scales, and the use of simple mathematical instruments.
5. Geography.

CHAPTER I.

COURSE OF READING.

THIS Examination, though not a difficult one, nevertheless requires careful and diligent reading, and you must make up your mind to apply yourself steadily to the object in view. The course which we map out below is arranged for either six or three months. In the majority of instances the longer period will be required; but in cases where three months only are given, the work arranged to be gone through in a fortnight must be completed in a week. Before proceeding to map out your work for each fortnight (or week), we will give a few practical hints as to the general method that should be pursued.

NUMBER OF HOURS TO BE DEVOTED TO READING.

It is hard to lay down any general rule on this point, as circumstances will be found so different in individual cases; but perhaps we may say that four hours a day, in the case of a six months' course, and six hours a day in a three months' course, will be found to answer the purpose.

MAKING NOTES.

This is an important subject; and yet here again it is difficult to lay down any stereotyped rule. If, as you proceed with your notes, you find that you are able to set down the gist of what you read in a concise and pithy manner, by all means continue the practice. If, on the other hand, you are unable to do this, and find that in making notes you do little else than copy the words of the book, desist at once, and spend the time you would be otherwise wasting in this way, in getting into your head the substance of what you are reading.

Last Month's Reading.

During the last month you will have to pay special attention to the revision of all the subjects of Examination; and if at this time you feel at all "shaky" in any point, you had better apply to some gentleman who "coaches" specially for this Examination. By so doing you will be spared a great deal of unnecessary trouble and anxiety, and will gain confidence by feeling that the work gone through in this special preparation, will "pay" in the Examination; as those who make it their particular study to watch the nature of the examinations from time to time are naturally able to guide Candidates as to the kind of questions likely to be set, and thus save their pupils a great deal of reading which might be utterly useless for Examination purposes.

Test Papers.

At the end of each fortnight (or week) you must allow yourself one day for working out the Test Papers given in the Appendix. This practice you will find an invaluable aid; for we cannot impress upon you too strongly the necessity of knowing how to answer a question properly when in for examination. The almost uniform success which has attended our own pupils we attribute, in a great measure, to their having acquired a proper way of answering on paper by working out from memory the Test Papers, which we set from time to time during their course of preparation.

In working out the questions set you will find the following plan a good one to adopt:—First, go very carefully through the questions, looking up in your text-book such of them as you do not feel sure about, then draft the answers from memory, taking care to follow the wording of the questions as to answer every part of them; then correct your answers, and enter them carefully and neatly in your note-book. By adopting this plan you cannot fail to have all the leading points touched upon in the questions firmly impressed on your memory, and you will be able just before the Examination to read over the questions and answers, and having worked them out yourself, the subject matter of them will readily come back to you.

CHAPTER II.

WHAT BOOKS TO READ.

On this subject there must necessarily be a conflict of opinion; and we can do no more than recommend those books which we have found, from the experience of tuition and the success of our pupils in examination, to be most effective for the purpose. Taking the subjects in the order given, *ante*, p. 8, the first is

Arithmetic.

Colenso's or Hamblin Smith's Arithmetic.

Geometry.

You will find Todhunter's the best book for your purpose.

French.*

Translation.

Stievenard, *or* go through a volume of any standard French author.

Grammar.

The Westminster School Grammar, *and*
French Grammar made Easy.

The latter book is prepared specially for Preliminary Examinations, and will be found to contain most of the necessary knowledge in a concise and tabulated form.

Geometrical Drawing.

We have every confidence in recommending Winter's Elementary Geometrical Drawing as the best text-book on this subject that has come under our notice. Most of the

* We have taken French as being the most likely modern language for selection.

questions on this subject in the Appendix are taken from this excellent little work.

Geography.

Any standard book of recent publication will answer your purpose; we, however, specially recommend you to procure *one* of the following works:—

Cornwell
Mackay
Hughes.

All the above works can be obtained through any bookseller, except, perhaps, the French Grammar Made Easy, which is published by Reeves and Turner, 100, Chancery Lane, and the Westminster French Grammar, which is published at 21, Great College Street, Westminster. We shall deal more fully with the books recommended in the next chapter.

CHAPTER III.

THE VARIOUS SUBJECTS, AND HOW TO DEAL WITH THEM.

MATHEMATICS.

(*a*) Arithmetic.

The Arithmetic Paper is usually of an easy nature; but still, as great accuracy is required, you must take great care in it. What is necessary is graduated knowledge; as you are particularly recommended to answer the questions in the order given. You must pay special attention to vulgar and decimal fractions, as these form a very important part in the examination.

(*b*) Geometry.

In this subject you cannot do better than use Todhunter's excellent book; and you will find it a very good plan to use different letters to those employed in the book. Take, for instance, the letters composing your own name. Practise occasionally riders on the different propositions.

FRENCH.

Work steadily at the Grammar and Translation Books that we have recommended, taking them alternate days, according to the course laid down for you in the following pages. In translating, your object should be to render the original into good English whilst preserving as literal a translation as you can. The author's French Grammar Made Easy will be found a very useful book in this branch of the Examination.

DICTATION.

This is a most important subject, and one which requires constant practice to make perfect. You must practise doing a piece of Dictation every other day. No doubt you will be able to find some friend to read you a portion from some book.

It matters little from what author the piece is taken; but in order as it were to kill two birds with one stone, we recommend that the person dictating should take the different countries of the globe in turn. You will thus have that all-important subject—Geography—impressed upon your mind. Write the Dictation on a loose sheet of paper, and have it corrected by the Dictator. After the corrections have been made go very carefully through them, and make a memorandum in your manuscript books of the words over which you have stumbled. From time to time ask the Dictator to question you on the words you have misspelt on former occasions. Before passing on we must draw your attention to the fact that in Dictation it is necessary not only to spell properly, but also to write legibly and punctuate properly, and you must write the word "and" in full, and not adopt the plan that we find so many pupils adopt at the outset, of cutting this word short by using the symbol "&." It will be the Dictator's duty to call your attention to any such abbreviations as a semi-mistake, and your duty to correct it.

Geometrical Drawing.

This is the only subject in the Preliminary Examination for which marks have ever been allotted; and, accordingly, you may judge that great stress is laid upon a Candidate's efficiency in this respect. The chief things to be studied are neatness and accuracy. Your best plan will be to draw your lines at the commencement in pencil, filling them in with ink afterwards. We would refer you to the excellent hints on this subject given on pages 1, 2 of Winter's 'Geometrical Drawing.'

Geography.

Last, but not least, comes what is to our mind the hardest subject of all. Your chief attention must be directed to the approximate distances of different places from each other, and the approximate latitude and longitude of important towns in the various countries. You must not be afraid of using your atlas and of marking carefully the different bays, gulfs,

and coast towns; the course of the main rivers in each country, from source to mouth, together with the chief towns on either bank; also the exact position of say a dozen towns in each country and for what they are severally famous. Nor must you neglect the course and direction of the mountains and the approximate height of their summits; also the different governments and religions that obtain in different parts.

