EXERCISE-01

Multiple Choice Questions

1. Number of variable(s) in a simple linear equation is

(1) Two (2) One

(3) Zero (4) None of these

2. The equation for the statement : "half of a number added to 10 is 15".

(1) $\frac{x}{2}+10+5$ (2) $\frac{x}{2}+10=15$

(3) $\frac{x}{2}+15=10$ (4) $\frac{x}{2}=10+15$

3. The algebraic expression for the statement: 'Product of x and a subtracted from the product of b and y'.

(1) ax – by (2) x + a – by

(3) by – ax (4) xa – b – y

4. '6 less than ten times a' is written as

(1) 6 – 10a (2) 10a – 6

(3) 10ac (4) 6 < 10 × a – 6

5. The method of finding solution of equation by trying out various values for the variable is called

(1) Error method

(2) Trial and error method

(3) Testing method

(4) Checking method

6. Equation for the statement; "thrice the length of a room is 340 metres".

(1) $3\ell = 430$ (2) $3\ell = 340$

(3) $3+\ell = 340$ (4) None of these

7. Value of x in $\frac{x}{4}+\frac{1}{2}=4$ is

(1) +28 (2) –28 (3) +14 (4) –14

8. Number to be added on L.H.S. & R.H.S of equation to find the value of 'y' in $y-8=6$ is

(1) –8 (2) +8 (3) 0 (4) –6

9. To get the value of 'p', ____ is to be multiplied on either side of equation $\frac{p}{4}=12$

(1) –4 (2) 4 (3) 1 (4) 0

10. To get the value of 'a', ____ to be divided on either side of equation 6a = 30.

(1) –6 (2) +30 (3) +6 (4) 0

11. In $\frac{3}{4}x+8=17$, value of x is

(1) –12 (2) +36 (3) +12 (4) –36

12. In 6 (2a – 1) + 8 = 14, the value of 'a' is

(1) –1 (2) $3\frac{1}{12}$ (3) $1\frac{3}{12}$ (4) +1

13. I think of a number and on adding 14 to it I get 27. The equation for this is

(1) x + 14 = 27 (2) x – 27 = 14

(3) x – 14 = 27 (4) x + 27 = 14

14. In $\frac{a}{8}+\frac{a}{4}=6$, the value of a is

(1) 12 (2) –16 (3) 16 (4) 0

15. If a = b, then ax = ____

(1) b + x (2) bx

(3) b – x (4) b ÷ x

16. If a = b, then a + x = ____

(1) b + x (2) bx

(3) b – x (4) b ÷ x

17. If p = q, then px = ____

(1) q (2) qx (3) q + x (4) 0

18. In $\frac{2}{3}p-2\frac{1}{2}=3\frac{1}{2}$, the value of p is

(1) –9 (2) +6 (3) +9 (4) 0

Direction (Q.19 to Q.21) : Length and breadth of a bulletin board are x cm and y cm respectively.

19. If 'n' nails are used to repair one board, how many nails will be required to repair 15 such boards?
(1) 15 (2) n
(3) 15n (4) 15 + n

20. What will be the length (in cm) of aluminium strip required to frame the board, if 10 cm extra strip is required to fix it properly.
(1) 2x + 2y + 5 (2) 2x + 2y
(3) 2 (x + y) + 10 (4) x + y + 10

21. If 200 sq. cm extra cloth per board is required to cover the edges, what will be the total area of the cloth required to cover 8 such boards (in cm^2)?
(1) 8(xy + 200) (2) xy + 200
(3) 8xy + 200 (4) 8(x + y) + 200

22. If six times a number is 48, then the number is
(1) –8 (2) 1 (3) 48 (4) 8

23. If half of a number is added to 18, then the sum is 46. That number is
(1) 92 (2) 56 (3) 65 (4) 0

24. Observe the patterns : 5, 11, 17, 23.
In this number pattern, if one of the numbers is x, then the second number after x is
(1) x + 2 (2) x + 4
(3) x + 6 (4) x + 8

