

Shrewsbury School.

ARITHMETIC PRIZE, 1902.

1. Find the least perfect cube which is exactly divisible by 42, 56, 154, 231, and 484.

2. Add together $3\frac{3}{8}$ of $\frac{5}{9}$, $5\frac{1}{3}$ of $3\frac{1}{9}$ of $\frac{5}{9}$, $\frac{1\frac{5}{8}}{2\frac{1}{11}}$, and $\frac{2\frac{5}{7}}{\frac{4}{21}}$.

3. Find the quotient when the difference of the squares $\sqrt{123}$ and $\sqrt{012}$ is divided by $\sqrt{1132}$.

4. A train starts full of passengers: at the first station it drops one-third of these and takes in 96 more, at the next station it drops one-half of the new total and takes in 12 more, on reaching the third station 248 passengers get out and the train is then empty. How many started?

5. Find the present value of £150 due 3 months hence, judging the rate of interest from the price of 3% consols, which is 99 just after payment of a quarter's dividend.

6. A 3-quart vessel contains 2 quarts of wine, and a 2-quart vessel is full of water. Pour from the smaller into the larger till full, mix and pour back to fill the smaller. What is now the proportion of wine in the smaller, and what would it be if the operation were repeated?

7. C does half as much in a day as A and B can do together, and B does half as much again as A. If all three working together can mow 20 acres of barley in 16 days, how long would each, working by himself, take to mow 5 acres?

8. An article is first sold at a profit of 10%; the purchaser sells it for 4s. 7d., and calculates that his gain is 15% of the price at which he sells it. How much did the article originally cost?

9. What is the difference between the simple and compound interest on £8536 for 3 years, at 5% per annum?

10. A speculator having bought 100 seats to view the Coronation, calculated that by selling them at 5 guineas each he would make a profit of 25% on his outlay. After selling 60 he had to lower his price; if he still made 15% on the transaction, what did he charge for the last 40?

11. What sum should be insured at £2 2s. 6d. per £100, that the owner may recover, in case of loss, the value of the goods, £783, and the insurance premium?

12. The breadth of a lawn-tennis ground is two-thirds of its length, and the cost of levelling at 8d. a square yard is £115 4s. Find the cost of enclosing it with an iron railing at 6s. 8d. a yard.

13. If £100 amount to £112 in 3 years at compound interest, how much will it amount to in 6 years?