

i. e., 72 lbs @ 30c., 48 lbs. @ 45c., and 24 lbs. @ 60c. 10 lbs. @ 30c. would gain as much, being sold @ 40c., as 20 lbs. @ 45 would lose, being also sold @ 40c., and similarly for the 60c. tea. Care must be taken that a loss is opposed to an equal gain.

7. A commission merchant sold a consignment of goods on 3% commission, and was instructed to invest (on 2% commission) in other goods, the commission for both transactions to be deducted in advance. His entire commission was \$265. Find value of the goods he purchased.

Solution :—

$$\frac{3}{100} + \frac{2}{102} \text{ of } \frac{97}{100} = \frac{5}{102} \text{ or, the total com,}$$

$$\therefore \frac{97}{102} = \text{amount invested.}$$

$$\frac{5}{102} = \$265. \quad \frac{97}{102} = \$5,141.$$

8. Find cost of papering a room 29 ft. 6 in. wide, 36 ft. 6 in. long, and 13 ft. 6 in. high, with paper 2½ ft. wide, and costing \$2.20 per piece of 12 yds. long, the parts not requiring paper making up ½ of whole surface.

Solution :—

$$(29\frac{1}{2} + 36\frac{1}{2}) 2 = 132 \text{ ft., total length of four walls.}$$

$$132 \times 13\frac{1}{2} \times \frac{1}{3} = \text{sq. ft. to be papered.}$$

$$\$2.20 \div (2\frac{1}{2} \times 36) = \text{cost per sq. ft.}$$

$$\therefore 132 \times 13\frac{1}{2} \times \frac{1}{3} \times 2.20 \times \frac{1}{8} = \$31.68, \text{ total cost.}$$

9. Two persons travelling together agree to pay expenses in the ratio of 7 to 5. The first (who contributes the greater sum) pays away on the whole, \$103.20; the second, \$63.40. What must one pay the other to settle the affair according to agreement?

Solution :—

$$\$103.20 + \$63.40 = \$166.60.$$

$$\frac{7}{12} \text{ of } \$166.60 = \$97.18\frac{1}{3} \text{ or greater share.}$$

$$\therefore \$103.20 - \$97.18\frac{1}{3} = \$6.01\frac{2}{3}.$$

10. The sides of a triangle are 30, 40 and 50 respectively. Find the area of the triangle formed by joining the middle points of these sides.

Solution :—

The figure is a right-angled triangle; the line joining the middle points of two sides parallel to the third side, therefore a new right-angled triangle will be formed, whose sides are resp. 15, 20 and 25. The area, therefore, is $15 \times 20 \div 2$, or 150.

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