25. If one-fifth of a number is equal to 4, then the number is
(1) 9 (2) 20 (3) $\frac{4}{5}$ (4) $\frac{5}{4}$

26. If the sum of two consecutive odd numbers is 24, the smaller number is
(1) 9 (2) 11 (3) 13 (4) 15

27. 3 less than 4 times a number x is
(1) 3 – 4x (2) 4 – 3x
(3) 3x – 4 (4) 4x – 3

28. Ramu's father is thrice as old as Ramu. If father's age is 45 years, then Ramu's age is
(1) 45 yrs (2) 30 yrs
(3) 15 yrs (4) 10 yrs

29. A number is multiplied by 6 and 12 is added to the product. The result is 84. Then the number is
(1) –12 (2) 72 (3) 12 (4) –72

30. The length of side of an equilateral triangular garden whose perimeter is 66 m is
(1) 66 m (2) 11 m
(3) 3 m (4) 22 m

31. The length of a rectangle is 12 m and its area is 72 m^2. Then the breadth equals to
(1) 72 m (2) 60 m (3) 6 m (4) 9 m

32. Area of a square whose side is 'n' cm is
(1) n^2 cm^2 (2) 2n cm^2
(3) 4n cm^2 (4) 2n + 2 cm^2

33. The sum of ages of three children is 30 years. After 5 years, the sum of their ages will be
(1) 30 years (2) 35 years
(3) 40 years (4) 45 years

34. Deepak is 5 years older than Joseph. If Deepak is x years old, then the age of Joseph is
(1) (x + 5) years (2) (x – 5) years
(3) (5 – x) years (4) 5x years

35. One third of a number added to itself gives 8. Then number is
(1) 8 (2) 6 (3) 4 (4) 2

True or False

1. The number of months in a year is not a variable.

2. The difference between the ages of two friends Sarika and Monika is a variable.

3. p hours has 60 p minutes.

4. q metres is equal to (100 + q) cm.

5. The additive inverse of an integer a is –a.

6. $3x + 2 > 0$ is not an equation.

7. –1 is the solution of the equation $2x + 2 = 0$.

8. In an equation, LHS is always equal to RHS.

9. If m is an even number, then m + 1 and m – 1 are odd numbers.

10. The equation $3x - 1 = 5$ cannot be solved in integers.

Fill in the blanks

1. 'K' kg of potatoes are bought for ₹ 60 cost of 1 kg of potatoes (in Rs) is _____.

2. If I spend 'f' rupees from 100 rupees, the money left with me is _____rupees.

3. A two digit number whose tens digit is 't' and units digit is 'u' is _____.

4. Annual salary at 'r' rupees per month along with a festival bonus of ₹ 2000 is _____.

5. The distance (in km) travelled in 'h' hours at a constant speed of 40 km per hour is _____.

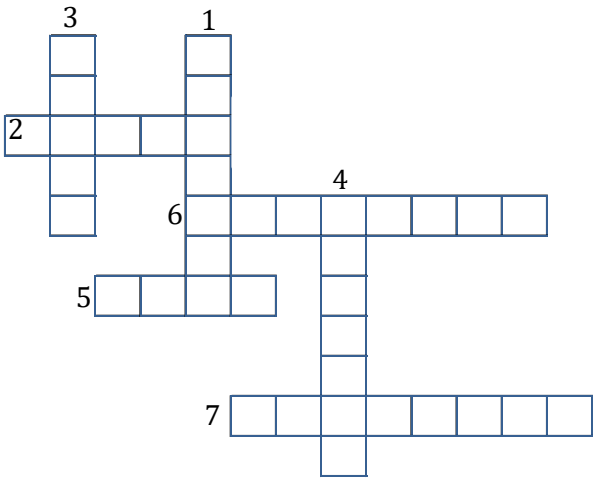
Match the column

Match the statements given in column I with their expression in column II.