CHAPTER IV.

COURSE OF READING.

First Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic.
The first Four Rules (simple and compound).
(*b*) Geometry.
The definitions and first eight propositions, with riders on them.
French.—Practise a piece of translation every other day.
Grammar.—Articles and Nouns.
Dictation.—Write a piece of dictation every other day.
Geometrical Drawing.—Winter, pp. 1–10.
Geography.—Definitions and Europe generally.

ARITHMETIC.

I. Learn up the definitions of Arithmetic, Numeration, Notation, &c., and practise the last two very carefully.

II. Learn up and practise the rules for proving Multiplication and Division.

III. Get up the Weights and Measures; and frequently practise Reduction, *e.g.* bringing so many tons, cwts., &c., to lbs., oz., &c., and so on.

IV. Practise carefully Long and Short Division, and mark the method of obtaining the remainder to a Short Division sum.

GEOMETRY.

Definitions and first eight Propositions with riders on them.

The chief points to which your attention must be directed are:—

I. Great accuracy in the wording of the definitions.

II. Take care to make out the figure of your proposition *as*

you go along, and do not start with it already completed.

III. Preserve the same order in the mentioning the triangles, angles, sides of figures, &c., all through the proposition as that with which you commence.

IV. Do about six riders on each proposition. These can be taken from Todhunter's or Hamblin Smith's Euclid.

French.

For suggestions as to the best mode of translating, you are referred back to our remarks on page 13.

Grammar.

Articles and Nouns.

Note particularly:—

I. The main rules for the genders of French nouns, with the exceptions in each case.

II. The feminine forms of such words as cheval, roi, héros, tigre, &c.

III. The formation of the plural of nouns, especially of compound nouns—*e.g.*, arc-boutant.

IV. Those nouns that vary their meaning with their gender —*e.g.*, le livre and la livre, &c.

Geography.

Definitions and Europe generally.

Note particularly:—

I. The definitions of such terms as latitude, longitude, equator, ecliptic, bay, cape, estuary, &c.

II. The approximate distance of one place of importance from another, taking the places in pairs—*e.g.*, London and Moscow, Antwerp and Constantinople, &c.; the shortest route and the chief towns that would be passed *en route*.

III. The approximate latitude and longitude of the capitals of the different countries.

IV. The chief rivers, mountains, islands, lakes, bays, capes, &c., of the various countries.

V. The general configuration of Europe, with special reference to its inland seas, extent of coast, &c.

VI. The points from which you would take (*a*) the greatest length, (*b*) the greatest breadth of the Continent.

At the end of this fortnight (or week) you must devote one day to working out the Test Papers given in the Appendix under the letter A on the various subjects (see *post*, page 35), and, in answering, adopt the plan suggested *ante*, page 10.

Second Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Four Rules (Compound) and Square Measure.
(*b*) Geometry. Propositions 9 to 16, with corollaries and riders on them.
French.—Translation. Practise a piece of translation every other day.
Grammar. Adjectives.
Dictation.—Practise this as before.
Geometrical Drawing. Winter, pp. 10–14.
Geography.—England and Wales, Scotland and Ireland.

ARITHMETIC.—(I) COMPOUND RULES. (II) SQUARE MEASURE.

With regard to (I), there is little to be said. All that is required is frequent practice in sums on these rules. But (II) presents some difficulty to many Students. With regard to this subject, the following points must be carefully noted:—

I. To carpet a room. Multiply the length of the room by the breadth, to get the area in square measure. Then divide this result by the breadth of the carpet; this will give the length required. For example:

Required to carpet a room 12 ft. 3 in. long, by 11 ft. 6 in. broad with carpet 9 in. wide.

ft. *in.* *in.*
12 3 = 147
11 6 = 138

ft. *in.* *sq. in.*
147 × 138 = 20,286

sq. in. *in.* *sq. in.* *ft.* *in.*
20286 ÷ 9 = 2254 = 187 10

yds. *ft.* *in.*
= 62 1 10 —Length of carpet required.

II. To paper the walls of a room. First multiply the length of the room by the height, and multiply the result by 2 (for the two side walls). This will give you the area of the two side walls. Next multiply the breadth by the height, and multiply the result by 2 (for the two end walls). This will give the area of the two end walls. Then add these two results together, which will give the whole area of the four walls. Finally, divide this area by the width of the paper, and you will have the length required. For example:

Required to paper a room 14 ft. 9 in. long, 12 ft. 6 in. broad, and 10 ft. 3 in. high, with paper 1 ft. 3 in. wide.

ft.	*in.*		*in.*
14	9	=	177
12	6	=	150
10	3	=	123

in.		*in.*		*in.*		*sq. in.*
177	×	123	×	2	=	43542
150	×	123	×	2	=	36900

sq. in.		*sq. in.*		*sq. in.*	
43542	+	36900	=	80442	Total area of walls.

sq. in.		*in.*		*yds.*	*ft.*	*in.*
80442	÷	15 (width of paper)	=	14	2	$8\frac{4}{5}$—*Ans.*

III. To find the cubic contents of a room or of a vessel. Multiply the length, breadth and height all together; and this will give the contents in cubic measure. For example:

A cistern is 6 ft. 3 in. long, 4 ft. broad, and 5 ft. 9 in. high. Find its cubic contents.

ft.	*in.*		*in.*
6	3	=	75
4	0	=	48
5	9	=	69

	in.		*in.*		*in.*		*cub. in.*		*cub. yds.*	*ft.*	*in.*
Cubic contents =	75	×	48	×	69	=	248,400	=	5	8	1296

(*b*) GEOMETRY.—Follow same system as recommended in first fortnight's work.

FRENCH:—*Translation.*

Do a piece of translation every other day.

Grammar.

Adjectives.

The following are the most important points to note:—

I. Position of Adj.

II. Comparison of Adj., especially bon, mauvais, and petit.

III. The fem. forms of Irregular Adjectives.

IV. Those adj. ending in et, that form the fem. in—ète.

V. Adj. varying their meaning according as they precede or follow the noun, *e.g.* un homme bon = a *kind* man; un bon homme = a *simple* fellow.

VI. Adj. that vary their concord, according to their position, *e.g.* demi, feu, nu.

VII. The construction of tout, used as an adverb.

Geography.

England and Wales, Scotland and Ireland. Look up carefully—

I. The boundaries of these countries, and the points from which the greatest length and breadth should be taken.

II. The chief rivers and mountains, with their directions.

III. Take twenty of the chief towns in each country, and mark their exact latitude and longitude and anything of importance connected with them. Then take them in pairs, and estimate the distance from one town to another.

IV. The bays, river-mouths, towns, headlands and counties that would be passed in coasting along the different countries.

V. A description of the four principal rivers in each country, their course from source to mouth, the counties through which they flow, and the towns on either bank.

