

# Arithmetic Prize

## Shrewsbury School.

July, 1897.

### ARITHMETIC.

1. How can it be determined, without actual division, whether a number can be divided by 8, 9 or 11?

Find, without division, whether 50830296 be divisible by *any* or *all* of these numbers.

2. What must be the depth of a rectangular tank, 14 ft. long by 7 ft wide, so that it may contain 2450 gallons of water? A cubic foot of water contains  $6\frac{1}{4}$  gallons.

3. Find the amount of produce from a field of 19 ac. 2 ro. 36 po. 1 sq. yd., at the rate of 7 qrs. 4 bush. 2 pks. per acre.

4 Find all the numbers which divide without remainder both 154583 and 214643.

5. Simplify—

$$(i) \left( \frac{9\frac{7}{9} \text{ of } 10\frac{4}{5} + \frac{3\frac{5}{7} \text{ of } 3\frac{2}{9}}{\frac{3\frac{7}{9} \text{ of } 4\frac{1}{7}}{2 + \frac{1}{3 + \frac{1}{4 + \frac{1}{5}}}}} \right) \times \frac{1}{2 + \frac{1}{3 + \frac{1}{4 + \frac{1}{5}}}}$$

$$(ii) \frac{15.6 \times .011}{3.2092 - 3.1} - \frac{.265 - .07}{.05 \times 9.1},$$

$$(iii) \cdot 2\bar{1} \text{ of } 3.53\bar{5}7142\bar{8} \text{ of } 5 \text{ cwts. } 1 \text{ qr. } 17 \text{ lbs.}$$

6. An autocar and a dogcart start together from the same place to go in the same direction. The autocar takes 6 minutes to perform the first mile, but it subsequently travels at the rate of 18 miles an hour. The dogcart goes at a uniform rate of 12 miles an hour. Find which of them first reaches the end of the second mile; and how many yards it then is before the other carriage.

7. Assuming that a metre is 39.370 inches, and that £1 is equivalent to 25.20 francs; find, correct to the nearest half-centime, what railway fare in centimes a kilometre is equivalent to the English fare of one penny a mile.

8. For what price would goods be sold at a *profit* of 12 per cent., if there be a *loss* of 12 per cent. by selling them at £2 13s. 2d.?

9. Divide £285 among A, B and C, so that A's share may be three-fifths of B's share, and that B's share may be one-half of A's and C's shares together.

10. Find, correct to the nearest penny, the *compound* interest on £576 12s 6d. for 3 years at 4 per cent. per annum

11. Find, correct to the nearest penny, what rate of interest is obtained by investing money in  $2\frac{1}{2}$  per Cents. at  $106\frac{1}{4}$ .