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.

JUNE, 1880.

1. Multiply one hundred and seventy-four million five hundred and fifty thousand six hundred and thirteen by six hundred thousand four hundred and seventeen. Explain why each partial product is removed one place to the left.

2. Define *measure, common measure,* and *greatest common measure.*

Find the G.C.M. of 153517 and 7389501522.

3. Shew that $\frac{3}{5} = \frac{4}{15}$.

Simplify $\frac{4\frac{1}{1} \text{ of } \frac{7}{15} \text{ of } 7\frac{3}{4}}{12\frac{3}{15} - 2\frac{3}{4}} + \frac{2\frac{1}{4} + 1\frac{7}{8}}{9\frac{3}{4} - 3\frac{7}{12}} - \frac{12354}{12355}$.

4. A brick wall is to be built 90 feet long, 17 feet high, and 4 feet thick ; each brick is 9 inches long, 4½ inches wide and 2½ inches thick. How many bricks will be required ?

5. A merchant received a case of goods invoiced as follows :—

12 pieces of silk, each 48 yds., at 5s. 3d. per yd.
15 " cotton, each 60 yds., at 6¼d. "
20 " " each 56 yds., at 4¾d. "
14 " Irish linen, each 40yds., at 1s. 3½d. per yd.

Supposing the shilling to be worth 24½ cents, find the amount of the above bill of goods.

6. Divide 76.391955 by nine hundred and twenty thousand three hundred and eighty-five ten-billionths.

7. D. D. Wilson, of Seaforth, exported last year 8,360 barrels of eggs, each containing the same number. He received an average price of 14.85 cents per doz. Allowing the cost (including packing, etc.) to have been 13.5 cents per dozen, and the entire profit to have been $7,900.20, find the number of eggs packed in each barrel.

8. The dimensions of the *Globe* newspaper are 50 inches by 32 inches, and the daily issue is about 24,000 copies ; how many miles of Yonge-street, which is about 70 feet wide, might be covered with ten weeks' issue ?

9. A flag-staff 120 feet high was broken off by the wind, and it was found that .76 of the longer part was ⅗ of 9½ times the shorter part. Find the length of each part.

10. A and B together can do a piece of work in ⅗ of a day, B and C in ⅗ of a day, and C and A in ⅔ of a day. In what time could all working together do the work ?

DECEMBER, 1880.

1. Define *Number, Numeration, Notation, Addend, Minuend.*

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

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 73 men aboard, how much may be allowed each man per day ?

4. Find the amount of the following bill :—14¾ lbs. beef at 10c., 12½ lbs. pork at 9¼c., 3 turkeys,

weighing in all 35½ lbs., at 12½c. per lb., 12 lb. 10 oz. lard, at 15c. per lb., 5 geese, weighing in al 14⅝ lb. 12 oz., at 10c. per lb.

5. Simplify :—

$\frac{5\frac{5}{6} \text{ of } \frac{7}{16} + 3.\overline{3} \text{ of } 2 - 1\frac{1}{2}}{\frac{1}{17} \text{ of } (2.045 - .5)}$ of $\frac{\pounds 19 \text{ 16s. } 7\frac{3}{4}d.}{\pounds 20 \text{ 16s. } 8\frac{3}{4}d.}$

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 1,875 lbs. ?

7. A man, after paying an income tax of 15½ mills in the dollar, and spending $3.37½ a day, is able to save $1.230.87½ a year (365 days). Find his gross income.

JULY, 1881.

1. Define Subtrahend, Multiplicand, Quotient. Explain the statement—"The multiplier must always be regarded as an abstract number."

Divide 2000000018760681 by sixty-three million two hundred and forty-five thousand five hundred and fifty-three.

2. Define Prime Number, Prime Factors. How do you resolve a number into its prime factors ? Resolve 132288, and 107328 into their prime factors, and find the least common multiple of these numbers.

3. How many minutes are there in 1⅔ of a year (365 days) + ⅗ of a week + ⅖ of 3½ days?

4. Simplify :—

$\frac{1\frac{1}{5} + \frac{4}{7}}{1\frac{1}{8} - \frac{4}{7}} - \frac{9 + 1\frac{4}{5}}{2 + 2\frac{1}{4}} + 1761\frac{7}{18} - 1650\frac{11}{14}$.

5. A grain dealer buys 5,225 bushels of wheat at $1.05 per bushel, and paid $125 for insurance, storage, etc. ; he sold .4 of the quantity at 97 cents per bushel. At what price per bushel must he sell the remainder in order to gain $522.50 on the whole ?

