Examination Papers.

ADMISSION TO HIGH SCHOOLS.

(We intend for the future to insert under this heading, in chronological order, the various examination papers that have been set for admission to high schools.)

ARITHMETIC.

JULY, 1877.

1. What is the least number that must be added to five millions to make the sum exactly divisible by seven thousand and nineteen?

2. Simplify $\frac{20}{21} - \left(\frac{48\frac{1}{2}+7\frac{3}{4}-16\frac{7}{8}}{16\frac{1}{2}\times 14\frac{1}{3}\times 12\frac{1}{4}} \div \frac{5\frac{2}{3}}{7\frac{3}{8}}\right)$.

3. Simplify $\frac{£14\ 12s.\ 11d.}{10\frac{1}{2}-3\frac{5}{8}} \times \frac{£10\ 10s.\ 10d.}{10s.\ 9\frac{1}{2}d.}$

4. A man bought a quantity of hay at $15 for 20 cwts. He sold it at 85 cents per cwt., gaining $22.25. How many cwt. did he buy?

5. 3½ yards of cloth cost $12.50; what will $23\frac{7}{16}$ yards cost?

6. A person having an annual income of $1,400, spends a sum equal to $625.50 more than he saves. Find his daily expenditure (year = 365 days).

7. A lady had in her purse just money enough to buy a certain quantity of silk; but she spent $\frac{3}{10}$ of the money in flannel, $\frac{3}{8}$ of the remainder in calico, and had then only enough money left to buy 10½ yards of silk. How many yards of silk could she have bought at first?

8. A room 15 feet wide and 18 feet long is covered with matting at a cost of $25; what would be the expense of covering, with the same quality of matting, a room a yard longer and a yard wider?

9. The average of four quantities is $18\frac{305}{7}$; the first is 26.207, the second 3 592, and the third is 38.06. Find the fourth.

10. A bankrupt owes to *A* $1,039.84, and to *B* $612.80; if *A* receives $357.44½, what will *B* receive?

NOTE.—10 marks to each question.

DECEMBER, 1877.

1. How often is 6 yds. 2 ft. contained in 25 furlongs?

2. If I buy 3 bushels, paying 5 cents for every 3 quarts, and sell at a profit of 10 cents per gallon, find the selling price of the whole.

3. Simplify:—

$$\frac{2\frac{1}{3}+\frac{5}{6}\text{ of }12-\frac{5}{8}}{3\frac{1}{3}\times .01\div\frac{1}{10}} \times \frac{11}{3\frac{5}{12}} \times \frac{18\frac{1}{12}\div 5\frac{5}{16}-22\frac{3}{50}}{\frac{1}{1\frac{1}{17}}\div(2\frac{7}{10}-\frac{5}{8}+4)}.$$

4. Reduce 2 hrs. 20 min. to the decimal of 3½ weeks.

5. A sum of money was divided among *A*, *B*, and *C*. *A* received $\frac{2}{5}$ of the sum; *B*, $20 less than $\frac{1}{5}$ of what was left; and the remainder, which was $\frac{2}{3}$ of *A*'s share was given to *C*. Find the sum divided.

6. Trees are planted 12 feet apart around the sides of a rectangular field (40 rods long), containing two acres. Find the number of trees.

7. I buy a farm containing 80 acres, and sell $\frac{1}{4}$ of it for $\frac{1}{5}$ of the cost of the farm; I then sell the remainder at $60 per acre, and neither gain nor lose by the whole transaction. Find the cost of the farm.

8. Find the amount of the following bill of goods:—

18¾ cords of wood, at $3.50 per cord.
16 yards of cloth, at $1.12½ per yard.
12 bus. 25 lbs. of wheat, at $1.20 per bus.
1,400 feet of lumber, at $12.50 per thousand.
05 tons 12 cwt. of coal, at $0.30 per cwt.

JULY, 1878.

1. Define prime number, multiple of a number, highest common factor of two or more numbers, ratio between numbers. Find the prime factors of 1260.

2. The quotient is equal to six times the divisor the divisor is equal to six times the remainder, and the three together, plus 45, amount to 561, find the dividend.

3. I sell 12½ tons of coal for $80, which is one-seventh more than the cost, find the gain per cwt.

4. .001 × .001 ÷ .0001.

5. A cistern is two-thirds full; one pipe runs out and two run in. The first pipe can empty it in eight hours, the second can fill it in twelve hours, and the third can fill it in sixteen hours. There is also a leak half as large as the second pipe; in how many hours will the cistern be half full?

6. Ten men can do a piece of work in twelve days. After they have worked four days, three boys join them in the work, by which means the whole is done in ten days. What part of the work is done by one boy in one day?

7. I buy a number of boxes of oranges for $600, of which 12 boxes are unsaleable. I sell two-thirds of the remainder for $400, and gain on them $40. How many boxes did I buy?

