

COMPOSITION.

Write from memory the substance of the passage read to you by the Inspector. :—

"During the last two seasons, terrible havoc has been committed by caterpillars on the foliage of our oaks and other trees. The natural enemies of the caterpillars, and of the flies or moths which produce them, are the birds. Nearly all birds, with the exception of a few which are exclusively seed-eaters, feed on insect life during some part of the year; while some of them, as is well known, live on insect food entirely. The rook, though he takes some of the farmer's corn, has an enormous appetite for insects. Even the common and much abused house-sparrow feeds her young on grubs and caterpillars. Previous to the two severe winters we lately had, birds were extremely plentiful in wooded districts. But since then they have even in many such districts become extremely scarce, and I have no doubt that in the birds we have lost the best friends of our trees as well as of the farmers."

EUCLID.

All generally understood abbreviations for words may be used.

1. If a quadrilateral figure be bisected by one diagonal, the second diagonal is bisected by the first.
2. Any two angles of a triangle are together less than two right angles.
3. If a side of any triangle be produced, the exterior angle is equal to the two interior and opposite angles, and the three interior angles of every triangle are together equal to two right angles.

ALGEBRA.

1. Simplify $(a+b)^2 - (b+a)(a-b) - \{a(2b-2) - (b^2-2a)\}$.
2. Find the G.C.M. of $x^2-7x+10$ and $4x(x^2+10)-25x-62$.
3. Solve the equation :—

$$\frac{2x-6}{3x-8} = \frac{2x-5}{3x-7}$$

FOURTH YEAR.

ARITHMETIC.

MALES.

1. A man invests £4,875 in the 3 per cents. at $97\frac{1}{2}$; he afterwards sells out at 99, and reinvests the money in railway shares at 110, paying a dividend of 4 per cent. Find the increase in his income.
2. Find the present value of a bill for £2,287 10s. due 5 months hence, interest being at 4 per cent. per annum.
3. Find the value of 2142857 of 3 guineas + 1375 of £2-0625 of a crown + 416 of 1d.; and reduce the result to the decimal of £5.
4. The capital of a railway company is £5,000,000; the gross earnings in a year are £500,000, and the expenses are 55 per cent. of the earnings. What dividend per cent. can the company pay on the capital?
5. A man mixes 36 gallons of whisky at 15s. a gallon with 36 gallons at 13s. 6d. a gallon, and adds 9 gallons of water. If he sells the mixture at the rate of 19s. a gallon, what per cent. does he gain on his outlay?

FEMALES.

1. Find the amount of £417 7s. 9d. for 1 year 10 months, at 4s per cent.
2. If tea be bought at 3s. 6d. per lb., and be sold at 3s. 10½d. per lb., find the gain per cent.
3. A hare pursued by a greyhound was 130 yards before him at starting; whilst the hare ran 5 yards the dog ran 7 yards. How far had the hare gone when she was caught by the dog?
4. If 20 men can do a piece of work in 12 days, find the number of men who could do another piece of work 3 times as great in $\frac{1}{2}$ of the time.

GRAMMAR.

1. "How many men, in the common concerns of life, lend sums of money which they are not able to spare, are bound for persons whom they have little friendship for, give recommendatory characters of

men whom they are not acquainted with, bestow places on those whom they do not esteem, live in such a manner as themselves do not approve, and all this merely because they have not the confidence to resist solicitation, importunity, or example!"

ADDISON: *Essay on "False Modesty."*

- (a) Show from the above that an infinitive may be the complement of a verb.
 - (b) Analyse from *How many men to spare*.
 - (c) Parse the words in italics.
 - (d) To what period of the English language does the above belong? Notice any difference you may observe in it, compared with the style of the present day.
2. Give the meaning of the following words:—*Ethics, astronomy, eucharist, monastery*. State to which element in our language they belong, and account for their introduction into our language.

GEOGRAPHY.

1. Give full Notes of a Lesson on the "Gulf of Mexico;" and illustrate by a map. Insert the lines of latitude and longitude.
2. What is a river-basin? Illustrate your answer by reference to the basin of the Amazon.

HISTORY.

1. What periods of our history have been remarkable for contests with France? To what in general would you attribute those contests?
2. What was the condition of Parliament during September 1832? What is its condition now, and what do you expect to be the next change?
3. Give dates and brief particulars of any wars in which this country has been engaged during the present reign in Europe, Asia, and Africa.

COMPOSITION.

Write a short Essay on "Fables and their Uses." (Illustrate the subject by giving any fable you can remember.)

EUCLID.

All generally understood abbreviations for words may be used.

1. $ABCD$ is a trapezoid, BC being parallel to AD . If E be the middle point of DC , the triangle AEB is half the trapezoid.
2. To draw a straight line through a given point parallel to a given straight line.
3. If a straight line be divided into any two parts, the square on the whole line is equal to the squares on the two parts, together with twice the rectangle contained by the parts.

ALGEBRA.

1. Find the value of $\frac{a}{a+b} + \frac{b}{a-b} - \frac{b^2}{a^2-b^2}$ when $4b=3a$.

2. Solve the equations :—

$$(1) \frac{3x}{4} - \frac{2y}{3} = 1 = \frac{7x}{18} + \frac{5y}{36}$$

$$(2) \frac{68x}{7} - \frac{7}{x} = 8x + 11$$

3. Find two consecutive numbers, such that the half and the fifth of the first taken together shall be equal to the third and the fourth of the second.

MENSURATION.

Find the side of an isosceles right-angled triangle whose area is the same as that of the triangle with sides 10, 11, 12.

ANSWERS TO MATHEMATICS.

ARITHMETIC.

CANDIDATES. *Males*.—(1) £253 1s. 4½d. (2) £73 10s. (3) 48 days. (4) 12½ miles. (5) 16 days. *Females*.—(1) £11 16s. 3d. + £8 0s. 10½d. + £3 16s. 6d. + £2 16s. 8½d. + £2 17s. 9d. + £1 19s. 4½d. + £1 11s. 6d. + £1 11s. 10½d. + £1 16s. 9d. = £36 6s. 6½d. (2) £938486 11s. 9d. (3) £48538 5s. 3d. (4) £503 13s. 5½d.