LINEAR EQUATION

WORKSHEET – A

Q1.   Fifteen less than 4 times a number is 9. Find the number.

Q2.   28 is 12 less than 4 times a number. Find the number.

Q3.   Fifteen more than 3 times Neetu's age is the same as 4 times her age. How old is she?

Q4.   A's salary is the same as 4 times B's salary. If together they earn ₹ 3,750 a month, find the salary

of each.

Q5.   Six more than one-fourth of a number is two-fifth of the number. Find the number.

Q6.   The length of a rectangle is twice its width. If its perimeter is 54 cm, find its length.

Q7.   The sum of three consecutive odd numbers is 57. Find the numbers.

Q8.   A man's age is three times that of his son, and in twelve years he will be twice as old as his son would be. What are their present ages.

Q9.   The difference of two numbers is 3 and the difference of their squares is 69. Find the numbers.

Q10.   If the same number be added to the numbers 5, 11, 15 and 31, the resulting numbers are in proportion. Find the number.

1. Let the required number be x
    4 times the number = 4x
    15 less than 4 times the number = 4x – 15
    According to the statement:
    4x – 15= 9
    ⇒ 4x = 9 + 15
    ⇒ 4x = 24
    ⇒ x = 6

2. Let the required number be x
    4 times the number = 4x
    12 less than 4 times the number = 4x – 12
    According to the statement
    4x – 12 = 28
    ⇒ 4x = 28 + 12
    ⇒ 4x = 40
    X = 10
    Required number = 10

3. Let Neeut's age = x years
    3 times Neeut's age = 3x years
    Fifteen more than 3 times Neetu's age = (3x + 15) years
    4 times Neetu's age = 4x
    4x = 3x + 15
    ⇒ 4x – 3x = 15
    ⇒ x = 15
    Neetu's age = 15 years

4. Let B's salary = Rs x
    A's salary = RS 4x
    According to the statement:
    X + 4x = 3750/-
    ⇒ 5x = 3750/-
    ⇒ x = 750/-
    4x = 750 × 4 = 3000/-
    A's salary = Rs 3000/-
    B's salary = RS 750/-

5.   Let the required number = x

∴ One – fourth of the number = $\frac{x}{4}$

Two – fifth of the number = $\frac{2x}{5}$

According to the statement:

$$\frac{2x}{5} = 6 + \frac{x}{4}$$

$$\Rightarrow \frac{2x}{5} - \frac{x}{4} = \frac{6}{1}$$

$$\Rightarrow \frac{2x}{5} \times 20 - \frac{x}{4} \times 20 = 6 \times 20$$

[Multiplying each term by 20 because

L.C.M. of 5, 4, and 1 = 20]

$$\Rightarrow 8x - 5x = 120$$

$$\Rightarrow 3x = 120$$

$$\Rightarrow x = \frac{120}{3}$$

Required number = 40

x = 40

6.   Let width of the rectangle = x cm

Length of the rectangle = 2x cm

Perimeter of the rectangle = 2 [Length + Width] = 2 [2 × x] = 2 × 3x = 6x cm

6x = 54

⇒ x = 17

7. Let the three consecutive odd numbers be x, x + 2, x + 4.

X + x + 2 + x + 4 = 57

⇒ x + x + x = 57 − 2 − 4

⇒ 3x = 51

⇒ x = 17

Three consecutive odd numbers are 17, 19, 21

8.   Let present age of the son = x years

Present age of the man = 3x years

In 12 years:

Son's age will be = (x + 12) years

The man's age will be = (3x + 12) years

According to the statement:

3x + 12 = 2(x + 12)

⇒ 3x + 12 = 3x + 24

⇒ 3x − 2x = 24 − 12

⇒ x = 12

3x = 3 × 12 = 36

Hence, present age of the man = 36 years
Present age of the son = 12 years

9. Let one number = x
Second number = $x + 3$ [Difference of two numbers is 3]
According to the statement:
$$(x + 3)^2 - (x)^2 = 69$$
$$\Rightarrow (x)^2 + (3)^2 + 2 \times x \times 3 - x^2 = 69$$
$$\Rightarrow 6x = 69 - 9$$
$$\Rightarrow 6x = 60$$
$$\Rightarrow x = \frac{60}{6}$$
$$\Rightarrow x = 10$$

One number = 10
Second number = $x + 3$ = 10 + 3 = 13

10. Let x be added to each number, then the numbers will be
$5 + x, 11 + x, 15 + x$ and $31 + x$
According to the condition
$$\frac{5 + x}{11 + x} = \frac{15 + x}{31 + x}$$
By cross multiplication,
$$(5 + x)(31 + x) = (15 + x)(11 + x)$$
$$\Rightarrow 155 + 5x + 31x + x^2 = 165 + 11x + 15x + x^2$$
$$\Rightarrow 155 + 36x + x^2 = 165 + 26x + x^2$$
$$\Rightarrow 36x + x^2 - 26x - x^2 - 165 - 155$$
$$\Rightarrow 10x = 10 \Rightarrow x = \frac{10}{10} = 1$$

The required value is 1