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**ALPHA UNIVERSITY BORAMA**

***Assignment of math’s methods***

**Name: kaltoun Ali Mohamed**

**faculty: Social work ID: 423**

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

**Solution**

**(dividing both by 4)**

**12:16 = 3:4**

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

**Solution**

**Total parts = 2 + 3 = 5**

**120 ÷ 5 = 24**

**2 parts = 24 × 2 = $48**

**3 parts = 24 × 3 = $72**

**Answer: $48 and $72**

1. The ratio of cats to dogs in a pet shop is 4:7. If there are 28 dogs, how many cats are there?

**Solution**

**7 parts = 28 → 1 part = 4**

**4 parts = 4 × 4 = 16 cats**

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

**Solution**

**$240 ÷ 8 = $30 per hour**

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

**Solution**

**Step 1: Simplify both ratios.  
6:9 simplifies to (divide both by 3)=2:3, and**

**8:12 simplifies to (divide both by 4)=2:3   
Since both simplified ratios are equal, they are proportional.**

**6:9 = 2:3**

**8:12 = 2:3  
The Answer is Yes, they are proportional.**

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

**Solution**

**1 shirt = $45 ÷ 3 = $15**

**5 shirts = 5 × $15 = $75**

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

**Solution**

**1 pen = $10 ÷ 5 = $2**

**12 pens = 12 × $2 = $24**

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

**Solution**

**Step 1: Total students = 18 + 12 = 30.  
Step 2: Ratio = boys : total = 18 : 30.  
Step 3: Simplify ratio: 18 ÷ 6 = 3, 30 ÷ 6 = 5  
so the ratio is : 3:5**

1. Find 25% of 480.

**Solution**

**25% × 480 = 0.25 × 480 = 120**

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

**Solution**

**Let original price = x**

**After 20% discount: x - 0.2x = $150 → 0.8x = $150 → x = $150 ÷ 0.8 = $187.50**

**the original price =187.50**

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

**Solution**

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

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

**Solution**

**Let the number be x. 60% of x is written as 0.6x = 180  
Solve: x = 180 ÷ 0.6 = 300.  
Final Answer: 300**

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

**Solution**

**SI = (P × R × T)/100 = (1200 × 5 × 3)/100 = $180**

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

**Solution**

**Formula: of compound interest**

**A = P(1 + r)^t**

**P = 2000**

**r = 10% = 0.10**

**t = 3 years**

**A = 2000(1 + 0.10)^3 = 2000 × (1.1)^3 = 2000 × 1.331 = $2,662**

1. 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**

**SI = (P × R × T) / 100**

**P = 2000**

**R = 6%**

**T = 2 years**

**SI = (2000 × 6 × 2)/100 = $240**

**Total = 2000 + 240 = $2,240**