MATHS

BOOKS - NAND LAL PUBLICATION

LINEAR EQUATIONS IN ONE VARIABLE

Exercise 2 1

1. Solve the following equations.

$x - 2 = 7$

▶ **Watch Video Solution**

2. Solve the following equations.

$y + 3 = 10$

▶ **Watch Video Solution**

3. Solve the following equations.

$6 = z + 2$

▶ **Watch Video Solution**

4. Solve the following equations.

$$\frac{3}{7} + x = \frac{17}{7}$$

5. The value of x in the equation 6x = 12 is :

6. Solve the following equations. $\frac{t}{5} = 10$

7. Solve the following equations. $\dfrac{2x}{3} = 18$

▶ Watch Video Solution

8. Solve the following equations. $1.6 = \dfrac{y}{1.5}$

▶ Watch Video Solution

9. Solve the following equations. $7x - 9 = 16$

▶ Watch Video Solution

10. Solve the following equations. $14y - 8 = 13$

▶ **Watch Video Solution**

11. Solve the following equations. $17 + 6p = 9$

▶ **Watch Video Solution**

12. Solve the following equations.

$$\frac{x}{3} + 1 = \frac{7}{15}$$

Exercise 2 2

1. If you subtract $\dfrac{1}{2}$ from a number and multiply the result by $\dfrac{1}{2}$, you get $\dfrac{1}{8}$. What is the number?

2. The perimeter of a rectangular swimming pool is 154 m. Its length is 2 m more than twice its breadth. What are the length and the breadth of the pool?

> ▶ **Watch Video Solution**

3. The base of an isosceles triangle is $\frac{4}{3}$ cm. The perimeter of the triangle is $4\frac{2}{15}$ cm. What is the length of either of the remaining equal sides?

4. Sum of two numbers is 95. If one exceeds the other by 15, find the numbers.

▶ **Watch Video Solution**

5. Two numbers are in the ratio 5:3. If they differ by 18, what are the numbers?

▶ **Watch Video Solution**

6. Three consecutive integers add up to 51. What are these integers?

> ▶ **Watch Video Solution**

7. The sum of three consecutive multiples of 8 is 888. Find the multiples.

> ▶ **Watch Video Solution**

8. Three consecutive integers are such that when they are taken in increasing order and

multiplied by 2, 3 and 4 respectively, they add up to 74. Find these numbers.

> ▶ **Watch Video Solution**

9. The ages of Rahul and Haroon are in the ratio 5:7. Four years later the sum of their ages will be 56 years. What are their present ages?

> ▶ **Watch Video Solution**

10. The number of boys and girls in a class are in the ratio 7:5. The number of boys is 8 more than the number of girls. What is the total class strength?

11. Baichung's father is 26 years younger than Baichung's grandfather and 29 years older than Baichung. The sum of the ages of all the

three is 135 years. What is the age of each one of them?

▶ **Watch Video Solution**

12. Fifteen years from now Ravi's age will be four times his present age. What is Ravi's present age?

▶ **Watch Video Solution**

13. A rational number is such that when you multiply it by $\dfrac{5}{2}$ and add $\dfrac{2}{3}$ to the product. you get $-\dfrac{7}{12}$. What is the number?

14. Lakshmi is a cashier in a bank. She has currency notes of denominations Rs 100, Rs 50 and Rs 10, respectively. The ratio of the number of these notes is 2:3:5. The total cash

with Lakshmi is Rs 4,00,000. How many notes of each denomination does she have?

15. I have a total of Rs 300 in coins of denomination Rs 1, Rs 2 and Rs 5. The number of Rs 2 coins is 3 times the number of Rs 5 coins. The total number of coins is 160. How many coins of each denomination are with me?

16. The organisers of an essay competition decide that a winner in the competition gets a prize of Rs 100 and a participant who does not win gets a prize of Rs 25. The total prize money distributed is Rs 3,000. Find the number of winners, if the total number of participants is 63.

▶ **Watch Video Solution**

Exercise 2 3

1. Solve the following equations and check your result :

$$3x = 2x + 18$$

2. Solve the following equations and check your results. $5t - 3 = 3t - 5$

3. Solve the following equations and check your results. $5x + 9 = 5 + 3x$

4. Solve the following equations and check your results. $4z + 3 = 6 + 2z$

5. Solve the following equations and check your results. 2x – 1 = 14 – x

▶ **Watch Video Solution**

6. Solve the following equations and check your result :

WE have : $8x + 4 = 3(x - 1) + 7$

▶ **Watch Video Solution**

7. Solve the following equations and check your results. $x = \dfrac{4}{5}(x + 10)$

8. Solve the following equations and check your results. $\dfrac{2x}{3} + 1 = \dfrac{7x}{15} + 3$

9. Solve the following equations and check your result :

$$2y + \frac{5}{3} = \frac{26}{3} - y.$$

▶ **Watch Video Solution**

10. Solve the following equations and check your result :

$$3m = 5m - \frac{8}{5}.$$

▶ **Watch Video Solution**

1. Amina thinks of a number and subtracts $\dfrac{5}{2}$ 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?

▶ **Watch Video Solution**

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

the other new number. What are the numbers?