Column-I	Column-II
(1) Product of 8 and x subtracted from 6.	(a) $x + 1$
(2) 7 added to the product of $\frac{1}{2}$ and x.	(b) $2x + 1$
(3) Successor of an integer x.	(c) $6 - 8x$
(4) Area of a square with side x units.	(d) x^2
(5) Perimeter of a rectangle with length x units and breadth 4 units.	(e) $\frac{1}{2}x + 7$
(6) Multiple of 6.	(f) $5x - 3$
(7) Subtract the number 3 from 5x.	(g) $6x$
(8) x times 2 subtracted from the smallest two digit number.	(h) $\frac{x}{4} + 8$
(9) x divided by 4 added to 8.	(i) $2(x+4)$
(10) Sum of two consecutive numbers.	(j) $10-2x$

Crossword puzzle

Solve the following crossword puzzle, hints are given below :



Across

2. The number of days in a week is ____.

5. If 3x = 27, then find the value of x.

6. A statement of equality with expressions on both sides of the equal sign.

7. p in the expression 3p + 5 is a ____.

Down

1. The sequence of triangular numbers (geometrical form) by few dots shows a ____.

3. Is 3x + x + 2 is the equation form? Give answer in right / wrong.

4. The branch of mathematics that deals with the use of variables for numbers.

ANSWER KEY

Multiple choice questions

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**2**	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**2**	**3**	**3**	**4**	**1**	**3**	**2**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**1**	**2**	**3**	**3**	**3**	**1**	**4**	**2**	**3**	**2**	**2**	**4**	**3**	**3**	**4**
Question	31	32	33	34	35										
Answer	**3**	**1**	**4**	**2**	**2**										

True or False

1. True **2.** False **3.** True **4.** False

5. True **6.** True **7.** True **8.** True

9. True **10.** False

Fill in the blanks

1. $\frac{60}{K}$ **2.** 100 – f **3.** 10t + u **4.** 12r + 2000

5. 40h

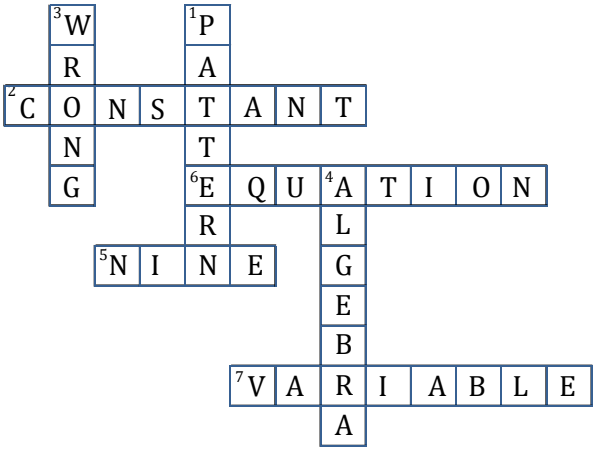
Match the column

(1) → c (2) → e (3) → a (4) → d

(5) → i (6) → g (7) → f (8) → j

(9) → h (10) → b

Crossword puzzle



1. Pattern **2.** Constant **3.** Wrong **4.** Algebra

5. Nine **6.** Equation **7.** Variable

EXERCISE-02

Very short answer type questions

1. Frame algebraic expressions for the following.

(i) Two times a number increased by three.

(ii) Half of a number added to 12.

(iii) Twice a number decreased by another number.

(iv) Four times a number divided by another number.

(v) Five times a number multiplied by three times another number.

(vi) Twice the sum of a number and another number, which is three more than the first number.

2. Write the terms of the expressions given here.

(i) $4abc - 4ab$ (ii) $3ab - 3bc + 4b^2$

(iii) $6y - x^2 - 2y$

3. State which of the following are monomials, binomials and trinomials. What will you name the ones that do not fall into these categories?

(i) $3x - 5y + 3z$ (ii) 9

(iii) $2x^2 - 5y^2$

4. Write the numerical coefficients in each of the following.

(i) $4x^3y$ (ii) $6abc$

(iii) $19xyz$ (iv) $-ab^2$

5. Write algebraic expressions for the following.

(i) Seven more than a number divided by six.