6. Find the quotient of .9840018 ÷ .00159982 to seven decimal places ; and reduce .7002457 to a vulgar fraction.

7. Water, in freezing, expands about *one-ninth* in volume. How many cubic feet of water are there in an iceberg 445 feet long, 100 feet broad, and 175 feet high?

DECEMBER, 1881.

1. Divide three hundred and fourteen and *one hundred and fifty-nine thousands* by eight thousand nine hundred and thirty-seven *ten-billionths.*

2. Divide the difference of

13½ ÷ [(2⅔ – 2⅞₁) × 1⅖] and [13½ ÷ (2⅔ – 2⅞₇)] × 1⅖

by 13½ ÷ 2⅔ – 2⅞₇ × 1⅖.

3. Find the amount of the following bill in dollars and cents, the shilling being worth 24½ cents: 115 yards Brussels carpet, at 5s. 10d.; 95 yards Dutch stair, at 2s. 7d.; 84 yards Kidderminster, at 3s. 4½d. ; 72 yards drugget, at 2s. 8d. ; 10 dozen stair rods, at 5s. 6d.

4. Lead weighs 11.4 times as much as water, and platinum weighs 21 times as much as water. What weight of platinum will be equal in bulk to 56 lbs. lead ?

5. Find the difference in cost between 200 feet of chain cable, 76 lbs. to the foot, and 600 feet of

wire rope, 18 lbs. to the foot, the chain costing 15s. 6d., and the rope costing 23s. 6d. per cwt.

6. By selling tweed at $2.60 a yard it was found that ⅚ of the cost was gained ; what selling price would have gained .7 of the cost ?

7. A plate of copper 5 ft. 6 in. long. 3 ft. wide and ⅜ inch thick, is rolled into a sheet 4 ft. 6 in. wide and 6 ft. long. Find its thickness.

8. How many bricks, 9 in. long, 4½ in. wide, and 4 in. thick, will be required for a wall 60 ft. long, 17 ft. high, and 4 ft. thick, allowing that the mortar increases the bulk of each brick one-sixteenth ?

9. A grocer gained 20 per cent by selling 10 lbs. sugar for a dollar ; afterwards he increased his price, giving only 9 lbs. for a dollar. How much per cent did he make at the increased price?

Value, 1–8, eleven marks each ; 12 for No. 9.

JUNE, 1882.

1. Define *greatest common measure.* State the principle on which the rule for finding the G.C.M. of two numbers depends.

Find the G.C.M. of *sixty-eight million five hundred and ninety thousand one hundred and forty-two,* and *eighty-five million fifty-four thousand and fifty-nine.*

2. A dealer bought eight carloads of lumber, each containing 9,870 feet, at $13.50 per M. He retailed it at $1.43 per 100 feet. Find his gain on the whole lot.

3. Shew that ⅔ = ⁴⁄₆, and that ⅗ ÷ ⅔ = 1⅖.
Simplify the following :—

$\frac{26\frac{2}{3} - 1\frac{4}{7}}{\frac{17\frac{1}{2}}{12}}$ of $\frac{5\frac{1}{2}}{52\frac{1}{2}}$.

⅔ + 1½ – ⅞ of —— of ⅝ ÷ 3⅗

4. Prove that 2.3 × .04 = .092.

Add together 154.2125, .5421, .0001235, 741.206, .03, and 4567.0004.

Reduce 75.0125 cwt. to ounces.

5. A steamer makes a nautical mile (6,072 feet) in 3 minutes and 50 sec. Find her rate per hour in statute (common) miles.

6. There is a solid pile of bricks which is 36 feet long, 16 feet 6 in. wide, and 14 feet 6 in. high, and contains 122,496 bricks of uniform size; each brick is 9 in. long and 4½ in. wide ; find its thickness.

7. A London merchant transmits £250 10s. through Paris to New York ; if £1 = 24 francs, and 6 francs = $1.14 American currency, what sum in American currency will the merchant realize?

8. In a map of a country the scale is ₁⁄₆₀ of an inch to a mile (*i.e.*, ₁⁄₆₀ of an inch represents a mile), and a township is represented on this map by a square whose side is half an inch. How many acres in a township ?

9. If 4 men or 6 boys can do a work in 8 days, how long will it take 8 men and 4 boys to do such a piece of work ?

10. A. and B. were candidates for election in a constituency of 2,700 voters. The votes polled by A. were, to those polled by B., as 23 to 25, and B. was elected by a majority of 100. How many persons did not vote ?