VI. The general configuration of each country, its climate, physical features, &c.

At the end of this Fortnight do Test Papers B on all the subjects.

Third Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Greatest Common Measure and Least Common Multiple.
(*b*) Geometry. Propositions 17 to 24, with riders on them.
French.—Do a piece of translation every other day.
Grammar. Pronouns.
Dictation.—As before.
Geometrical Drawing.—Winter, pp. 15–24.
Geography.—France, Spain, Portugal, and Italy.

Mathematics.

(*a*) Arithmetic.

G. C. M. and L. C. M.

Definitions. The G. C. M. of two or more numbers is the greatest number that divides them both or all without a remainder. Thus 3 is the G. C. M. of 6 and 9.

The L. C. M. of two or more numbers is the smallest number that contains them both or all exactly. Thus 12 is the L. C. M. of 3 and 6.

Rule for finding G. C. M.

Divide the greater number by the smaller and the divisor by the remainder, and so on, making each new remainder a new divisor, until no remainder is left. The *last divisor* is the G. C. M. If there are three numbers given, find the G. C. M. of any two of them, and then the G. C. M. of this G. C. M. and of the third number, and so on for 4 or 5 numbers.

Rule for finding L. C. M.

Place all the numbers in a row, striking out any smaller number that is contained in a larger. Then divide those that are left by any *prime* number (*i.e.* any number which is only divisible by itself and 1, *e.g.* 3, 5, 7, 11), which will

exactly divide two or more of them. Put down the quotient in each case, and bring down again those numbers that are not exactly divisible. Then strike out again as above, and divide by another prime number; and so on till there is no common measure for the numbers. Finally, multiply all the divisors and all the numbers in the last line together. This will give the L. C. M.

Be careful always to divide by *prime* numbers.

Examples.

G. C. M.

Find the G. C. M. of 16, 68, and 128.

16) 68 (4
64
4)16 (4

G. C. M. = 4

4) 128 (32
12
8
8

L. C. M.

Find the L. C. M. of

3 | 6, 12, 16, 18, 24
2 | 16, 6, 8
8, 3

L. C. M. = 3 × 2 × 8 × 3 = 144.

FRENCH.

Translation.

Do a piece of translation every other day.

GRAMMAR.

Pronouns.

This is a very important subject, and requires the Student's best attention.

Note:—

I. The distinction between the conjunctive and disjunctive pronouns; (*a*) personal; (*b*) possessive; *e.g.* between me and moi; mon and le mien.

II. The order of governed personal pronouns preceding the

verb. Consider the sentences: Il le lui dit; il leur en dit.

III. The difference between celui-ci and ceci; celui qui and ce qui; ce demonstrative pronoun and ce demonstrative adj.

IV. The difference in use between qui and lequel; de qui and dont; quel and lequel; que and quoi.

V. The distinction between quel que, quelque and quelque que; chacun and chaque.

VI. The different uses and meanings of même. Consider moi-même, le même, &c.

Dictation.

As before.

Geography.

France, Spain, Portugal, and Italy.

Follow same system as recommended in last fortnight's work.

At the end of this Fortnight (or Week) do Test Papers C. on all the subjects.

Fourth Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Vulgar Fractions.
(*b*) Geometry. Propositions 25 to 32, with riders on them.
French.—Translation. Practise as before.
Grammar. Numerals.
Dictation.—Practise a piece of dictation every other day.
Geometrical Drawing.—Winter, pp. 25–36.
Geography.—Norway, Sweden, Denmark, Belgium, and Holland.

Mathematics.—(*a*) Arithmetic.

Vulgar Fractions.

Note—

I. The different kinds of fractions; and be able to give an instance of each.

II. That any fraction can be reduced to its lowest terms by dividing numerator and denominator by the G. C. M.

III. In addition and subtraction of fractions never bring the mixed numbers to improper fractions; but deal with the whole numbers first, and then with the fractions.

IV. On the other hand, in division and multiplication, the mixed numbers *must* be brought to improper fractions.

V. In a mixed sum, which has to be simplified, always get out the multiplication and division part before you touch the addition and subtraction.

VI. To bring one quantity to the fraction of another, reduce both to the same terms. The former quantity thus reduced is the numerator, and the latter the denominator, of the fraction.

FRENCH.

Translation.

Do a piece every other day.

GRAMMAR.

Numerals.

The following points must be noted :—

I. The cases in which vingt and cent take a plural sign.

II. The use of cardinals for ordinals in speaking of days of the months, kings, &c.

III. The use of mil for mille.

IV. The use of de instead of que following a comparative and preceding a numeral, *e.g.* plus d'une heure.

V. Learn carefully the numerals from 1 to 100.

DICTATION.

Write dictation as before.

GEOGRAPHY.

Norway, Sweden, Denmark, Belgium, and Holland.

Follow same system as has been traced out before.

At the end of this Fortnight (or Week) do Test Papers D on all the subjects.

Fifth Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Decimal Fractions.
(*b*) Geometry. Propositions 33 to 40, with riders on them.
French.—Translation as before.
Grammar. Regular Verbs.
Dictation.—Practise as before.
Geography.—Germany, Austria, Turkey in Europe, and Prussia.
Geometrical Drawing.—Winter, pp. 51–60.

ARITHMETIC.

Decimal Fractions.

The following points are noteworthy:—

I. Any fraction, whose denominator is 10 or some power of 10, may be represented as a decimal by setting down the figures containing the numerator and marking off (from right to left), by means of a point (·), one place for every 0 in the denominator, *e.g.*—

$$\frac{115}{100} = 1{\cdot}15$$

II. Conversely, any decimal may be represented as a fraction by taking the figures containing the decimal as a numerator, and putting, in the denominator, a 1 followed by as many 0's as there are decimal places. Thus:—

$$\cdot 151 = \frac{151}{1000}$$

III. Any decimal may be multiplied or divided by 10 or any power of 10, by moving the decimal point one place to the right for every 0 in the multiplier and one place to the left for every 0 in the divisor. Thus :—

$$\cdot 125 \times 100 = 12\cdot 5$$
$$\div 100 = \cdot 00125$$

IV. Rule for addition—

Put down the decimals as in an ordinary addition sum, being careful, however, to keep the decimal points in the same vertical line. Fill up the blank places with 0's. Then add, putting the point in the answer in the same line with the other points.

Deal similarly with subtraction.

V. Rule for Multiplication—

Multiply as if the decimals were ordinary numbers. Then in the result mark off as many places as there are in the multiplier and multiplicand together.

VI. Rule for Division—

Bring the divisor to a whole number by moving the decimal point as far to the right as possible. Move the decimal point in the dividend the same number of places. Then divide; and when in the course of division you come to the decimal point, put it in the quotient.

N.B.—This is by far the best—in fact the only satisfactory—rule. By following this rule, there can be no difficulty about the local position of the decimal point in the quotient.