(ii) Half of a number decreased by three.

(iii) x multiplied by five and added to three times y.

(iv) 10 added to nine times x.

(v) Five times the reciprocal of x added to x times the reciprocal of five.

6. Express the following as algebraic equations.

(i) Sixteen subtracted from the product of two consecutive numbers is 56.

(ii) The sum of three consecutive even numbers is equal to 30.

(iii) The sum of three consecutive numbers is equal to 42.

(iv) The sum of three consecutive odd number is equal to 51.

7. Express the following as formulae.

(i) The amount (A) of money that an investment (P) will become is equal to the sum of the investment and the interest (I). A =

(ii) The sum of the angles of a triangle ΔABC is equal to 180°.

$\angle A +$ ___ + ___ =

(iii) The time t in hours necessary to cover a distance d km at the rate r km/h is obtained by dividing the distance by the rate and is given as t =

8. Find the rule which gives the number of matchsticks required to make the following matchstick patterns. Write the rule using a variable.

(i) A pattern of letter L as 

(ii) A pattern of letter N as 

(iii) A pattern of letter U as 

(iv) A pattern of letter E as 

(v) A pattern of letter W as 

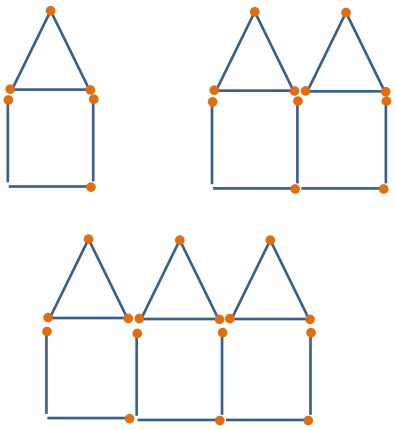
(vi) A pattern of letter M as 

9. Write algebraic expressions for the following. How many matchsticks do you think are required to make

(i) 6 triangles (ii) 10 triangles

(iii) 20 triangles (iv) x triangles

10. Observe the following pattern of houses made of matchsticks



Number of house	1	2	3
Number of Sticks	6	11	16

How many matchsticks do you think are required to make

(i) 4 houses (ii) 6 houses

(iii) 20 houses (iv) x houses

11. 2, 4, 6, 8, 10 are even numbers.
To get the next even numbers, add 2.
To get the even number before 10, subtract 2.
In this number pattern, if one number is x, then
(i) What is the number after x?
(ii) What is the number before x?
(iii) What is the second number after x?
(iv) What is the tenth number after x?

12. Observe the following pattern :
3, 7, 11, 15, 19
In this number pattern, if one number is x, then
(i) What is the number after x?
(ii) What is the second number after x?
(iii) What is the third number after x?
(iv) What is the tenth number after x?

