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Assignment of Math's Methods

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Solutions:

1. Express the ratio 12:16 in its simplest form:
Divide both numbers by their greatest common divisor (GCD), which is 4:
12 ÷ 4 = 3, 16 ÷ 4 = 4
Simplified ratio = 3:4

2. Divide $120 in the ratio 2:3:
Total parts = 2 + 3 = 5
Each part = $120 ÷ 5 = $24
So, 2 parts = 2 × $24 = $48, 3 parts = 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?
Let the number of cats be x.
According to the ratio: x / 28 = 4 / 7
Cross-multiplying: 7x = 4 × 28 = 112 ? x = 112 ÷ 7 = 16
Answer: 16 cats

4. If a person earns $240 for working 8 hours, what is the rate of pay per hour?
Rate = Total pay ÷ Hours = $240 ÷ 8 = $30/hour

5. Are the ratios 6:9 and 8:12 proportional?
Simplify 6:9 = 2:3, and 8:12 = 2:3
Since both simplify to the same ratio, they are proportional.
Answer: Yes

6. If 3 shirts cost $45, how much would 5 shirts cost at the same rate?
Cost per shirt = $45 ÷ 3 = $15
Cost of 5 shirts = 5 × $15 = $75

7. If 5 pens cost $10, how much do 12 pens cost?
Cost per pen = $10 ÷ 5 = $2
Cost of 12 pens = 12 × $2 = $24

8. A class has 18 boys and 12 girls. What is the ratio of boys to the total number of students?
Total students = 18 + 12 = 30
Ratio = 18:30 = 3:5 (simplified)

9. Find 25% of 480:
25% = 25 ÷ 100 = 0.25
0.25 × 480 = 120

10. A jacket is sold for $150 after a 20% discount. What was the original price?
Let original price be x
After 20% discount, price = x - 0.2x = 0.8x
0.8x = 150 ? x = 150 ÷ 0.8 = $187.50

11. A salesperson earns a 5% commission on $2,000:
Commission = 5% of $2,000 = 0.05 × 2000 = $100

12. If 60% of a number is 180, what is the original number?
Let the number be x.
0.6x = 180 ? x = 180 ÷ 0.6 = 300

13. Find the simple interest on $1,200 at 5% per annum for 3 years:
SI = (P × R × T) ÷ 100 = (1200 × 5 × 3) ÷ 100 = $180

14. A sum of $2,000 is invested at 10% per annum for 3 years compounded annually:
A = P(1 + r)^t = 2000 × (1 + 0.10)^3 = 2000 × 1.331 = $2,662

15. A loan of $2,000 is given for 2 years at 6% per annum (simple interest):
SI = (2000 × 6 × 2) ÷ 100 = $240
Total repayment = 2000 + 240 = $2,240