VII. To bring a Vulgar Fraction to a Decimal—

Divide the numerator by the denominator, putting on a 0 to the former. And mark: as soon as you put on this 0, put the decimal point in the quotient.

If the denominator contains only 2 and 5, or powers of them, as factors, the decimal will terminate; if it contain any other factors it will not terminate.

VIII. A Circulating or Recurring Decimal is one in which the same figures come over and over again. This recurrence is represented by placing a dot over the first and last recurring figures, *e.g.*,

123, 123 is represented thus : $1\dot{2}3\dot{.}$

Circulating decimals are produced by fractions, whose denominators contain other factors than 2 and 5, or powers of 2 and 5. See above.

IX. To bring a Circulating Decimal to a Vulgar Fraction. Set down the figures containing the decimal for the numerator, subtracting from the *whole* period those figures that do not recur; and in the denominator put a 9 for every recurring, and 0 for every non-recurring figure. Thus:

$$1\dot{2}3\dot{4} = \frac{1234-12}{9900} = \frac{1222}{9900}$$

Bring this fraction to its lowest terms.

X. To bring one quantity to the decimal of another, bring both to the same terms; then divide the former by the latter.

French Grammar.

Regular Verbs.

Mark—

I. The number of conjugations, and their characteristic distinctions.

II. The varieties of orthography (spelling), in cases of verbs ending in—ger—yer—cer.

III. The primitive tenses of a verb.

IV. The formation of the other parts of a verb from the primitive tenses.

V. The rules for the inflection of the past participle of a verb when compounded (*a*) with etre; (*b*) with avoir.

VI. The mode of conjugating a verb (*a*) interrogatively; (*b*) negatively; (*c*) interrogatively and negatively.

VII. The way in which the French avoid the use of the passive voice by means of "on," and reflective verbs.

VIII. Those verbs that take être instead of avoir in the compound tenses.

IX. When the present participle is inflected, and when not.

At the end of this Fortnight (or Week) do Test Papers E on all the subjects.

Sixth Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Proportion.
(*b*) Geometry. Propositions 41 to 48, with riders on them.
Dictation.—As before.
French. Translation. As before.
Grammar. Irregular Verbs.
Geometrical Drawing.—Winter, pp. 60–70.
Geography.—Asia generally.

Arithmetic.

Proportion.

Definition :—

Four numbers are said to be in proportion, when the first bears to the second the same ratio as the third bears to the fourth. Thus—2 : 4 :: 8 : 16.

In a Proportion sum three terms are given, and we have to find the 4th.

Rule—

First ask yourself the question : What *kind* of thing will the answer represent? Put the quantity that is of a similar kind in the 3rd term. Next ask yourself the question : Will the answer be greater or less than the 3rd term? If greater, put the greater of the other two quantities in the 2nd term; if less, put the lesser. Multiply the 2nd and 3rd terms together, and divide by the 1st.

Note—

I. The 1st and 2nd terms must always be similar in kind.

II. In the case of a double Proportion sum, put down in the 3rd term the quantity similar in kind to the answer; then of the other four quantities compare two at a time, like with like, and set them down according to the rule given above. Then multiply all in the 3rd and 2nd terms together, and all in the 1st term together. Finally, divide the result of the former by that of the latter.

Examples.

Simple Proportion.

If I borrowed of a friend £300 for 8 months, for how long should I lend him £200 in return?

£	£	*months.*	
200	300	8	*Ans.*

$$Ans. = \frac{\overset{4}{\cancel{8}} \times 300}{\underset{2}{\cancel{200}}} \overset{months.}{=} 12 \qquad Ans.$$

Double Proportion.

If 7 horses are kept for 20 days for £12, how many may be kept 14 days for £18?

days.		*days.*		*horses.*		
14	:	20	: :	7	:	*Ans.*
£		£				
12		18				

$$Ans. = \frac{\overset{5}{\cancel{7}} \times \overset{3}{\cancel{20}} \times \overset{9}{\cancel{18}}}{\underset{4}{\cancel{12}} \times \underset{2}{\cancel{14}}} \overset{horses.}{=} 15 \qquad Ans.$$

French Grammar.

Irregular Verbs.

Mark—

I. The conjugation of the impersonal verb "falloir."

II. Learn carefully the list of irregular verbs as given in the French Grammar Made Easy, pp. 13, 14.

III. The verb s'en aller.

At the end of this Fortnight (or Week) do Test Papers F.

Seventh Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Simple Interest.
(*b*) Geometry. Revise Definitions, and first 8 Propositions.
Dictation.—As before.
French.—Translation. As before.
Grammar. Prepositions.
Geometrical Drawing.—Revise Winter, pp. 1–14.
Geography.—India and China.

Arithmetic.

Simple Interest.

Remember—

I. That "Principal" means the capital put out to interest at a given rate per cent.

II. That "Interest" means the sum of money realised by the principal.

III. That "Amount" means Principal + Interest.

To work out a Simple Interest sum:—

Multiply the principal by the number of years and the rate per cent., and divide by 100.

You will find it by far the best way to work in fractions of a £, and not bring the £ *s.* *d.* to pence. Thus—

Required the interest on £121 6*s.* 8*d.* for $1\frac{1}{4}$ years, at $4\frac{1}{2}$ per cent.

Ans. $121\frac{1}{3} \times 1\frac{1}{4} \times 4\frac{1}{2} \div 100$

$$= \frac{\overset{91}{\cancel{364}}}{\underset{3}{\cancel{3}}} \times \frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{4}}} \times \frac{\overset{3}{\cancel{9}}}{2} \times \frac{1}{\underset{20}{\cancel{100}}} = \frac{273}{40} = 6\frac{33}{40}$$

	£		*s.*		*d.*
Ans.	6	:	16	:	6.

To work out a problem in Simple Interest :—

(*a*) When the problem involves "time."

In what time will £50 become £55 at 5 per cent. simple interest?

Here we must suppose a time to work by as a standard.

Let us take 1 year.

Interest on £50 for 1 year at 5 per cent. = £2 10*s*.

Now we have a Proportion sum. If the interest on £50 is £2 10*s*. in 1 year, how long will it take to amount to (£55—£50) £5?

$$\begin{array}{ccccccc} £ & & £ & & year. & & \\ 2\frac{1}{2} & : & 5 & :: & 1 & : & Ans. \end{array}$$

$$Ans. = \frac{5}{\frac{5}{2}} = \frac{5}{1} \times \frac{2}{5} = 2 \text{ years.} \quad Ans.$$

(*b*) When the problem involves rate per cent.

At what rate will £100 become £110 in 3 years?

Here we suppose 1 per cent. Interest on £100 for 3 years at 1 per cent = £3.

Now for our Proportion sum. If the interest on £100 is £3 at 1 per cent., at what rate will it become (£110—£100) £10?

$$\begin{array}{ccccccc} £ & & £ & & year. & & \\ 3 & : & 10 & :: & 1 & : & Ans. \end{array}$$

$$Ans. = \frac{1 \times 10}{3} = \frac{10}{3} = 3\frac{1}{3} \text{ p. c.} \quad Ans.$$

(*c*) When the problem involves principal.