Short answer type questions

13. Solve :

(i) $x + 2 = 6$ (ii) $x + 6 = 2$

(iii) $y + 8 = 5$ (iv) $x + 4 = -3$

(v) $y + 2 = -8$ (vi) $b + 2.5 = 4.2$

(vii) $p + 4.6 = 8.5$ (viii) $y + 3.2 = -6.5$

(ix) $a + 8.9 = -12.6$ (x) $x + 2\frac{1}{3} = 5$

(xi) $z + 2 = 4\frac{1}{5}$ (xii) $m + 3\frac{1}{2} = 4\frac{1}{4}$

(xiii) $x + 2 = 1\frac{1}{4}$ (xiv) $y + 5\frac{1}{3} = 4$

(xv) $a + 3\frac{1}{5} = 1\frac{1}{2}$

14. Solve :

(i) $x - 3 = 2$ (ii) $m - 2 = -5$

(iii) $b - 5 = 7$ (iv) $a - 2.5 = -4$

(v) $y - 3\frac{1}{2} = 6$ (vi) $z - 2\frac{1}{3} = -6$

(vii) $p - 5.4 = 2.7$ (viii) $x - 1.5 = -4.9$

(ix) $n - 4 = -4\frac{1}{5}$

15. Solve :

(i) $3x = 12$ (ii) $2y = 9$

(iii) $5z = 8.5$ (iv) $2.5\,m = 7.5$

(v) $3.2\,p = 16$ (vi) $2a = 4.6$

16. Solve :

(i) $\frac{x}{2} = 5$ (ii) $\frac{y}{3} = -2$

(iii) $\frac{a}{5} = -15$ (iv) $\frac{z}{4} = 3\frac{1}{4}$

(v) $\frac{m}{6} = 2\frac{1}{2}$ (vi) $\frac{n}{7} = -2.8$

17. Solve

(i) $-2x = 8$ (ii) $-3.5y = 14$

(iii) $-5z = 4$ (iv) $-5 = a + 3$

(v) $2 = p + 5$ (vi) $4.5 = m - 2.7$

(vii) $3\frac{2}{5} = x - 2\frac{1}{3}$ (vii) $5 = m + 3\frac{4}{7}$

(ix) $-2\frac{1}{5} = y - 4$

Long answer type questions

18. Solve :

(i) $2x + 5 = 17$ (ii) $3y - 2 = 1$

(iii) $5p + 4 = 29$ (iv) $4a - 3 = -27$

19. Solve :

(i) $\frac{x}{3} - 5 = 2$ (ii) $\frac{y}{2} - 3 = 8$

(iii) $\frac{z}{7} + 1 = 2\frac{1}{2}$ (iv) $\frac{a}{2.4} - 5 = 2.4$

(v) $\frac{b}{1.6} + 3 = -2.5$

20. Solve :

(i) $-8m + 2 = 10$ (ii) $4x + 2x = 3 + 5$

(iii) $4x - x + 5 = 8$ (iv) $6x + 2 = 2x + 1$

(v) $18 - (2a - 12) = 8a$

(vi) $3x + 5 + 2x + 6 + x = 4x + 21$

(vii) $3.5x - 9 - 3 = x + 1$

(viii) $8x + 6 + 2x - 4 = 4x + 8$

(ix) $-m + (3m - 6m) = -8 - 14$

(x) $5x - 14 = x - (24 + 4x)$

21. $3a = -2.1$

22. $\frac{z}{4} = -1.5$

23. $\frac{z}{6} = -1\frac{2}{3}$

24. $-5x = 10$

25. $2.4z = -4.8$

26. $2y - 5 = -11$

27. $2x + 4.6 = 8$

28. $5y - 3.5 = 10$

29. $3x + 2 = -2.2$

30. $\frac{y}{2} - 5 = 1$

31. $\frac{z}{3} - 1 = -5$

32. $\frac{x}{4} + 3.6 = -1.1$

33. $-3y - 2 = 10$

34. $4z - 5 = 3 - z$

35. $7x - 3x + 2 = 22$

36. $6y + 3 = 2y + 11$

37. $3(x + 5) = 18$

38. $5(x - 2) - 2(x + 1) = 3$

39. $(5x - 3) \div 4 = 3$

40. $3(2x + 1) - 2(x - 5) - 5(5 - 2x) = 16$

41. A natural number decreased by 7 is 12. Find the number.

42. One-fourth of a number added to one-sixth of itself is 15. Find the number.

43. A whole number is increased by 7 and the new number so obtained is multiplied by 5, the result is 45. Find the number.

44. The difference between two numbers is 15. Taking the smaller number as x, find

(i) The expression for larger number

(ii) The larger number if the sum of these numbers is 71.