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?

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?

5. Shobo's mother 's present age is six times Shobo's preset age.Shobo's age five years from

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

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 Rs 100 per metre it will cost the village panchayat Rs 75000 to fence the plot. What are the dimensions of the plot?

7. Hasan buys two kinds of cloth materials for school uniforms, shirt material that costs him Rs 50 per metre and trouser material that costs him Rs 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 Rs 36,600. How much trouser material did he buy?

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.

▶ Watch Video Solution

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

▶ Watch Video Solution

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.

▶ **Watch Video Solution**

1. Solve the following linear equations :

$$\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$$

▶ **Watch Video Solution**

2. Solve the following linear equations :

$$\frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} = 21$$

3. Solve the following linear equations :

$$x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$$

4. Solve the following linear equation:

$$\frac{x-5}{3} = \frac{x-3}{5}.$$

5. Solve the following linear equations :

$$\frac{3t-2}{4} - \frac{2t+3}{3} = \frac{2}{3} - t$$

6. Solve the following linear equations :

$$m - \frac{m-1}{2} = 1 - \frac{m-2}{3}$$

7. Simplify and solve the following linear equations : 3(t – 3) = 5(2t + 1)

8. Solve the following linear equation:

$$15(y - 4) - 2(y - 9) + 5(y + 6) = 0.$$

9. Simplify and solve the following linear equations : 3(5z – 7) – 2(9z – 11) = 4(8z – 13) – 17

10. Simplify and solve the following linear equations : 0.25(4f – 3) = 0.05(10f – 9)

▶ **Watch Video Solution**

Exercise 2 6

1. Solve the following equations. $\dfrac{8x - 3}{3x} = 2$

▶ **Watch Video Solution**

2. Solve the following equations. $\dfrac{9x}{7-6x} = 15$

3. Solve the following equations. $\dfrac{z}{z+15} = \dfrac{4}{9}$

4. Solve the following linear equation :

$\dfrac{3y+4}{2-6y} = -\dfrac{2}{5}$

5. Solve the following equations.

$$\frac{7y + 4}{y + 2} = \frac{-4}{3}$$

6. The ages of Hari and Harry are in the ratio 5:7. Four years from now the ratio of their ages will be 3:4. Find their present ages.

7. The denominator of a rational number is greater than its numerator by 8. If the numerator is increased by 17 and the denominator is decreased by 1, the number obtained is $\dfrac{3}{2}$. Find the rational number

▶ **Watch Video Solution**

Additional Questions For Practice Objective Type Questions

1. Solution to ax + b = 0 is _____

2. Shifting of a number from one side to the other side of equation is called _____

3. Value of the variable which satisfies the equation is called the _____ of the equation.

4. The solution of the equation $4x + 5 = 1 + 3x$

is _____

5. Sum of three consecutive numbers is 15,

then the numbers are _____

6. The equation of the statement "Adding 60 to the product of 7 and y is 16" is _____

7. Perimeter of a rectangle is 48 cm. If its length is thrice its breadth then its length is

    A. 18

    B. 12

    C. 24

D.

Answer: A

8. 6 is added to a number. The sum when divided by 5 gives 3. The equation is

A. $\dfrac{6+x}{5} = 3$

B. $\dfrac{6+x}{3} = 5$

C. $3(6+x) = 5$

D.

Answer: A

9. $\dfrac{x}{1} + \dfrac{x}{2} + \dfrac{x}{3} = 110$ for x equal to

A. -11

B. 11

C. 60

D.

Answer: C

10. Degree of variable in a linear equation is

A. -1

B. 1

C. 23

D.

Answer: B

11. In a linear equation, if you multiply the LHS by a number then you should

    A. divide RHS by it

    B. multiply RHS by it

    C. Add it to RHS

    D.

Answer: B

▶

12. Two numbers are in the ratio 2 : 3. Together

their sum is 100 then the numbers are

A. 20, 80

B. 40, 60

C. 30, 70

D.

Answer: B

13. State whethe true or false

We can add/subtract the same number from both sides of the equation.

▶ **Watch Video Solution**

14. For $x = 2$ $\qquad$ $4x + 1 = 9$

▶ **Watch Video Solution**

15. In a linear equation highest power of the variable is _____

16. If 6x = 18 then x = 3.

17. The sum of 2 numbers is 80. If one is 7 times the other number, then the numbers are

20, 60.

18. A and B are together 60 years old. Three year ago A was 5 times as old as B was. Hence, their present ages are 48 and 12.

