



ALPHA UNIVERSITY BORAMA

Assignment of math's methods

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The assignment

Individual assignment the assignment 30 marks

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Express the ratio 12:16 in its simplest form.

Divide \$120 in the ratio 2:3.

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

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

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

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

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

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

Find 25% of 480.

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

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

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

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

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

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:

$$12 \div 4 = 3, 16 \div 4 = 4$$

Simplest form = 3:4

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

Answer:

$$\text{Total parts} = 2 + 3 = 5$$

$$\$120 \div 5 = \$24$$

$$2 \text{ parts} = 2 \times 24 = \$48$$

$$3 \text{ parts} = 3 \times 24 = \$72$$

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:

$$7 \text{ parts} = 28 \text{ ? } 1 \text{ part} = 4$$

$$\text{Cats} = 4 \text{ parts} = 4 \times 4 = 16 \text{ cats}$$

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

Answer:

$$\$240 \div 8 = \$30 \text{ per hour}$$

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:

$$\text{Cost per shirt} = \$45 \div 3 = \$15$$

$$5 \text{ shirts} = 5 \times 15 = \$75$$

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

Answer:

$$\text{Cost per pen} = \$10 \div 5 = \$2$$

$$12 \text{ pens} = 12 \times 2 = \$24$$

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

Answer:

$$\text{Total students} = 18 + 12 = 30$$

$$\text{Ratio} = 18:30 = 3:5 \text{ (simplified)}$$

Answer: 3:5

9. Find 25% of 480.

$$\text{Answer: } 25\% \text{ of } 480 = 0.25 \times 480 = 120$$

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

Answer:

Selling price = 80% of original price

$$\$150 = 0.8 \times \text{original price}$$

$$\text{Original price} = 150 \div 0.8 = \$187.50$$

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

Answer:

$$5\% \text{ of } \$2,000 = 0.05 \times 2000 = \$100$$

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

Answer:

$$0.6 \times \text{number} = 180$$

$$\text{Number} = 180 \div 0.6 = 300$$

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

Answer:

$$SI = (P \times R \times T) / 100$$

$$= (1200 \times 5 \times 3) / 100 = \$180$$

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

Answer:

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

$$= 2000 \times 1.1^3 = 2000 \times 1.331 = \$2,662$$

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):

$$SI = (2000 \times 6 \times 2) / 100 = \$240$$

$$\text{Total} = 2000 + 240 = \$2,240$$