**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?

**SOLUTION**

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

Answer:

Divide both by 4:

12 ÷ 4 = 3, 16 ÷ 4 = 4

Simplest form = 3:4

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

Answer:

Total parts = 2 + 3 = 5

$120 ÷ 5 = $24

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?

Answer:

7 parts = 28 → 1 part = 4

Cats = 4 parts = 4 × 4 = 16 cats

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

Answer:

$240 ÷ 8 = $30 per hour

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

Answer:

6:9 = 2:3

8:12 = 2:3

Yes, they are proportional.

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

Answer:

Cost per shirt = $45 ÷ 3 = $15

5 shirts = 5 × 15 = $75

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

Answer:

Cost per pen = $10 ÷ 5 = $2

12 pens = 12 × 2 = $24

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

Answer:

Total students = 18 + 12 = 30

Ratio = 18:30 = 3:5 (simplified)

Answer: 3:5

**9.** Find 25% of 480.

Answer:25% of 480 = 0.25 × 480 = 120

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

Answer:

Selling price = 80% of original price

$150 = 0.8 × original price

Original price = 150 ÷ 0.8 = $187.50

**11**. A salesperson earns a 5% commission on sales. If they sell goods worth $2,000, how much is the commission?

Answer:

5% of $2,000 = 0.05 × 2000 = $100

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

Answer:

0.6 × number = 180

Number = 180 ÷ 0.6 = 300

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

Answer:

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. Find the total amount.

Answer:

A = P(1 + r/100)^t = 2000(1 + 0.10)^3

= 2000 × 1.1^3 = 2000 × 1.331 = $2,662

**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?

Answer (Simple Interest):

SI = (2000 × 6 × 2) / 100 = $240

Total = 2000 + 240 = $2,240