8. Find the total cost of the following:—Cutting a pile of wood 80 ft. long, 6 ft. high, and 4 ft. wide, at 60c. per cord.—Digging a cellar 44 ft. long, 30 ft. wide, and 8 ft. deep, at 18c. per cubic yard.—Plastering a room 24 ft. long, 16 ft. wide, and 10 ft. high, at 15c. per square yd.—Sawing 6,800 shingles, at 40c. per 1,000.

DECEMBER, 1878.

1. (*a*) Define abstract number, composite number, common multiple of two or more numbers; and explain by an example the use of the numerator of a fraction.

(*b*) Express in figures four hundred billions, four millions, forty thousand and four units.

2. A man has 5 tons 6 cwt. of flour; after selling 25 barrels of 196 lbs. each, how many sacks, holding 150 lbs., can be filled with the remainder?

3. How many rails in a straight fence 400 rods long, 5 rails high, each rail being 10 feet long?

4. If it cost $57.60 to carpet a room 20 feet long, with carpet 2½ feet wide, at $1.20 per yard, find the width of the room.

5. Find the value of

$$\frac{5\frac{1}{2}\text{ of }\frac{2}{3}\text{ of }2\frac{1}{2}-1\div(\frac{1}{2}+\frac{1}{3})}{1-\frac{3}{14}\text{ of }\left\{\frac{1}{2}+\frac{1}{2}\text{ of }\frac{2\frac{1}{10}}{\frac{1}{2}\text{ of }1\frac{1}{25}}\right\}}.$$

6. A pint contains 34⅔ cubic inches; how many gallons of water will fill a cistern 4 ft. 4 in. long, 2 ft. 8 in. wide and 6 ft. 1½ in. deep?

7. If 12 men earn $120 in 12 days, by working 10 hours a day, in how many days will 15 men earn $150 by working 8 hours a day?

8. *A* and *B* have together 210 acres of land, and $\frac{1}{4}$ of *A*'s share is equal to $\frac{1}{5}$ of *B*'s share. *B* paid $1,470 for his land; for how much must he sell it to gain $20 per acre?

JULY, 1879.

1. Define *abstract number*, *factors* of a number, *least common multiple* of two or more numbers; *common denominator*.

2. Simplify $5-\cfrac{6}{24+\cfrac{2}{3-2\frac{3}{4}}}$.

3. From one hundred and one thousandths, substract one hundred thousand nine hundred and ninety-nine millionths, and multiply the result by one hundred and one-tenths of thousands.

4. If the water in a cistern 8 ft. long 4 ft. wide and 12 ft. deep weighs twelve tons, find the weight in ounces of 1 cub. ft. of water.

5. Reduce $\frac{3\frac{1}{7}}{5\frac{5}{8}\text{ of }3\frac{3}{4}}$ of $\frac{16\frac{5}{12}-5\frac{1}{14}}{5\frac{1}{4}-3\frac{3}{4}\ (2\frac{1}{2}\times\frac{2}{10})}$ of .005 of a ton to the fraction of a cwt.

6. Find the cost of wheat at 80 cents per bus. which will be required to sow a field 60 rods long, and 40 rods wide, if $\frac{3}{4}$ of an ounce be sown on every square yard.

7. How many bricks, each covering 36 sq. in., will be required to pave a walk 6 feet wide around the outside of a rectangular field 10 rods long; which contains half an acre?

8. A train, 40 rods long, overtakes a man walking 3 miles an hour, and passes him in 12 seconds, how many miles an hour is the train running?

DECEMBER, 1879.

1. A man has 703 acres 3 roods 22 sq. rods 14¼ sq. yards; after selling 19 acres 1 rood 30 sq. rods 2¼ sq. yards, among how many persons can he divide the remainder so that each person may receive 45 acres 2 roods 20 sq. rods 25 sq. yards?

2. Find the price of digging a cellar 41 ft. 3 in. long, 24 feet wide and 6 feet deep at 20 cents per cubic yard.

3. The fore wheel of a waggon is 10½ feet in circumference, and turns 440 times more than the hind wheel, which is 11⅔ ft. in circumference; find the distance travelled over in feet.

4. $\frac{3\frac{1}{3}-1\frac{1}{3}\text{ of }\frac{1}{10}+8}{\frac{11}{12}(8\frac{5}{12}+3\frac{5}{8}-\frac{7}{12}+3\frac{2}{3})} \div \frac{.05-.005}{.25\div.5}$.

5. Find the total cost of the following.—

2745 lbs. of wheat at $1.20 per bush.
867 " " oats " 35 " "
1936 " " barley " 60 " "
1650 " " hay " 8.00 " ton
2675 feet of lumber at $10 per 1000 feet.

6. If, when wheat sells at 90 cents per bushel, a 4 lb. loaf of bread sells for 10 cents, what should be the price of a 3 lb. loaf when wheat has advanced 45 cents in price?

7. At what price must I mark cloth which cost me $2.40 per yard, so that after throwing off $\frac{1}{5}$ of the marked price I may sell it at $\frac{1}{5}$ more than the cost price?

(To be continued.)