45. Find three consecutive integers such that their sum is 78.

ANSWER KEY

Very short answer type questions

1. (i) $2x + 3$ (ii) $\frac{1}{2}x + 12$ (iii) $2x - y$ (iv) $\frac{4x}{y}$ or $4x \div y$

(v) $15xy$ (vi) $2(x + x + 3) = 4x + 6$

2. (i) $4abc, -4ab$ (ii) $3ab, -3bc, 4b^2$ (iii) $6y, -x^2, -2y$

3. (i) Trinomial (ii) Monomial (iii) Binomial; Polynomial

4. (i) 4 (ii) 6 (iii) 19 (iv) – 1

5. (i) $\frac{x}{6} + 7$ (ii) $\frac{1}{2}x - 3$ (iii) $5x + 3y$ (iv) $9x + 10$

(v) $\frac{5}{x} + \frac{x}{5}$

6. (i) $x(x + 1) - 16 = 56$ (ii) $6x + 6 = 30$

(iii) $3x + 3 = 42$ (iv) $6x + 9 = 51$

7. (i) $A = P + I$ (ii) $\angle A + \angle B + \angle C = 180°$ (iii) $t = \frac{d}{r}$

8. (i) $2n$ (ii) $2n + 1$ (iii) $2n + 1$ (iv) $5n$

(v) $4n$ (vi) $3n + 1$

9. (i) 13 (ii) 21 (iii) 41 (iv) $2x + 1$

10. (i) 21 (ii) 31 (iii) 101 (iv) $5x + 1$

11. (i) $x + 2$ (ii) $x - 2$ (iii) $x + 4$ (iv) $x + 20$

12. (i) $x + 4$ (ii) $x + 8$ (iii) $x + 12$ (iv) $x + 40$

Short answer type questions

13. (i) $x = 4$ (ii) $x = -4$ (iii) $y = -3$ (iv) $x = -7$

(v) $y = -10$ (vi) $b = 1.7$ (vii) $p = 3.9$ (viii) $y = -9.7$

(ix) $a = -21.5$ (x) $x = 2\frac{2}{3}$ (xi) $z = 2\frac{1}{5}$ (xii) $m = \frac{3}{4}$

(xiii) $x = \frac{-3}{4}$ (xiv) $y = -1\frac{1}{3}$ (xv) $a = -1\frac{7}{10}$

14. (i) $x = 5$ (ii) $m = -3$ (iii) $b = 12$ (iv) $a = -1.5$

(v) $y = 9\frac{1}{2}$ (vi) $z = -3\frac{2}{3}$ (vii) $p = 8.1$ (viii) $x = -3.4$

(ix) $n = -\frac{1}{5}$

15. (i) x = 4 (ii) $y = 4\frac{1}{2}$ (iii) z = 1.7 (iv) m = 3

(v) p = 5 (vi) a = 2.3

16. (i) x = 10 (ii) y = –6 (iii) a = –75 (iv) z = 13

(v) m = 15 (vi) n = –19.6

17. (i) x = –4 (ii) y = –4 (iii) z = –0.8 (iv) a = –8

(v) p = –3 (vi) m = 7.2 (vii) $x = 5\frac{11}{15}$ (viii) $m = 1\frac{3}{7}$

(ix) $y = 1\frac{4}{5}$

Long answer type questions

18. (i) x = 6 (ii) y = 1 (iii) p = 5 (iv) a = – 6

19. (i) x = 21 (ii) y = 22 (iii) $z = 10\frac{1}{2}$ (iv) a = 17.76

(v) b = – 8.80

20. (i) m = –1 (ii) $x = 1\frac{1}{3}$ (iii) x = 1 (iv) x = 2

(v) a = 3 (vi) x = 5 (vii) $x = 5\frac{1}{5}$ (viii) x = 1

(ix) $m = 5\frac{1}{2}$ (x) $x = -1\frac{1}{4}$

21. a = – 0.7 **22.** z = – 6 **23.** z = – 10 **24.** x = – 2

25. z = – 2 **26.** y = – 3 **27.** x = 1.7 **28.** y = 2.7

29. $x = -\frac{4.2}{3}$ **30.** y = 12 **31.** z = – 12 **32.** x = – 18.8

33. y = – 4 **34.** z = 1.6 **35.** x = 5 **36.** y = 2

37. x = 1 **38.** x = 5 **39.** x = 3 **40.** x = 2

41. 19 **42.** 36 **43.** 2

44. (i) x + 15, (ii) 43 **45.** 25, 26, 27

Exercise-01 Solutions

1. Option (2)

For example $2x + 1 = 0$

In equation, no. of variables is 1.

