**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.?

To simplify the ratio 12:16:

1. Find the greatest common divisor (GCD) of 12 and 16.
   1. The GCD of 12 and 16 is 4.
2. Divide both terms by 4:
   1. 12 ÷ 4 = 3
   2. 16 ÷ 4 = 4

Simplified ratio: 3:4.

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

To divide $120 in the ratio **2:3**:

1. Add the parts of the ratio:  
   2 + 3 = **5 parts**
2. Find the value of one part:  
   $120 ÷ 5 = **$24**
3. Multiply each part:
   * First part (2 parts): 2 × $24 = **$48**
   * Second part (3 parts): 3 × $24 = **$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?

The ratio of cats to dogs is **4:7**, and there are **28 dogs**.

1. The "dog" part of the ratio is 7.
2. Set up a proportion:

Cats/dogs=4/7

x/28=4/7

1. Solve for x (number of cats):

x=4/7×28= 16

**Answer: There are 16 cats.**

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

To find the **rate of pay per hour**:

Rate per hour=Total pay/Total hours=240/8=30

**Answer: $30 per hour**

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

To check if the ratios **6:9** and **8:12** are proportional, simplify both:

* **6:9** simplifies by dividing both terms by 3:

6/9=2/3

* **8:12** simplifies by dividing both terms by 4:

8/12=2/3

Since both simplify to **2:3**, **yes, the ratios are proportional**.

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

To find the cost of 5 shirts at the same rate:

1. First, find the cost of **one shirt**:

45/3=15

1. Then, multiply by 5:

5×15=75

**Answer: $75 for 5 shirts.**

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

To find the cost of 12 pens:

1. Find the cost of **one pen**:

10/5=2

1. Multiply by 12:

12×2=24

**Answer: $24 for 12 pens**

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

To find the **ratio of boys to the total number of students**:

1. Total number of students = 18 boys + 12 girls = **30 students**
2. Ratio of boys to total = 18/30=3/5

**Answer: 3:5**

1. Find 25% of 480.?

To find **25% of 480**: 25%=25/100=1/4. 1/4 ​×480=120

**Answer: 120**

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

Let the **original price** be x.

Since there's a **20% discount**, the jacket is sold for **80% of the original price**:

0.80×X=150

Solve for x:

x=150/0.80=187.50

**Answer: The original price was $187.50**

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

To calculate **5% commission** on $2,000:

Commission=5/100×2000=0.05×2000=100

**Answer: $100 commission**

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

Let the original number be x.

Given:

60% of x=180⇒0.60×x=180

Solve for x:

x=180/0.60=300

**Answer: The original number is 300**

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

To find **simple interest**, use the formula:

Simple Interest=P×R×T/100

* P=1200 (principal)
* R=5% (rate)
* T=3 years

SI=1200×5×3/100=18000/100=180

**Answer: $180 in simple interest**

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

To find the **total amount** with **compound interest**, use the formula:

A=P×(1+R/100)^t

* P=2000 (principal)
* R=10% (rate)
* T=3 years

A=2000×(1+10/100)^3=2000×(1.10)^3l

A=2000×1.331=266

**Answer: $2,662 total amount**

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?

To find the **total amount to be repaid** using **simple interest**,

SI=P×R×T/100

* P=2000
* R=6%
* T=2 years

SI=2000×6×2/100=24000/100=240

Total=Principal+Interest=2000+240=2240

**Answer: $2,240 to be repaid**