

would have had to pay a shilling more. Find the number of the company, and each man's share of the reckoning. (By algebra).

8. I wish to pay a bill in Naples of 7,500 lira; the direct exchange is \$0.22=1 lira; the exchange on London is \$4.95; of London on Paris is £1= 26 francs; of Paris on Naples is 1½ francs =1 lira. What is the difference between the direct and circuitous exchange? (By arith.)

4. A merchant gains every year 50 per cent. on his capital, of which he spends \$1,200 per annum in house and other expenses. At the end of 4 years he finds himself in possession of four times as much capital as he had at the beginning. What was his original capital?
D. DUSTON, Holland Landing.

5. A certain number of men and women drank to the value of 20 shillings sterling. The reckoning being called, a man said he would pay 4d. for himself and 4d. for every man in the company, and every man said he would do the same. This did not make up the reckoning; so a woman said she would pay 3d. for herself and 3d. for every woman in the company, and every woman said she would do the same. This made up the reckoning. How many men and women were there?
F. FLANAGAN, Kinkora.

6. The number of men in the side rank of a solid body of militia is to the number in the front rank as 2 to 3. If the length and breadth be increased so as to number each 4 men more, the whole body will contain 2,320: how many does it now contain? Solve by arithmetic.

7. If several consecutive terms of an equation, whose roots are real, be wanting, and if the next terms on each side of those wanting have the same sign, prove that the equation cannot have as many roots as it has dimensions.

8. Solve the following equation by factoring:

$$\frac{2c^2}{d^2} + \frac{ac}{d} - (a-b)(2c+ad)\frac{x}{d} = (a+b)\frac{cx}{d} - (a^2-b^2)x^2.$$

9. From the middle of a town two streets branched off, and crossed a river that ran in a straight course, by two bridges A and B. From their junction a sewer equally inclined to both streets led to a point in the river at the distance of 6 chains from the bridge A, and a distance from B less by 11 chains than the length of the sewer: the expense of making it amounted to as many pounds per chain as there were chains in the street leading to A. The sewer, however, being insufficient to carry off the water, an additional drain was made from a point in this street distant four chains from the bridge A, which entered the river at the same point with the sewer, and was equally inclined to the river and sewer. Now it was found that a drain down the middle of each street, at the rate of £9 per chain, would have cost only £54 more than the expense of the sewer. Required the lengths of the streets and the sewer.

10. A tract of land is bounded thus: N. 35½° E., 23.00; N. 75½° E., 30.50; S. 8½° E., 46.49; N. 66½° W., 49.64. It is to be divided into four equivalent parts by two straight lines, one of which runs parallel to the third side; required the distance of the parallel division line from the first corner, measured on the fourth side; also the bearing of the other division line, and its distance from the same corner measured on the first side.

L. B. FRAXER, Fayette, Ont.

TO CORRESPONDENTS.

READER, Markham. You will find the Allegation question solved in the December number.

Practical Department.

EDUCATION DEPARTMENT, ONTARIO.

DECEMBER EXAMINATIONS, 1880.

ADMISSION TO HIGH SCHOOLS.

ARITHMETIC.

TIME—TWO HOURS.

Values.

- 10 1. Define—Number, Numeration, Notation, Addend, Minuend.
- 10 2. Find the G. C. M. of sixty-eight million five hundred and ninety thousand one hundred and forty-two, and eighty-five million forty-four thousand and fifty-nine.
- 16 3. For a voyage of 17 weeks a ship takes provisions to the amount of 48 tons 4 cwt. 2 qrs. 20 lbs. 9 oz. Supposing that there are 78 men aboard, how much may be allowed each man per day?
- 16 4. Find the amount of the following bill:—14½ lbs. beef at 10c, 12½ lbs. pork at 9½c, 3 turkeys, weighing in all 85½ lbs., at 12½c per lb.; 12 lb. 10 oz. lard, at 15c per lb.; 5 geese, weighing in all 45 lb. 12 oz., at 10c per lb.
- 16 5. Simplify—

$$\frac{5\frac{1}{2} \text{ of } \frac{3}{4} + 3\frac{1}{2} \text{ of } 2 - 1\frac{1}{2}}{\frac{1}{7} \text{ of } (2.045 \cdot 5)} \text{ of } \frac{\text{£}19 \text{ } 16\text{s. } 7\frac{1}{2}\text{d.}}{\text{£}20 \text{ } 16\text{s. } 8\frac{1}{2}\text{d.}}$$
- 16 6. What is the weight of a block of stone 12 ft. 6 in. long, 6 ft. 6 in. broad, and 4 ft. 1½ in. thick, when a block of the same kind of stone 2 ft. 6 in. long, 3 ft. 9 in. broad, and 1 ft. 3 in. thick, weighs 1875 lbs.?
- 16 7. A man, after paying an income tax of 15½ mills on the dollar, and spending \$3.37½ a day, is able to save \$1280.87½ a year (365 days). Find his gross income.

ENGLISH GRAMMAR.

TIME—TWO HOURS.

Values.

- 39 1. Parse—"The Europeans were hardly less amazed at the scene which presented itself to their view."
- 9 2. Analyse—
 "Beneath, in the churchyard, lay the dead,
 In their night encampment on the hill."
- 12 3. Write the plural and the possessive singular of John, James, and King of England; and the third singular present indicative active of deny, crow, dye, cross, box, shock.
- 12 4. Define Comparative Degree, Relative Pronoun, Adverb, and Participle.
- 28 5. Correct what is wrong in the following sentences, giving your reason in each case:
 I find them in the garden.
 For there's many hereabout.
 Let every child bring their books to-morrow.
 All persons writing or defacing the walls will be expelled.
 Why are you sorry for him.
 Have either of you a pencil?
 He said it was to be given to either you or I.
 You or I are to go.

COMPOSITION.

TIME—ONE HOUR AND A QUARTER.

Values.

- 10 1. Vary the form of the following sentence in as many ways as you can, keeping the ideas:—"It was not so much the lateness of the hour, as the solitude and desolation of the place, that terrified me."
- 20 2. Re-write this passage, with proper spelling, punctuation, and capitals where they should be:—
 The seige and storming of delhi was the most illustrious event that occurred in the course of that gigantic struggle