2. Option (2)

Let a number be 'x'.

$\frac{x}{2} + 10 = 15$

3. Option (3)

by – (ax)

by – ax

4. Option (2)

10a – 6

5. Option (2)

Trial and error method.

6. Option (2)

$3\ell = 340$

7. Option (3)

$\frac{x}{4} + \frac{1}{2} = 4$

$\frac{x}{4} = \frac{4}{1} - \frac{1}{2}$

$\frac{x}{4} = \frac{8-1}{2}$

$\frac{x}{4} = \frac{7}{2}$

$x = \frac{7}{2} \times 4$

$x = 14$

8. Option (2)

$y - 8 = 16$

To find the value of y, we should add + 8 in L.H.S and R.H.S.

9. Option (2)

To Find the value of P, 4 is to be multiplied on either side of equation.

10. Option (3)

To get the value of 'a' 6 to be divided on either side of equation.

11. Option (3)

$\frac{3x}{4}+8=17$

$\frac{3x}{4}=17-8$

$\frac{3x}{4}=9$

$x=\frac{9\times4}{3}$

x = 12

12. Option (4)

6(2a – 1) + 8 = 14

12a – 6 + 8 = 14

12a + 2 = 14

12a = 14 – 2

$a=\frac{12}{12}$

a = 1

13. Option (1)

Let the number be 'x'

x + 14 = 27

14. Option (3)

$\frac{a}{8}+\frac{a}{4}=6$

$\frac{a+2a}{8}=6$

$\frac{3a}{8}=6$

$a=\frac{6\times8}{3}$

a = 16

15. Option (2)

Given a = b

ax = bx $\{\because a = b\}$

16. Option (1)

$a = b, a + x = b + x$

17. Option (2)

$p = q, px = qx$

18. Option (3)

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

$$\frac{2}{3}p - \frac{5}{2} = \frac{7}{2}$$

$$\frac{2}{3}p = \frac{7}{2} + \frac{5}{2}$$

$$\frac{2}{3}p = \frac{7+5}{2}$$

$$\frac{2}{3}p = \frac{12}{2}$$

$$\frac{2}{3}p = 6$$

$$p = \frac{6 \times 3}{2}$$

$p = 9$

19. Option (3)

Number of nails for 1 board = n

Number of nails for 15 board = 15 × n

= 15n

20. Option (3)

Length = x cm

Breadth = y cm

$\therefore$ Perimeter = 2(x + y) cm,

Required strip = 2(x + y) + 10

21. Option (1)

Length = x cm,

Breadth = y cm

$\therefore$ Area = l × b

= x × y cm^2

Area of 8 boards = 8xy cm^2

Extra cloth for 1 board = 200 cm^2

Extra cloth for 8 board = 8 × 200 cm^2

Total cloth = 8xy + 8 × 200 = 8(xy + 200) cm^2

22. Option (4)

According to the question

Let a number be 'x'

$6x = 48$

$x = \frac{48}{6}$

$x = 8$

23. Option (2)

$\frac{x}{2} + 18 = 46$

$\frac{x}{2} = 46 - 18$

$\frac{x}{2} = 28$

$x = 28 \times 2 \Rightarrow x = 56$

24. Option (3)

5, 11, 17, 23

5, (5 + 6), (11 + 6), (17 + 6)

If one number is x, then the number just after $x = x + 6$

25. Option (2)

Let the number be x

$\frac{x}{5} = 4$

$x = 5 \times 4$

$x = 20$

26. Option (2)

Let two consecutive odd numbers be $2x + 1, 2x + 3$

$2x + 1 + 2x + 3 = 24$

$4x + 4 = 24$

$4x = 20$

$x = \frac{20}{4}$

$x = 5$

Small number $= 2x + 1 = 2 \times 5 + 1 = 11$

27. Option (4)

$4x - 3$

28. Option (3)

Let Ramu's age is x years, then Ramu's father's age is 3x years.

