# Mathematics Assignment: Ratios, Percentages & Interest

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1. **1. What is the simplest form of the ratio 12 to 16?**

To simplify, divide both numbers by their greatest common factor which is 4.  
So, 12 ÷ 4 = 3 and 16 ÷ 4 = 4. Final answer: 3:4

1. **2. Share $120 in the ratio 2 to 3.**

Total parts = 2 + 3 = 5  
Each part = 120 ÷ 5 = $24  
So, shares are: 2 × 24 = $48 and 3 × 24 = $72

1. **3. There are 28 dogs in a pet shop with a 4:7 cat-to-dog ratio. How many cats are there?**

7 parts represent 28 dogs → 1 part = 4  
Cats = 4 × 4 = 16

1. **4. What is the hourly rate if someone earns $240 for 8 hours of work?**

$240 ÷ 8 = $30/hour

1. **5. Check if the ratios 6:9 and 8:12 are equivalent.**

6 ÷ 9 = 0.666…, 8 ÷ 12 = 0.666… → Yes, the ratios are proportional.

1. **6. If 3 shirts cost $45, what is the cost of 5 shirts?**

Each shirt = 45 ÷ 3 = $15 → 5 × 15 = $75

1. **7. What would 12 pens cost if 5 pens are $10?**

Cost per pen = $2 → 12 × 2 = $24

1. **8. A class has 18 boys and 12 girls. Find the ratio of boys to total students.**

Total = 30 → Ratio = 18:30 = simplified to 3:5

1. **9. Calculate 25 percent of 480.**

0.25 × 480 = 120

1. **10. A jacket costs $150 after a 20% discount. What was the price before the discount?**

Let original be x: 0.8x = 150 → x = 150 ÷ 0.8 = $187.50

1. **11. What is 5% commission on a $2000 sale?**

5% × 2000 = $100

1. **12. If 60% of a number equals 180, find the number.**

0.6x = 180 → x = 180 ÷ 0.6 = 300

1. **13. How much simple interest will $1200 earn at 5% per year over 3 years?**

SI = (1200 × 5 × 3)/100 = $180

1. **14. Find the compound amount after investing $2000 at 10% interest for 3 years.**

A = 2000 × (1.1)^3 = 2000 × 1.331 = $2,662

1. **15. Determine the repayment on a $2000 loan over 2 years at 6% simple interest.**

SI = (2000 × 6 × 2)/100 = $240 → Total repayment = 2000 + 240 = $2,240