What principal will bring in £140 interest in 5 years at 4 per cent.? Here we suppose £100 as principal. Interest on £100 for 5 years at 4 per cent. = £20.

Proportion Sum.

If £100 brings £20 in 5 years at 4 per cent., what principal will bring in £140?

$$\begin{array}{ccccccc} £ & & £ & & £ & & \\ 20 & : & 140 & :: & 100 & : & Ans. \end{array}$$

$$Ans. = \frac{\overset{5}{\cancel{100}} \times 140}{\underset{1}{\cancel{20}}} = £700 \quad Ans.$$

French Grammar.

Prepositions.

Mark—

I. The distinction between à, dans and en. Notice the difference of meaning between "dans la ville," "en ville," and "à la ville."

II. The use of de and par after passive verbs.

III. The distinction between parmi and entre; avant and devant.

IV. Get up carefully the list of prepositions given in French Grammar Made Easy, p. 17.

V. The different prepositions required after different adjectives.

At the end of this Fortnight (or Week) do Test Papers G.

Eighth Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Revise first Four Rules (Simple and Compound).
(*b*) Geometry. Revise Prepositions 9 to 16.
Dictation.—As before.
French.—Translation. As before.
Grammar. Formation of Adverbs; Conjunctive Particles requiring Subjunctive Mood.
Geometrical Drawing.—Revise Winter, pp. 15–36.
Geography.—Turkey in Asia, Arabia, Persia, Afghanistan, Beloochistan.

Arithmetic.

In revising arithmetic during this and subsequent fortnights, practise answering questions on the subjects given, particularly those set in past Preliminary Examinations.

French Grammar.

Adverbs and Conjunctive Particles.

Adverbs.

Note—

I. How adverbs are formed.

II. The use of adjectives as adverbs, especially *tout.*

III. Comparison of adverbs, bien, mal, peu.

Conjunctions.

Note that compound conjunctions are formed, (*a*) with de; (*b*) with que. The former are constructed with an infinitive, the latter with a subjunctive.

Mark the classification of conjunctive particles:—

(*a*) Causal—*e.g.* parce que; (*b*) temporal—*e.g.* avant que; (*c*) comparative—*e.g.* ainsi que; (*d*) consecutive—*e.g.* de sorte que; (*e*) final—*e.g.* afin que; (*f*) conditional—*e.g.* pourvu que; (*g*) concessive—*e.g.* quoique; (*h*) quantitative—*e.g.* outre que.

Note the following, with their meanings:—

A la charge que; attendu que; bien que; au bien; quand bien même; au surplus; de sorte que.

At the end of this Fortnight (or Week) do Test Papers H.

Ninth Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Revise G. C. M., L. C. M., and Square Measure.
(*b*) Geometry. Revise Propositions 17 to 24.
Dictation.—As before.
French.—Translation as before.
Grammar. Practise distinguishing between words of similar sound, but different sense.
Geometrical Drawing.—Winter, p. 36, Examples Nos. 1–50.
Geography.—Turkestan, Asiatic Russia, and Japan.

French Grammar.

Words similar in sound but different in meaning.

Practise distinguishing such words as du, dû; des, dès; mûr, mur, &c. A list of such words can easily be obtained from any French dictionary.

At the end of this Fortnight (or Week) do Test Papers I.

Tenth Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Revise Vulgar and Decimal Fractions.
(*b*) Geometry. Revise Propositions 25 to 32.
Dictation.—As before.
French.—Translation. As before.
Grammar. Revise Nouns, Adj. and Pronouns.
Geometrical Drawing.—Winter, p. 40, Examples Nos. 51–100.
Geography.—Africa.

French Grammar.

In revising this subject follow similar plan to that laid down with regard to revision of Arithmetic, page 32.

At the end of this Fortnight (or Week) do Test Paper J.

Eleventh Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Revise Proportion.
(*b*) Geometry. Revise Propositions 33 to 40.
Dictation.—As before.
French.—Translation. As before.
Grammar. Revise Numerals and Regular Verbs.
Geometrical Drawing.—Winter, pp. 57–59.
Geography.—North America.

At the end of the Fortnight (or Week) do Test Paper K.

Twelfth Fortnight's (or Week's) Work.

Mathematics.—(*a*) Arithmetic. Revise Interest.
(*b*) Geometry. Revise Propositions 41 to 48.
Dictation.—As before.
French.—Translation. As before.
Grammar. Revise Irregular Verbs, Prepositions, and Conjunctions.
Geometrical Drawing. Winter, pp. 67–70.
Geography.—South America, Australia, and Polynesia.

At the end of the Fortnight (or Week) do Test Paper L.

APPENDIX A.

TEST PAPERS.

(In working out these papers follow course recommended on Page 10).

ARITHMETIC.

TEST PAPER A.

First Four Rules (Simple and Compound).

1. Define Arithmetic, Numeration and Notation.

2. Add together one million ten thousand and one; forty two billions, eighteen hundred thousand and sixty-one; four hundred millions, six thousand, seven hundred and seven; four hundred and twenty-seven thousand billions, five hundred thousand and four; and express the result in words.

3. Divide 3,472,156 by 27, both by long and short division. Explain how the remainder is obtained in the latter process.

4. Multiply 67,032 by 126 and prove the result in all the ways possible.

5. Reduce 5 tons 6 cwts. 3 qrs. 24 lbs. to ounces, and £20 1*s.* 7½*d.* to farthings.

6. How many times are 3 oz. 17 dwts. 8 grs. contained in 16 oz. 18 dwts.?

TEST PAPER B.

Square Measure, G. C. M. and L. C. M.

1. A room is 16 ft. 9 in. long and 13 ft. 6 in. wide. It is required to carpet it with carpet 15 in. wide, at 3*s.* 11*d.* a yard. How much carpet will be required, and what will it cost?

2. Required the cubic contents of a room 15 ft. square and 10 ft. 6 in. high.

3. How much paper 9 in. wide will be wanted for a room 18 ft. 6 in. long, 15 ft. 6 in. broad, and 10 ft. 9 in. high?

4. Define G. C. M. and L. C. M. What are their respective uses in arithmetic?

5. Find the G. C. M. of 1379 and 2401; also of 24,720 and 4155.

6. Find the L. C. M. of 6, 12, 16, 18, 24; also of 15, 16, 18, 20, 24, 25, 27, 30.

Test Paper C.

Vulgar Fractions.