Additional Questions For Practice Short Answer Type Questions

1. Solve the following equations and find the solution.

$$0.08(3m - 1) = 0.4m + 10$$

2. Solve the following equations and find the solution.

$$\frac{4 - a}{7} - 1 = \frac{a - 5}{3} + a$$

3. Solve the following equations and find the solution.

$$\frac{x+1}{2x+3} = \frac{x-1}{2x-5}$$

▶ **Watch Video Solution**

4. State which of the following are linear equations (with a variable) ? Identity the variable. Give reasons to support your answer.

$$(7 \times 3) - 15 = 8$$

▶ **Watch Video Solution**

5. State which of the following are linear equations (with a variable) ? Identity the variable. Give reasons to support your answer.

$$x + 12 > 9$$

▶ **Watch Video Solution**

6. State which of the following are linear equations (with a variable) ? Identity the variable. Give reasons to support your answer.

$$5m(11 \times 2) = 4$$

▶ **Watch Video Solution**

7. Pick out the solution from the values given in the bracket.

$2x - 7 = 11(0, 9, 10)$

▶ **Watch Video Solution**

Additional Questions For Practice Long Answer Type Questions

1. A steamer goes downstream from one port to another in 10 hours and covers the same distance upstream in 12 hours. If the speed of the stream be 4 km/hr. Find the speed of streamer in still water and the distance between the ports.

▶ **Watch Video Solution**

2. Each side of a triangle is increased by 5 cm. If the ratio of the perimeter of the new

triangle to the given triangle is 3 : 2. Find the perimeter of the given triangle.

3. A train is travelling at a speed of 75 km/hr from city A to city B. On its return journey, it travels at a speed of 50 km/h and takes 5 hours more than the onward journey. Find the distance between city A and city B.

4. Anushka and Arushi are friends. They have equal amounts of money in their pocket. Anushka gave $\dfrac{1}{5}$ th of her money to Arushi as a birthday gift. Then, Arushi gave a party at restaurant and cleared the bill by paying half of the total money with her. If the remaining money in Arushi's pocket is Rs. 2400, find the money spent by Anuskha on gift.

1. The cab charges are Rs. 52 for the first kilometre and Rs. 28 for every subsequent kilometre. Write a linear equation for this information, if the total cab charges were Rs. 980, find the distance travelled.

▶ **Watch Video Solution**

2. What would be the cab charges, if the passenger travelled 40 km and for each kilometer it take Rs.20 ?

3. Neha's school is 18 km from her house. She covers this distance in 3 hours partly by bus and partly by cycling. If she travels by bus at a speed of 9 km/hr. and cycles at 3 km/hr. How much distance does she cover by cycling ?

Sample Paper For Practice

1. If 3x is an even number then the next even number is _____.

▶ **Watch Video Solution**

2. A number when divide by 6 gives the quotient 6. What is the number?

▶ **Watch Video Solution**

3. In a linear equation, highest power of the variable is _____.

4. The solution of the equation $\dfrac{4}{m} = 16$ is _____

5. Two different equation can never have same solution.

6. If $\dfrac{x}{4} + 1 = \dfrac{3}{8}$ then $\dfrac{x}{4} = \dfrac{-5}{8}$

7. In the equation 7x - 8 = 10, transposing -8 to 10 gives 7x = 2.

8. If the age of a girl 6 years ago was 3x years then her present age is 3x + 6.

9. If 5 times a number increased by 7 is 42, the number is

A. 5

B. 6

C. 7

D. none of these

Answer: C

> ▶ **Watch Video Solution**

10. Which of the following is a linear equation in one variable.

A. $y^2 + 7 = 8$

B. $xy = 1$

C. x - 7 = 0

D. none of these

Answer: C

▶ **Watch Video Solution**

11. Solution of the equation $\dfrac{4x}{5} = x - 2$

A. 4

B. 10

C. x - 7 = 0

D. none of these

Answer: B

12. Which of the following has the coefficient of x as 1 in a linear equation in one variable ?

A. xy - 1 = 9

B. x + 3y = 1

C. x + 7 = 12

D. none of these

Answer: C

▶ **Watch Video Solution**

13. Two-third the number is 5 and more than 7 the number is .

▶ **Watch Video Solution**

14. Sum of three consecutive multiples of 6 is 666

▶ **Watch Video Solution**

15. 6 times a number subtracted from 15 gives to 10

▶ **Watch Video Solution**

16. $\dfrac{3}{5}$ th of a number is 4 more than half of a number.

▶ Watch Video Solution

17. What number must be added to each of the numbers 2, 6, 4, 9 so that the resulting numbers are in proportion.

▶ Watch Video Solution

18. Distance between two places A and B is 860 km. Two cars start simultaneously from A and B towards each other. The distance between them after 6 hours is 80 km. If the speed of one car is 10 km/hr. less than the other. Find the speed of each car.

19. Solve the equations $\dfrac{4m+3}{7} + 2 = \dfrac{m+5}{2}$ and verify the result.

20. Two supplementary angles differ by $50°$. Find the measures of the two angle.

21. 10 years ago grandmother was thrice as old as granddaughter, 15 year later grandmother will be twice as old as grand daughter. Find their present ages.