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**Assignment** (Mathematics)

1. Simplify the ratio 12:16

Divide both numbers by their greatest common divisor, which is 4:

12 ÷ 4 = 3, 16 ÷ 4 = 4

Answer: 3:4

2. Divide $120 in the ratio 2:3

Total parts = 2 + 3 = 5

Each part = $120 ÷ 5 = $24

First share = 2 × $24 = $48

Second share = 3 × $24 = $72

Answer: $48 and $72

3. Cats to dogs ratio is 4:7; if there are 28 dogs, how many cats?

Let the number of cats be x.

Then, x / 28 = 4 / 7

Cross-multiplying: 7x = 4 × 28 = 112

x = 112 ÷ 7 = 16

Answer: 16 cats

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

Rate = $240 ÷ 8 = $30/hour

Answer: $30 per hour

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

Simplify both ratios:

6:9 = 2:3

8:12 = 2:3

Since both simplify to the same ratio, they are proportional.

Answer: Yes, they are proportional.

6. If 3 shirts cost $45, how much would 5 shirts cost?

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?

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 total students?

Total students = 18 + 12 = 30

Ratio = 18:30 = 3:5 (after simplifying)

Answer: 3:5

9. Find 25% of 480

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?

Let the original price be x.

After a 20% discount, the price is 80% of x:

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?

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?

Let the number be x.

60% of x = 180 → 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

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.

Amount = Principal × (1 + Rate)^Time

= $2,000 × (1 + 0.10)^3

= $2,000 × (1.1)^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?

Simple Interest = $2,000 × 0.06 × 2 = $240

Total repayment = Principal + Interest = $2,000 + $240 = $2,240

Answer: $2,240