1. Add together $\frac{1}{3}$, $1\frac{1}{4}$, $1\frac{1}{5}$ and $\frac{7}{24}$.
2. Subtract $2\frac{1}{4}$ from $20\frac{1}{12}$.
3. Multiply $5\frac{8}{11}$ by $4\frac{8}{9}$.
4. Divide $10\frac{12}{25}$ by $5\frac{4}{7}$.
5. Multiply together $5\frac{4}{9}$, $1\frac{4}{7}$, $\frac{6}{11}$ and $4\frac{2}{3}$.
6. Bring £2 17*s.* 6$\frac{1}{2}$*d.* to the fraction of £5; and find the value of $\frac{2}{9}$ of 4 furlongs 18 poles 3 yds 2 ft.

Test Paper D.

Decimal Fractions.

1. Add together ·00946, 8·0203, 156·98, and 45·9876.
2. Subtract 48·398675 from 121·0768.
3. Multiply 250·635 by 8·056.
4. Divide 14·259 by ·582.
5. Subtract ·035 of a guinea from 1·427 of a shilling; and give the answer in pence and decimal fraction of a penny.
6. Express 9*s.* 4$\frac{1}{2}$*d.* as the decimal of £1 7*s.*

Test Paper E.

Proportion.

1. Define Proportion, and give the rule for working out a Proportion sum.
2. If 12 yds. of cloth can be bought for £2 17*s.* 8$\frac{1}{2}$*d.*, how many yards can be bought for £3?
3. A man's debts are £5635 10*s.* 6*d.*, and his assets are £1724 11*s.* 8*d.* How much can he pay in the pound?

4. If 10 quarters of oats will keep 11 horses for 7 weeks, how many quarters will keep 18 horses for 12 weeks?

5. 12 men are equal to 18 boys; and these 12 men can do a piece of work in 15 days. At the end of 9 days 8 men leave and 10 boys come in their place. How long will it be before the work is finished?

6. If 15 men can dig a trench 20 ft. long and 13 ft. wide in 9 days of 12 hours each; how many men will it take to dig a trench 30 ft. long and 18 ft. wide in 11 days of 10 hours each?

Test Paper F.

1. Find the Simple Interest on £1150 10*s.* 6*d.* for $5\frac{1}{2}$ years at 4 per cent.

2. What is the amount on £673 10*s.* at the end of $3\frac{1}{2}$ years at $3\frac{1}{4}$ per cent.?

3. What principal will amount to £425 in 3 years at $2\frac{1}{2}$ per cent.?

4. How long will it take £246 5*s.* to amount to £354 10*s.* 6*d.* at 4 per cent.?

5. At what rate will the interest on £650 10*s.* amount to £74 5*s.* in 2 years?

6. Required the interest on £970 from May 5 till September 22 at 5 per cent.

GEOMETRY.

Test Paper A.

Definitions and Propositions 1–8.

1. Define a Circle, Plane Superficies, Right Angle, Square, Parallelogram.

2. Write out the three postulates. What is meant by an axiom? Write out the last axiom, and explain it fully.

3. Draw a straight line from a given point equal to a given straight line.

4. If two triangles have two sides of the one equal to two sides of the other, each to each, and likewise the included angles equal; their bases or third sides shall be equal, and the triangles shall be equal in every respect.

5. On the same base and on the same side of it there cannot be two triangles having their two sides terminated in one of the extremities of the base equal to one another and likewise those that are terminated in the other extremity.

6. On a given straight line describe an isosceles triangle, having its two sides equal to two given straight lines.

Test Paper B.

Propositions 9–16.

1. Bisect a given rectilineal angle.

2. Prove that two straight lines cannot have a common segment.

3. The angles which one straight line makes with another on one side of it, are either two right angles or together equal to two right angles.

4. If two straight lines cut one another, the vertical or opposite angles are equal.

5. Find a point in a given straight line such that its distances from two given points may be equal.

6. If four straight lines meet at a point so that the opposite angles are equal, these straight lines are two and two in the same straight line.

Test Paper C.

Propositions 17–24.

1. The greater side of every triangle has the greater angle opposite to it.

2. Any two sides of a triangle are together greater than the third side.

3. At a given point in a given straight line make a rectilineal angle equal to a given rectilineal angle.

4. If two triangles have two sides of the one equal to two sides of the other, each to each, but the angle contained by the two sides of one of them greater than the angle contained by the two sides, equal to them, of the other, the base of that which has the greater angle shall be greater than the base of the other.

5. The four sides of any quadrilateral are together greater than the two diagonals together.

6. Given the base, one of the angles at the base and the sum of the two sides, construct a triangle.

Test Paper D.

Propositions 25–32.

1. If two triangles have two angles of the one equal to two angles of the other, each to each, and the sides adjacent to the

equal angles in each triangle equal, then the other sides shall be equal each to each, and the third angle of the one equal to the third angle of the other.

2. If a straight line falling on two other straight lines makes the alternate angles equal to one another, the two straight lines shall be parallel.

3. Straight lines that are parallel to the same straight line are parallel to one another.

4. Through a given point draw a straight line parallel to a given straight line.

5. The three interior angles of every triangle are together equal to two right angles.

6. If the straight line bisecting the exterior angle of a triangle be parallel to the base, prove that the triangle is isosceles.

Test Paper E.

Propositions 33–40.

1. The opposite sides and angles of a parallelogram are equal to one another.

2. Parallelograms on the same base and between the same parallels are equal to one another.

3. Triangles on the same base and between the same parallels are equal.

4. Equal triangles on the same base and on the same side of it are between the same parallels.

5. Prove that the diagonals of a parallelogram bisect each other.

6. Bisect a given triangle by a straight line drawn through a given point in a side.

Test Paper F.

Propositions 40–48.

1. Describe a parallelogram equal to a given triangle and having one of its angles equal to a given rectilineal angle.

2. The complements of the parallelograms which are about the diameter of any parallelogram are equal to one another.

3. Describe a parallelogram equal to a given rectilineal figure, and having an angle equal to a given rectilineal angle.

4. Describe a square on a given straight line.

5. The square on the side subtending an acute angle of a triangle is less than the squares on the sides containing the acute angle.

6. On the sides A B, B C of a triangle A B C squares A C D E. B C F H are described: show that the straight lines A F and B D are equal.

FRENCH GRAMMAR.

Test Paper A.

Articles and Nouns.

1. How many articles are there in French? Give instances of the use of the Definite Article in French where it is not used in English.

2. What is the general rule for the formation of the plurals of nouns? Give any exceptions that you know.

3. Write down the feminine forms of tigre, loup, neveu, héros, serviteur, artiste, empereur, bienfaiteur.

4. Give the French for bread and butter; a masterpiece; a boarding-school; a dining-room.

5. Distinguish between le and la mode; le and la livre; le and la poste; le and la manche; le and la voile.

6. Give a general rule for determining the genders of nouns from their endings.

Test Paper B.

Adjectives.

1. Give the general rule for the position of Adjectives. Instance exceptions to this rule.

2. Put into French: A round table; a green bonnet; a tall man; last year; the last year.

3. How do Adjectives ending in f and x form their feminines?

4. Mention any Adjectives in et forming their feminines in ète.

5. Give the feminine forms of—Chrétien, beau, bénin, roux, turc, grec, absous, sec, frais.

6. How are Adjectives compared? Write down the comparatives and superlatives of bon, mauvais, petit.

Test Paper C.

