## CHAPTER 2

# LINEAR EQUATIONS IN ONE VARIABLE

## QUESTIONS

1. Form an equation : 5 added to twice a number is 135.
2. Sum of ages of 5 friends is $x$. What is sum of their ages after 3 years?
3. If sum of two numbers is 35 and one of them is 23. Form an equation for finding another number.
4. A man has Rs. $x$ with him. He gave half to his wife, $\left(\frac{1}{3}\right)^{rd}$ to his son and rest of Rs. 1500 to his daughter. Form an equation to find $x$.
5. If $2x + 9 = 47$. Find $x$.
6. Find the value of $\frac{x}{2} + \frac{x}{3} + \frac{x}{4}$.
7. If the length of a rectangle is 5 more than its breadth ($x$). What is the perimeter of the rectangle?
8. Form an expression : when twice a number $x$ is added to thrice its reciprocal.
9. How many variables are there in $x^2 + 4x + 1 = 0$.
10. Give a number which is always even in terms of variable $x$.
11. What type of number is $(2x + 1)$. [odd or even].
12. Form an equation for a multiple of 5 added to 19 is 54.
13. Sum of two consecutive odd numbers is 56, form an equation.
14. Some monkeys were playing in two groups. In one group there were 5 more than $\left(\frac{1}{3}\right)^{rd}$ of total monkeys and in other group $\left(\frac{1}{4}\right)^{th}$ of the total monkeys. Write in the form of an equation.

15. A train is moving at the speed of $x$ km/hour. What distance will it cover in 15 hours if it stops for 1 hour at two stations.

16. 48 sweets are to be distributed among three friends $A$, $B$ and $C$ in such a way that $B$ gets 5 sweets more than $A$ and $C$ gets 7 sweets more than $A$. Form an equation.

17. I guessed a number ($x$) then added 10 to it. Give the expression for double of it.

18. Find $x$ if $2x + 5 = x + 25$.

19. Simplify the expression $\frac{x}{2} + \frac{x}{3} + \frac{x}{6}$.

20. Fill in the blanks : $\frac{x+5}{x+1} = 1 + \frac{\square}{x+1}$.

21. Complete it : $\frac{x+2}{x-2} = 1 + \frac{\square}{x-2}$.

22. If $x = n + 1$ then find the value of $(2x + 5)$

23. Find $3x - 2$ when $x = y + 1$.

24. If $x = \frac{n}{3} + 2$ then $3x - 1 =$ _____.

25. Ratio of three angles of a triangle is 1 : 2 : 3. Find the angles.

26. Perimeter of the top of a table in the conference hall is 32cm. If the length of the table is 3 times its breadth, how long is the table?

27. Preeti has three more dolls than Renu. If there are 11 dolls in all, how many dolls does each have.

28. Find the value of $P$ from the equation

$$x + 2 = \frac{1}{2}(P + 4) \text{ where } x = P - 4.$$

29. Ankit covered $\left(\frac{1}{2}\right)$ of the distance by metro train, $\left(\frac{1}{3}\right)^{rd}$ of the distance by bus and rest of 6 km by car for moving from Dwarka to South Extension. Find the total distance covered?

30. Sum of two numbers is 30. If one number is twice the other, form an equation for finding the numbers.

31. $3(x + 4) = x + 38$ find $x$.

32. Ratio of three sides of a triangle are 1 : 3 : 5 and perimeter of the triangle is 270m. Find the sides.

33. Find the value of $x$ if $\frac{x}{5} + \frac{x}{3} + 7 = x$.

34. If father is twice as old as his son and also 29 years older than his son. What is the age of father?

35. Solve for $x$ : $9x + 36 = 4x + 91$

36. Solve for $x$ : $\frac{-2 + x}{3 + x} = 6$.

37. Simplify : $(x + 7)^2 - (x - 7)^2$

38. Two numbers are in the ratio 4:7. If the sum of numbers is 143, find the numbers.

39. Sides of a rectangle are in the ratio 14:3. If the perimeter of the rectangle is 170 cms, find the length and breadth.

40. Find three consecutive odd numbers whose sum is 147.

## ANSWERS

1. $2x + 5 = 135$
2. $x + 15$
3. $23 + x = 35$
4. $\frac{x}{2} + \frac{x}{3} + 1500 = x$.
5. 19.
6. $\frac{13x}{12}$.
7. $4x + 10$.
8. $2x + \frac{3}{x}$.
9. One
10. $2x$
11. Odd
12. $5x + 19 = 54$
13. $(2x - 1) + (2x + 1) = 56$
14. $\frac{x}{3} + 5 + \frac{x}{4} = x$.
15. $14x$
16. $3x + 12 = 48$.
17. $2(x + 10)$
18. 20.
19. $x$
20. 4
21. 4
22. $2n + 7$.
23. $3y + 1$.
24. $n + 5$.
25. 30°, 60°, 90°
26. $12m$
27. 7, 4
28. 8
29. 36 km
30. $2x + x = 30$.
31. 13
32. 30m, 90m, 150m

33. 15

34. 58 years.

35. 11

36. –4

37. $28x$

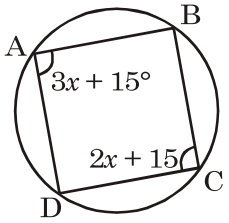
38. 52, 91

39. 70 cm, 15 cm

40. 47, 49, 51.

## TEST YOUR KNOWLEDGE

1. If $m = x - 2$ then find $x$ in the equation $3x + 2m = 6$.




2. Find $x$ if $ABCD$ is a cyclic quadrilateral.

3. If $x = k$ then find the value of $k$ if $(x + 1) + k - 2 = 0$.

4. Find $x$ if $\frac{3}{x} + 5 = 1$.

5. The perimeter of the square is 44 cm. Find its side.

6. Find $k$ if $\frac{13}{39} = \frac{k}{k + 4}$.

7. A mother is four times as old as her daughter. If the difference of their ages is 36 years. Find the age of daughter.

8. If $x = 2p - 1$ and $y = p + 7$ and $x + y = 6$ then find $p$.

9. A person starts his job with a monthly salary of Rs. 5000 and earn a fixed increment after every year. If he gets Rs. 6000 after 5 years. Find his annual increment,

10. If one is subtracted from the number if becomes $\frac{4}{5}$. Find the initial number.

## ANSWERS

1. $x = 2$
2. $x = 30°$
3. $k = \frac{1}{2}$.
4. $x = -\frac{3}{4}$.
5. 11 cm
6. $k = 2$.
7. 12 years
8. $p = 0$
9. Rs. 250
10. $\frac{9}{5}$.