



## CLASS NOTES-ANSWERS

### EXERCISE 2.4

1. Amina thinks of a number and subtracts  $\frac{5}{2}$  from it. She multiplies the result by 8. The result now obtained is 3 times the same number she thought of. What is the number?

Answer:

Let the number be  $x$ .

$$\left(x - \frac{5}{2}\right) 8 = 3x$$

$$8x - 20 = 3x$$

Transposing  $3x$  to LHS and  $-20$  to RHS, we obtain

$$8x - 3x = 20$$

$$5x = 20$$

Dividing both sides by 5, we obtain

$$x = 4$$

Hence, the number is 4.

2. A positive number is 5 times another number. If 21 is added to both the numbers, then one of the new numbers becomes twice the other new number. What are the numbers?

Answer:

Let the numbers be  $x$  and  $5x$ .

$$21 + 5x = 2(x + 21)$$

$$21 + 5x = 2x + 42$$



$$5x - 2x = 42 - 21$$

$$3x = 21$$

$$x = 7$$

First number is 7

Second number is  $5x = 5 \times 7 = 35$

Hence, the numbers are 7 and 35 respectively.

3. Sum of the digits of a two-digit number is 9. When we interchange the digits, it is found that the resulting new number is greater than the original number by 27. What is the two-digit number?

Answer:

Let the digits at tens place and ones place be  $x$  and  $9 - x$

Therefore, original number =  $10x + (9 - x)$

On interchanging the digits, the digits at ones place and tens place will be  $x$  and  $9 - x$  respectively.

Therefore, new number after interchanging the digits:

$$= 10(9 - x) + x$$

$$= 90 - 10x + x$$

$$= 90 - 9x$$

New number = Original number + 27

$$90 - 9x = 9x + 9 + 27$$

$$90 - 9x = 9x + 36$$

$$90 - 36 = 18x$$

$$54 = 18x$$



$$3 = x$$

$$9 - x = 6$$

Hence, the digits at tens place and ones place of the number are 3 and 6 respectively.

Therefore, the two-digit number is  $9x + 9 = 9 \times 3 + 9 = 36$

4. One of the two digits of a two digit number is three times the other digit. If you interchange the digits of this two-digit number and add the resulting number to the original number, you get 88. What is the original number?

Answer:

Let the digits at tens place and ones place be  $x$  and  $3x$  respectively.

Therefore, original number =  $10x + 3x = 13x$

On interchanging the digits, the digits at ones place and tens place will be  $x$  and  $3x$  respectively.

Number after interchanging =  $10 \times 3x + x = 30x + x = 31x$

Original number + New number = 88

$$13x + 31x = 88$$

$$44x = 88$$

$$x = 2$$

Therefore, original number =  $13x = 13 \times 2 = 26$

By considering the tens place and ones place as  $3x$  and  $x$  respectively, the two-digit number obtained is 62.

Therefore, the two-digit number may be 26 or 62.

5. Shobo's mother's present age is six times Shobo's present age. Shobo's age



five years from now will be one third of his mother's present age. What are their present ages?

**Answer:**

Let Shobo's age be  $x$  years. Therefore, his mother's age will be  $6x$  years.

After 5 years, Shobo's age = Shobo's mother's present age  $\div 3$

$$x + 5 = \frac{6x}{3}$$

$$x + 5 = 2x$$

$$2x - x = 5$$

$$x = 5$$

Shobo's age is 5

Shobo's mother's age is  $6x = 6 \times 5 = 30$

Therefore, the present ages of Shobo's and Shobo's mother will be 5 years and 30 years respectively.

6. There is a narrow rectangular plot, reserved for a school, in Mahuli village. The length and breadth of the plot are in the ratio 11:4. At the rate ₹ 100 per metre it will cost the village panchayat ₹ 75000 to fence the plot. What are the dimensions of the plot?

**Answer:**

Let the common ratio between the length and breadth of the rectangular plot be  $x$ .

Hence, the length and breadth of the rectangular plot will be  $11x$  m and  $4x$  m respectively.

Perimeter of the plot =  $2(\text{Length} + \text{Breadth})$



$$\begin{aligned} &= 2 \times (11x + 4x) \\ &= 30x \text{ m} \end{aligned}$$

It is given that the cost of fencing the plot at the rate of Rs 100 per metre is Rs 75,000.

$$100 \times \text{Perimeter} = 75000$$

$$100 \times 30x = 75000$$

$$30x = 750$$

$$x = 25$$

$$\text{Length} = 11x$$

$$= 11 \times 25$$

$$= 275 \text{ m}$$

$$\text{Breadth} = 4x$$

$$= 4 \times 25$$

$$= 100 \text{ m}$$



Hence, the dimensions of the plot are 275 m and 100 m respectively.

