

Alpha University, Borama  
Department of Math's Methods  
Individual Assignment – 30 Marks  
Name: mustafe Ali hassan.  
Faculty: project management  
ID:498

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

Solution:

Divide both numbers by their greatest common divisor (4):

$$12 \div 4 = 3$$

$$16 \div 4 = 4$$

Answer: 3:4

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

Solution:

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

$$\text{Value per part} = \$120 \div 5 = \$24$$

$$\text{First part: } 2 \times \$24 = \$48$$

$$\text{Second part: } 3 \times \$24 = \$72$$

Answer: \$48 and \$72

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

Solution:

Let the number of cats be  $(x)$ .

$$\text{Given ratio: } \left( \frac{x}{28} = \frac{4}{7} \right)$$

$$\text{Cross-multiply: } (7x = 112)$$

$$(x = 16)$$

Answer: 16 cats

4. If a person earns \$240 for working 8 hours, what is the rate of pay per hour?

Solution:

$$\text{Rate} = \text{Total earnings} \div \text{Hours worked} = \$240 \div 8 = \$30/\text{hour}$$

Answer: \$30 per hour

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

Solution:

Simplify both ratios:

$$6:9 = 2:3 \text{ (divided by 3)}$$

$$8:12 = 2:3 \text{ (divided by 4)}$$

Answer: Yes, they are proportional (both simplify to 2:3).

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

Solution:

$$\text{Cost per shirt} = \$45 \div 3 = \$15$$

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

Answer: \$75

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

Solution:

$$\text{Cost per pen} = \$10 \div 5 = \$2$$

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

Answer: \$24

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

Solution:

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

$$\text{Ratio of boys to total} = 18:30 = 3:5 \text{ (simplified)}$$

Answer: 3:5

9. Find 25% of 480.

Solution:

$$25\% \text{ of } 480 = 0.25 \times 480 = 120$$

Answer: 120

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

Solution:

Let the original price be  $x$ .

Discounted price = 80% of  $x = \$150$

$$0.8x = 150$$

$$x = 150 \div 0.8 = 187.50$$

Answer: \$187.50

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

Solution:

$$\text{Commission} = 5\% \text{ of } \$2,000 = 0.05 \times 2,000 = \$100$$

Answer: \$100

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

Solution: be

Let the number be  $x$ .

$$0.6x = 180$$

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

Answer: 300

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

Solution:

Simple Interest = Principal  $\times$  Rate  $\times$  Time

$$= 1,200 \times 0.05 \times 3 = 180$$

Answer: \$180

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

Solution:

Compound Interest formula:  $A = P(1 + r)^n$

$$A = 2,000(1 + 0.10)^3 = 2,000 \times 1.331 = 2,662$$

Answer: \$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?\*

Solution:

$$\text{Simple Interest} = 2,000 \times 0.06 \times 2 = 240$$

$$\text{Total repayment} = \text{Principal} + \text{Interest} = 2,000 + 240 = 2,240$$

Answer: \$2,240