**ALPHA UNIVERSITY BORAMA**

**Assignment of math’s methods**

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**The assignment**

**Individual assailment the assignment 30 marks**

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1. Express the ratio 12:16 in its simplest form.
2. Divide $120 in the ratio 2:3.
3. The ratio of cats to dogs in a pet shop is 4:7. If there are 28 dogs, how many cats are there?
4. If a person earns $240 for working 8 hours, what is the rate of pay per hour?
5. Are the ratios 6:9 and 8:12 proportional?
6. If 3 shirts cost $45, how much would 5 shirts cost at the same rate?
7. If 5 pens cost $10, how much do 12 pens cost?
8. A class has 18 boys and 12 girls. What is the ratio of boys to the total number of students?
9. Find 25% of 480.
10. A jacket is sold for $150 after a 20% discount. What was the original price?
11. A salesperson earns a 5% commission on sales. If they sell goods worth $2,000, how much commission do they earn?
12. If 60% of a number is 180, what is the original number?
13. Find the simple interest on $1,200 at a rate of 5% per annum for 3 years.
14. A sum of $2,000 is invested at 10% per annum for 3 years compounded annually. Find the total amount.
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?

**ANSWER SHEET**

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

**Answer:**  
  
First, I look at the ratio given, which is 12 to 16.  
  
To simplify it, I need to divide both numbers by their highest common factor.  
  
The highest common factor of 12 and 16 is 4.  
  
Now I divide both numbers by 4:  
12 ÷ 4 = 3 and 16 ÷ 4 = 4  
  
So, **the simplest form of the ratio 12:16 is:  
  
=3:4**

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

**Answer**:  
  
First, I add the parts of the ratio together: 2 + 3 = 5 parts.  
  
Now I divide the total amount, which is $120, by 5 to find the value of one part:  
$120 ÷ 5 = $24 per part.  
  
Now I multiply to find each share:  
Person 1 gets 2 parts: 2 × $24 = $48  
Person 2 gets 3 parts: 3 × $24 = $72  
  
So, **$120 divided in the ratio 2:3 is:  
  
=$48 and $72**

1. **Question 3:** The ratio of cats to dogs in a pet shop is 4:7. If there are 28 dogs, how many cats are there?

**Answer**:  
  
We are given the ratio of cats to dogs is 4:7, and the number of dogs is 28.  
  
Since the dogs represent the '7' in the ratio, we divide 28 by 7 to find the value of one part:  
28 ÷ 7 = 4  
  
Now we multiply the number of cat parts by 4:  
4 × 4 = 16  
  
So, **there are:  
  
16 cats in the pet shop.**

1. **Question 4**: If a person earns $240 for working 8 hours, what is the rate of pay per hour?

**Answer**:

Rate = Total earnings ÷ Hours worked = $240 ÷ 8 = $30  
So, **the rate of pay is:  
$30 per hour**

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

**Answer**:

Simplify both ratios:  
6:9 = 2:3  
8:12 = 2:3  
Since both ratios are equal:  
**Yes, the ratios are proportional**

1. **Question 6:** If 3 shirts cost $45, how much would 5 shirts cost at the same rate?

**Answer**:

Cost per shirt = $45 ÷ 3 = $15  
Cost for 5 shirts = 5 × $15 = $75  
So, **5 shirts would cost:  
$75**

1. **Question 7:** If 5 pens cost $10, how much do 12 pens cost?

**Answer**:

Cost per pen = $10 ÷ 5 = $2  
Cost for 12 pens = 12 × $2 = $24  
So, **12 pens would cost:  
$24**

1. **Question 8**: A class has 18 boys and 12 girls. What is the ratio of boys to the total number of students?

**Answer**:

Total number of students = 18 + 12 = 30  
Ratio of boys to total = 18:30 = 3:5  
So, **the ratio is:  
3:5**

1. **Question 9:** Find 25% of 480.

**Answer**:

25% of 480 = (25 ÷ 100) × 480 = 0.25 × 480 = 120  
So, **the answer is:  
=120**

1. **Question 10:** A jacket is sold for $150 after a 20% discount. What was the original price?

**Answer**:

Let the original price be x.  
80% of x = $150  
0.8x = 150  
x = 150 ÷ 0.8 = $187.50  
So, **the original price was:  
$187.50**

1. **Question 11:** A salesperson earns a 5% commission on sales. If they sell goods worth $2,000, how much commission do they earn?

**Answer**:

Commission = 5% of $2,000 = 0.05 × 2,000 = $100  
So, **the commission earned is:  
= $100**

1. **Question 12:** If 60% of a number is 180, what is the original number?

**Answer**:

Let the number be x.  
60% of x = 180  
0.6x = 180  
x = 180 ÷ 0.6 = 300  
So**, the original number is:  
= 300**

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

**Answer**:

Simple Interest = P × R × T ÷ 100  
= 1200 × 5 × 3 ÷ 100 = $180  
So, **the simple interest is:  
= $180**

1. **Question 14:** A sum of $2,000 is invested at 10% per annum for 3 years compounded annually. Find the total amount.

**Answer**:

Amount = P × (1 + R/100)^T  
= 2000 × (1 + 0.10)^3  
= 2000 × 1.1^3 = 2000 × 1.331 = $2,662  
So, **the total amount is:  
$2,662**

1. **Question 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?

**Answer**:

Simple Interest = 2000 × 6 × 2 ÷ 100 = $240  
Total amount = Principal + Interest = 2000 + 240 = $2,240  
So, **the total amount to be repaid is:  
$2,240**