Alpha University, Borama

Department of Math’s Methods

Individual Assignment – 30 Marks

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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 ÷ 4 = 3

16 ÷ 4 = 4

Answer: 3:4

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

Solution:

Total parts = 2 + 3 = 5

Value per part = $120 ÷ 5 = $24

First part: 2 × $24 = $48

Second part: 3 × $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 \( x \).

Given ratio: \( \frac{x}{28} = \frac{4}{7} \)

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:

Rate = Total earnings ÷ Hours worked = $240 ÷ 8 = $30/hour

Answer: $30 per hour

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

Solution:

Simplify both ratios:

6:9 = 2:3 (divided by 3)

8:12 = 2:3 (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:

Cost per shirt = $45 ÷ 3 = $15

Cost for 5 shirts = 5 × $15 = $75

Answer: $75

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

Solution:

Cost per pen = $10 ÷ 5 = $2

Cost for 12 pens = 12 × $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:

Total students = 18 + 12 = 30

Ratio of boys to total = 18:30 = 3:5 (simplified)

Answer: 3:5

9. Find 25% of 480.

Solution:

25% of 480 = 0.25 × 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

\( 0.8x = 150 \)

\( x = 150 ÷ 0.8 = 187.50 \)

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:

Commission = 5% of $2,000 = 0.05 × 2,000 = $100

Answer: $100

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

Solution: be

Let the number be \( x \).

\( 0.6x = 180 \)

\( x = 180 ÷ 0.6 = 300 \)

Answer: 300

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

Solution:

Simple Interest = Principal × Rate × Time

= \( 1,200 × 0.05 × 3 = 180 \)

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: \( A = P(1 + r)^n \)

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

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:

Simple Interest = \( 2,000 × 0.06 × 2 = 240 \)

Total repayment = Principal + Interest = \( 2,000 + 240 = 2,240 \)

Answer: $2,240