

B. gains 4 miles per hour, and must gain twenty miles to earn to overtake A.; A. and B. will therefore be together once in each ? every five hours.

85. In a river, supposing two boats start at the same time from places 300 miles apart; the one proceeding up stream is retarded by the current two miles per hour, while another, that moving down stream is accelerated the same; if both be propelled by a steam engine which would move them 8 miles per hour in still water, how far from each starting place will the boats meet?

Ans. 112½ miles from the lower place, and 187½ miles from the upper place.

86. A man bought a pipe (126 gallons) of wine for £275; he wishes to fill 10 bottles, 4 of which contain two quarts each, and 6 of them 3 pints each, and to sell the remainder so as to make 30 per cent on the first cost; at what rate per gallon must he sell it?

Ans. £5'936+
87. Thomas sold 150 pine apples at 1s. 3d. apiece, and received as much money as Harry received for a certain number of water-melons at 9d. apiece; how much money did each receive, and how many melons had Harry?

Ans. £9 7s. 6d. and 250 melons.
88. The third part of an army was killed, the fourth part taken prisoners, and 1000 fled, how many were in this army?

This and the 18 following questions are usually wrought by a rule called *Position*, but they are more easily solved on general principles. Thus, $\frac{1}{3} + \frac{1}{4} = \frac{7}{12}$ of the army; therefore, 1000 is $\frac{5}{12}$ of the whole number of men; and if $\frac{5}{12}$ be 1000, how much is 12 twelfths, or the whole?

Ans. 2400 men.
89. A farmer being asked how many sheep he had, answered that he had them in 5 fields; in the first were $\frac{1}{4}$ of his flock, in the second $\frac{1}{6}$, in the third $\frac{1}{8}$ in the fourth $\frac{1}{12}$, and in the fifth 450; how many had he?

Ans. 1200.
90. There is a pole, $\frac{1}{4}$ of which stands in the mud, $\frac{1}{3}$ in the water, and the rest of it out of the water; required the part out of the water.

Ans. $\frac{5}{12}$.
91. If a pole be $\frac{1}{3}$ in the mud, $\frac{3}{8}$ in the water, and 6 feet out of the water, what is the length of the pole?

Ans. 90 feet.
92. The amount of a certain school is as follows: $\frac{1}{16}$ of the pupils study grammar, $\frac{3}{8}$ geography, $\frac{3}{10}$ arithmetic, $\frac{3}{8}$

Ans.

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