

Proportions & Percent

Fractions, Decimals & % · Grade 7

Score: _____ / 10

★ Hard · 10 Questions

Solve each problem. Show your work in the space provided. Write your answer on the line.

- Three numbers are in ratio 2:3:5. Their sum is 80. Find the three numbers.

Answer: _____

- A mixture of paint uses red and blue in ratio 3:7. You have 24 L of red. How much blue is needed? What is the total volume?

Answer: _____

3. Price of an item increased from \$45 to \$54. Find the ratio of increase to original price, and the percent increase.

Answer: _____

4. Divide \$360 among A, B, and C in ratio 2:3:4.

Answer: _____

5. A store offers a 15% discount on a \$240 jacket. What is the sale price and what is the ratio of discount to sale price?

Answer: _____

6. Mix concrete: cement:sand:gravel = 1:2:4. You have 3 bags of cement. How many bags of sand and gravel?

Answer: _____

7. Two trains leave at the same time. Train A goes 60 mph, Train B goes 75 mph. After 4 hours, how far apart?

Answer: _____

8. If 8 workers paint a house in 6 days, how many workers to paint it in 4 days?

Answer: _____

9. A scale on a map shows $1 \text{ cm} = 50 \text{ km}$. Two cities are 7.5 cm apart on the map. Find actual distance.

Answer: _____

10. A bag has marbles in ratio red:blue:green = 3:4:5. There are 24 blue marbles. How many total?

Answer: _____

Answer Key

Proportions & Percent — Hard

1. 16, 24, 40

Parts: $2+3+5=10$. Each part = $80 \div 10 = 8$. Numbers: $2 \times 8 = 16$, $3 \times 8 = 24$, $5 \times 8 = 40$.

2. 56 L blue; 80 L total

$3:7 = 24:b$. $b = (24 \times 7) \div 3 = 56$ L. Total = $24 + 56 = 80$ L.

3. Ratio 1:5; 20% increase

Increase = \$9. Ratio: $9:45 = 1:5$. Percent: $(9 \div 45) \times 100 = 20\%$.

4. A=\$80, B=\$120, C=\$160

Parts: $2+3+4=9$. Each part = $360 \div 9 = \$40$. $A = 2 \times 40 = \$80$, $B = 3 \times 40 = \$120$, $C = 4 \times 40 = \$160$.

5. Sale price = \$204; ratio = 2:17

Discount = $15\% \times \$240 = \36 . Sale = $\$240 - \$36 = \$204$. Ratio: $36:204 = 2:17$ ($\div 18$).

6. 6 sand, 12 gravel

Cement = $3 (\times 3)$. Sand = $2 \times 3 = 6$. Gravel = $4 \times 3 = 12$.

7. 60 miles (if same direction) or 540 miles (if opposite)

Same direction: $(75-60) \times 4 = 60$ miles. Opposite: $(75+60) \times 4 = 540$ miles.

8. 12 workers

Inverse proportion: $8 \times 6 = 48$ worker-days. $48 \div 4 = 12$ workers.

9. 375 km

$7.5 \times 50 = 375$ km.

10. 72 marbles

Blue = 4 parts = 24. Each part = 6. Total = $(3+4+5) \times 6 = 12 \times 6 = 72$.