Pronouns.

1. Give a list of conjunctive and disjunctive personal and possessive pronouns.

2. Distinguish between celui-ci and ceci; quel and lequel; qui and que; de qui and dont.

3. Put into French: What a fine day! The man of whom I speak is wise. Come what may, I will do it. I saw it myself.

4. Give the rule for the position of personal pronouns governed by the verb. Translate into French: He gave them some. I have given it to them there.

5. In how many different ways may même be used? Give instances.

6. Give the French for: Any one, several, both, whoever, every one, nobody.

Test Paper D.

Numerals.

1. Give instances in which cardinal numbers are used in French, where we in English use ordinals.

2. When do cent and vingt take a plural sign?

3. Give the French for: 27, 84, 110, 2000.

4. Distinguish between quatre mille and quatre milles. When is mil used?

5. Put into French: He is twenty-nine years of age; Henry the Fourth, king of England; more than half an hour; book six, chapter seven.

6. Write down the cardinal and ordinal numbers from 12 to 20.

Test Paper E.

Regular Verbs.

1. How many conjugations are there in French, and how are they distinguished? Give instances.

2. Conjugate (*a*) negatively, (*b*) interrogatively, the future indicative of finir.

3. What verbs are compounded with être instead of avoir?

4. Give rules for the formation of the perfect definite and the present subjunctive.

5. What is meant by the primitive tenses of a verb?

6. How do the French avoid the use of the passive voice? put into French: I am much praised; Good people are always loved.

Test Paper F.

Irregular Verbs.

1. Write down the first persons present indicative and imperfect subjunctive of:—Mourir, ouvrir, prendre, aller, bouillir, tenir, venir, pouvoir, mettre.

2. Give the perfect definite (first person) and past participles of:—Valoir, voir, vouloir, battre, boire, conduire, craindre, coudre, croire, écrire, faire.

3. From what do the following verbs come:—Acquirent, ira, envoie, jouons, pleuvra, faut, fît, vécus, né?

4. Conjugate the imperative mood of s'en aller.

Test Paper G.

Prepositions.

1. Distinguish in use between à, dans, and en.

2. Put into French:—I sat down before the house; I came before him; of whom do you speak?

3. Give the French for:—Near, above, around, opposite, as far as, along.

4. What prepositions are required after the following verbs:—condamner, essayer, permettre, penser, chercher?

5. Translate into French:—I do it to oblige you; I like to read; he hinders me from doing it; we will talk while walking.

6. Give the exact meaning of the prepositions in the following phrases:—Salle-à-manger; je l'ai demandé à mon père; des bas de soie; à l'égard de mon père.

Test Paper H.

Adverbs and Conjunctive Particles.

1. How are adverbs formed? Form adverbs from the following adjectives:—Naïf, gentil, constant, lent, impuni.

2. Compare bien, mal, peu.

3. Give a list of conjunctive particles requiring (*a*) the indicative, (*b*) the subjunctive mood.

4. Give the French for:—Until, provided that, although, so that, in order that.

5. How are compound conjunctions formed, and how are conjunctive particles classified?

6. Give the meaning of:—Attendu que; pendant que; quand bien même; bien que; outre que.

GEOMETRICAL DRAWING.

Test Paper A.

Practical Plane Geometry.

Problems I. to XII.

1. Bisect a given rectilineal angle.

2. Draw a line 3 inches long: assume a point about 2 inches above it, and from this point draw a perpendicular to it.

3. Describe a circle of 1·4 radius, and draw tangents, intersecting each other, from two points in the circumference 90° apart.

4. Draw two circles having radii of 1° and 1·2 in. respectively touching each other.

5. Construct a triangle, having no side less than $1\frac{1}{2}$ in. and no angle less than 30°; and describe a circle passing through the angular points.

6. Find a mean proportional between two lines, $2\frac{1}{2}$ in. and 3 in. respectively, and describe a circle touching the sides.

Test Paper B.

Practical Plane Geometry.

Problems XIII. to XXIV.

1. Draw, on a scale of 40 yds. to an inch, a triangle of which each side equals 120 yds. Round off one of the angles with the arc of a circle touching the two sides forming that angle. Ink in the figure with a dark line.

2. Draw a straight line 4 in. long, and divide it in the proportion of the numbers 3, 5, 2, 8. Figure the parts.

3. Construct a square on a side of 1·2 in., and describe a circle about it.

4. Draw an irregular hexagon of which the longest side shall measure 3 in. and the shortest 1 in., and construct a similar figure, the longest side of which shall measure 2 in.

5. Construct a square equal to a triangle of which the sides are respectively 1·5, 2 and 2·25 inches.

6. Describe a square equal to the difference of two squares whose sides are 3·25 and 1·94 inches.

Test Paper C.

Practical Plane Geometry.

Problems XXIV. to XXXVI.

1. Find a line which shall have the same ratio to a line 1·5 in. long, that 3 in. has to 1·75 inches.

2. In the triangle ABC, AB = 150 yds., BC = 180 yds., and AC = 250 yds. Find by construction a point P when the angles APB and CPB are respectively 38° and 52°.

3. Construct a square of which the area shall be equal to the sum of 4 squares having their sides ·5, 7·5, ·875, and 1·125 in. respectively.

4. Determine by construction a third proportional to two lines of $1\frac{1}{2}$ in., and 3·625 in. in length, greater than either of them.

5. Draw a regular polygon of 1 in. side.

6. Trisect a line AB 5·3 inches long.

Test Paper D.

Practical Plane Geometry.

Problems XXXVI. to L.

1. Describe a circle with a radius of $1\frac{1}{2}$ in., and from it cut off a segment which shall contain an angle of 35°.

2. Inscribe a circle in a square of $2\frac{3}{4}$ in. side.

3. From a point 3 in. from the centre of a circle whose radius is 2·3 in., draw a straight line, which shall be cut in extreme and mean ratio by the circle.

4. Find the length of the side of the square inscribed in the quadrant of a circle of 2 in. radius.

5. Draw two tangents to a circle of 1·75 in. radius, the tangents to contain an angle of 50°.

6. Describe a square whose area is 7·69 in., and place a regular octagon in it; find the area of the octagon.

Test Paper E.

Use of Instruments.

1. Define a sector, sectoral lines, lateral distance, transverse distance.

2. Form a triangle whose sides are 2·53 and 1·78 in., and the included angle 132°; describe a circle about it.

3. Draw two lines, each 3 in. long, forming an angle of 25°. Describe a circle of $\frac{1}{2}$ in. radius touching both lines.

4. Describe a segment of a circle having a base of 2·36 in., and containing an angle of 115°.

5. Construct an octagon with a scale of chords on a line 9 in. long. Reduce it to an equivalent square.

6. Construct a regular hexagon, of which the side is equal to 13 ft., and a triangle of equal area. Scale, 10 ft. to an inch.