7. Hasan buys two kinds of cloth materials for school uniforms, shirt material that costs him ₹ 50 per metre and trouser material that costs him ₹ 90 per metre. For every 3 meters of the shirt material he buys 2 metres of the trouser material. He sells the materials at 12% and 10% profit respectively. His total sale is ₹ 36,600. How much trouser material did he buy?

**Answer:**

Let  $2x$  m of trouser material and  $3x$  m of shirt material be bought by him.

$$\text{Cost of shirt material} = 3x \times 50 = 150x$$



$$\text{Cost of trouser material} = 2x \times 90 = 180x$$

$$\begin{aligned} \text{Selling price of shirt material} &= 150x + \left(150 \times \frac{12}{100}\right) \\ &= 150x + 18x \\ &= 168x \end{aligned}$$

$$\begin{aligned} \text{Selling price of trouser material} &= 180x + \left(180 \times \frac{10}{100}\right) \\ &= 180x + 18x \\ &= 198x \end{aligned}$$

Total amount of selling = Rs 36600

$$168x + 198x = 36600$$

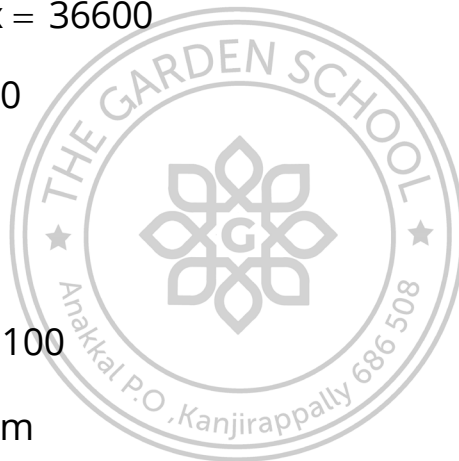
$$366x = 36600$$

$$x = 100$$

$$\text{Trouser material} = 2x$$

$$= 2 \times 100$$

$$= 200\text{m}$$



8. Half of a herd of deer are grazing in the field and three fourths of the remaining are playing nearby. The rest 9 are drinking water from the pond. Find the number of deer in the herd.

**Answer:**

Let the number of deer be  $x$ .

$$\text{Number of deer grazing in the field} = \frac{x}{2}$$

$$\begin{aligned} \text{Number of deer playing nearby} &= \frac{3}{4} \times \text{Number of remaining deer} \\ &= \frac{3}{4} \times \left(x - \frac{x}{2}\right) \end{aligned}$$



$$= \frac{3}{4} \times \frac{x}{2}$$

$$= \frac{3x}{8}$$

Number of deer drinking water from the pond = 9

$$\frac{x}{2} + \frac{3x}{8} + 9 = x$$

$$x - \left(\frac{x}{2} + \frac{3x}{8}\right) = 9$$

$$x - \frac{4x+3x}{8} = 9$$

$$8x - 7x = 72$$

$$x = 72$$

Hence, the total number of deer in the herd is 72.

9. A grandfather is ten times older than his granddaughter. He is also 54 years older than her. Find their present ages.

**Answer:**

Let the granddaughter's age be  $x$  years. Therefore, grandfather's age will be  $10x$  years.

Grandfather's age = Granddaughter's age + 54 years

$$10x = x + 54$$

$$10x - x = 54$$

$$9x = 54$$

$$x = 6$$

Granddaughter's age =  $x$  years = 6 years

$$\begin{aligned} \text{Grandfather's age} &= 10x \text{ years} \\ &= (10 \times 6) \text{ years} \\ &= 60 \text{ years} \end{aligned}$$



10. Aman's age is three times his son's age. Ten years ago he was five times his son's age. Find their present ages.

Answer:

Let Aman's son's age be  $x$  years.

Therefore, Aman's age will be  $3x$  years.

Ten years ago, their age was  $(x - 10)$  years and  $(3x - 10)$  years respectively.

10 years ago, Aman's age =  $5 \times$  Aman's son's age 10 years ago

$$3x - 10 = 5(x - 10)$$

$$3x - 10 = 5x - 50$$

$$50 - 10 = 5x - 3x$$

$$40 = 2x$$

$$20 = x$$

Aman's son's age = 20 years

Aman's age =  $3x$  years

$$= (3 \times 20) \text{ years}$$

$$= 60 \text{ years}$$

