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1. Express the ratio 12:16 in its simplest form.

Answer:

$$12:16 = 3:4 \text{ (Divide both numbers by 4)}$$

2. Divide \$120 in the ratio 2:3.

Answer:

$$\text{Total parts} = 2 + 3 = 5$$

$$\text{Each part} = \$120 \div 5 = \$24$$

$$\text{So: } 2 \text{ parts} = 2 \times 24 = \$48, 3 \text{ parts} = 3 \times 24 = \$72$$

Result: \$48 and \$72

3. The ratio of cats to dogs is 4:7. If there are 28 dogs, how many cats are there?

Answer:

$$\text{If } 7 \text{ parts} = 28 \text{ dogs ? } 1 \text{ part} = 4$$

$$\text{So, cats} = 4 \text{ parts} = 4 \times 4 = 16 \text{ cats}$$

4. A person earns \$240 for working 8 hours. What is the rate of pay per hour?

Answer:

$$\$240 \div 8 = \$30 \text{ per hour}$$

5. Are the ratios 6:9 and 8:12 proportional?

Answer:

$$6:9 = 2:3, 8:12 = 2:3 \text{ ? Yes, they are proportional}$$

6. If 3 shirts cost \$45, how much would 5 shirts cost at the same rate?

Answer:

$$1 \text{ shirt} = \$45 \div 3 = \$15$$

$$5 \text{ shirts} = 5 \times 15 = \$75$$

7. If 5 pens cost \$10, how much do 12 pens cost?

Answer:

$$1 \text{ pen} = \$10 \div 5 = \$2$$

$$12 \text{ pens} = 12 \times 2 = \$24$$

8. A class has 18 boys and 12 girls. What is the ratio of boys to the total number of students?

Answer:

$$\text{Total} = 18 + 12 = 30$$

$$\text{Ratio} = 18:30 = 3:5$$

9. Find 25% of 480.

Answer:

$$25\% \text{ of } 480 = (25/100) \times 480 = 120$$

10. A jacket is sold for \$150 after a 20% discount. What was the original price?

Answer:

Let original price be x .

$$x - 20\% \text{ of } x = 150 \Rightarrow 0.8x = 150 \Rightarrow x = 150 \div 0.8 = \$187.50$$

11. A salesperson earns a 5% commission on sales. If they sell goods worth \$2,000, how much commission do they earn?

Answer:

$$\text{Commission} = 5\% \text{ of } 2000 = (5/100) \times 2000 = \$100$$

12. If 60% of a number is 180, what is the original number?

Answer:

Let the number be x .

$$0.6x = 180 \Rightarrow x = 180 \div 0.6 = 300$$

13. Find the simple interest on \$1,200 at a rate of 5% per annum for 3 years.

Answer:

$$\text{Simple Interest} = (P \times R \times T)/100 = (1200 \times 5 \times 3)/100 = \$180$$

14. A sum of \$2,000 is invested at 10% per annum for 3 years compounded annually. Find the total amount.

Answer:

Compound Interest Formula:

$$A = P(1 + r)^t = 2000(1 + 0.10)^3$$

$$= 2000 \times (1.1)^3 = 2000 \times 1.331 = \$2,662$$

$$\text{Total Amount} = \$2,662$$

15. A loan of \$2,000 is given for 2 years at a rate of 6% per annum. What is the total amount to be repaid at the end of the period (simple interest)?

Answer:

$$\text{Simple Interest} = (2000 \times 6 \times 2)/100 = \$240$$

$$\text{Total} = 2000 + 240 = \$2,240$$