Test Paper F.

Scales.

1. Construct a scale of 4 in. to a mile, and give its representative fraction.

2. Construct a scale of yards having for its representative fraction $\frac{1}{9000}$.

3. Draw a scale to measure feet on a plan on which the distance between any two points is $\frac{1}{216}$ of the real distance.

4. The distance between two places is 35 miles, and measures on a map 4·4 in. Draw a diagonal scale of miles and furlongs to suit the map showing 50 miles. Show your calculations, figure the scale properly, and write above it its representative fraction. (1 inch = 8 furlongs.)

5. Draw a scale of yards for a military sketch representing 25,000 ft. on the ground by 1 ft. on the sketch.

It is desired to increase the size of part of a plan which is drawn to a scale of $\frac{1}{25440}$ to one which is to be on a scale of 8 ft. to $\frac{1}{8}$ of an inch. Draw the scales.

GEOGRAPHY.

Test Paper A.

Definitions and Europe generally.

1. Define the following terms:—Latitude, longitude, equator, watershed, bores, monsoon, tropics, neap tides, trade winds.

2. Draw an outline map of Europe, inserting the chief rivers, lakes, and mountains; and mark the position of Cadiz, Constantinople, Venice, Amsterdam, Gallipoli, Vienna, Hammerfest, Hamburg.

3. Give the boundaries and a short geographical description of France, Spain, and Italy.

4. Give the approximate latitude and longitude of Marseilles, Naples, Lisbon, St. Petersburg, Berlin.

5. Mention in order the chief bays, river mouths, capes, and towns on the west and south coasts of Europe.

6. Give the distance, as nearly as you can, from London to Moscow, Vienna to Constantinople, Toulon to Calais, Archangel to Astrakhan.

Test Paper B.

England and Wales, Scotland and Ireland.

1. Draw a map of Ireland, inserting in it the chief rivers, mountains, capes, and bays.

2. Give the boundaries of England and Scotland, and describe briefly the physical features of each country.

3. Trace the course, from source to mouth, and mention the chief towns on both banks of the following rivers:—Severn, Trent, Blackwater, Shannon, Clyde, Tweed, Tay.

4. Name the country to which each of the following counties belongs, and a town or river within each:—Wiltshire, Norfolk, Fifeshire, Ross, Kerry, Meath.

5. State the situation of the following places, and anything for which they are famous:—Belfast, Limerick, Peebles, Dunbar, Dundee, Preston-pans, Worcester, Sunderland, Plymouth, Woodstock.

6. Give the approximate latitude and longitude of London, Birmingham, Edinburgh, Aberdeen, Dublin, Londonderry, Cardiff.

Test Paper C.

France, Spain, Portugal, and Italy.

1. Give a brief account of the physical features of France and Spain.

2. Give the approximate distance between Paris and Marseilles, Milan and Naples, Lyons and Lisbon, Toulon and Barcelona.

3. Trace the course of the following rivers, and mention the chief towns on either bank:—Tagus, Po, Rhone, Loire, Douro, Tiber, Ebro.

4. Give the approximate latitude and longitude of the following towns, mentioning for what they are severally famous:—Oporto, Madrid, Florence, Toulon, Havre, Paris, Toledo.

5. Draw an outline map in France, and put in it the chief rivers and mountains and twelve of the leading towns.

6. Where are the following places, and for what are they noteworthy?—Ajaccio, La Hogue, Bordeaux, Marseilles, Saragossa, Trafalgar, Cadiz, Florence, Tivoli, Milan.

Test Paper D.

Norway, Sweden, Denmark, Belgium, and Holland.

1. Describe generally the physical features of Belgium and Holland.

2. Trace the course of the Maas, Scheldt, and Glommen.

3. Estimate roughly the distance between Hammerfest and Bruges, Stockholm and Brussels, Copenhagen and Ostend.

4. Give the approximate latitude and longitude of the following:—Utrecht, Liège, Brussels, Christiania, Amsterdam, Hammerfest.

5. What is the exact position of the following, and for what are they severally famous?—Elsinore, Ghent, Namur, Rotterdam, Gothenburg, Carlscrona.

6. Give a brief description of Norway and Sweden, their physical features, products, and political divisions.

Test Paper E.

Germany, Austria, Turkey in Europe, and Russia.

1. Draw an outline map of Germany, filling in the chief rivers, mountains and coast towns.

2. Give the approximate distance between Berlin and Constantinople, Vienna and St. Petersburg, Dresden and Archangel, Hamburg and Astrakhan.

3. Trace the course of the Rhine, Elbe, Danube, Volga and Don.

4. Give, as nearly as you can, the latitude and longitude of Berlin, St. Petersburg, Constantinople, Vienna, Odessa, Archangel, Cologne, Gallipoli.

5. Describe fully the physical features of Russia.

6. State the exact position of the following places and note anything for which they are respectively famous: Prague, Trieste, Moscow, Odessa, Warsaw, Adrianople, Belgrade, Hamburg, Leipzig, Strasburg, Munich.

Test Paper F.

Asia (generally).

1. Give the boundaries of Asia and a general description of (*a*) its physical features, (*b*) its political divisions.

2. Mention the chief mountains and rivers and the parts of the country drained by the latter.

4. Give the approximate latitude and longitude and anything of importance connected with—Quebec, Boston, San Francisco, St. John's, Halifax.

5. Write a short account of Mexico, physically and politically, stating its chief mineral and agricultural products.

6. Mention in order the chief islands off the different coasts of North America, with the capital of each.

Test Paper L.

South America, Australia, and Polynesia.

1. Mention the political divisions of South America with their respective capitals.

2. Trace the course of the Amazon and La Plata.

3. Draw a map of Australia, and comment upon its general physical features.

4. Give the approximate latitude and longitude of Valparaiso, Buenos Ayres, Caracas, Adelaide, Hobart Town, Brisbane, Quito.

5. State the exact position of each of the following and the government to which it belongs:—Tobago, Guadeloupe, Santa Cruz, Martinique, Jamaica, Cayenne, Cuba, Curaçoa, Barbadoes, Falkland Islands.

6. Write a brief geographical description of the West Indies.

APPENDIX B.

Useful Hints.

JUST before the Examination two days' clear holiday should be taken, and when in for the Examination the Candidate should observe the following rules :—

1. Read the paper carefully through, marking those questions which you can answer without difficulty, and do these first, before confusing yourself by puzzling over the more difficult ones.

2. Take care to answer, if possible, every part of the question, and when unable to do so do not leave the whole unanswered if you are able to answer it partially.

3. Avoid making guesses; as, if the guess is wrong, the Examiners may award *minus* marks for it.

4. Read each answer over carefully with the question when finished; and before handing in your papers read through the whole, making any necessary additions and alterations.

5. Be very careful to write, spell, and punctuate properly.