According to the question.

$3x = 45$

$x = \frac{45}{3}$

x = 15 years

29. Option (3)

Let the number be x.

$6x + 12 = 84$

$6x = 84 - 12$

$6x = 72$

$x = \frac{72}{6}$

x = 12

30. Option (4)

Perimeter of equilateral triangle = 3 × side

$\Rightarrow 66 = 3 \times$ side

Side = $\frac{66}{3}$

Side = 22 m

31. Option (3)

Area of rectangle = $\ell \times b$

$72 = 12 \times b$

$b = \frac{72}{12}$

b = 6 m

32. Option (1)

Side of square = n cm

Area = side × side

$= n \times n = n^2$ cm^2

33. Option (4)

Sum of ages of three children = 30 + 3 × 5 = 30 + 15 = 45 years

34. Option (2)

Age of Joseph is = (x – 5) years

35. Option (2)

Let the number be x

$\Rightarrow \frac{1}{3}x + x = 8$

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

$4x = 8 \times 3$

$x = \frac{8\times 3}{4}$

$x = 6$

Match the column

1. Option (c)

$6 - 8 \times (x)$

$6 - 8x$

2. Option (e)

$7 + \left(\frac{1}{2}\right)(x)$

$7 + \frac{x}{2}$

3. Option (a)

Successor of integer x is x + 1

4. Option (d)

Area= side × side

$= x \times x = x^2$

5. Option (i)

perimeter = $2(\ell + b)$

$= 2(x + 4)$

6. Option (g)

Multiple of 6 is 6x

7. Option (f)

Subtracting 3 from 5x gives

5x – 3

8. Option (j)

x times 2 subtracted from the smallest two-digit number.

10 – 2x

9. Option (h)

$\frac{x}{4} + 8$

10. Option (b)

Let consecutive number be x and x + 1

(x) + (x + 1)

2x + 1

Exercise-02 Solutions

1. Given :

(i) $2x + 3$

(ii) $\frac{x}{2} + 12$

(iii) Let a number to be 'x' another number be y

$2x - y$

(iv) $4x \div y = \frac{4x}{y}$

(v) $5x \times 3y = 15xy$

(vi) Let a number be x.

another number be $x + 3$

ATQ, $2(x + x + 3) = 4x + 6$

2. Given :

(i) $4abc, -4ab$

(ii) $30b, -3bc, 4b^2$

(iii) $6y, -x^2, -2y$

3. Given :

(i) Three terms, trinomials

(ii) One terms, monomials

(iii) Two terms, binomials

4. Given :

(i) 4

(ii) 6

(iii) 19

(iv) -1

5. Given :

(i) $\frac{x+7}{6}$

(ii) $\frac{x}{2} - 3$

(iii) $5x + 3y$

(iv) $10 + 9x$

(v) $5 \times \frac{1}{x} + x \times \frac{1}{5}$

$\frac{5}{x} + \frac{x}{5}$

6. Given :

(i) Let two consecutive numbers are x, x+ 1

$x(x + 1) - 16 - 56$

(ii) Let three consecutive numbers are $2x + 2x + 2 + 2x + 4$

$2x + 2x + 2 + 2x + 4 = 30$

$6x + 6 = 30$

(iii) Let three consecutive numbers are $x, x + 1, x + 2$

$x + x + 1 + x + 2 = 42$

$3x + 3 = 42$

(iv) Let three consecutive odd numbers are $x + x + 2 + x + 4$, where x is odd numbers.

$x + x + 2 + x + 4 = 51$

$3x + 6 = 51$

7. Given :

(i) $A = P + I$

(ii) $\angle A + \angle B + \angle C = 180°$

(iii) $t = \frac{d}{r}$

8. Given :

(i) $2n$

(ii) $2n + 1$

(iii) $2n + 1$

(iv) $5n$

(v) $4n$

(vi) $3n + 1$

9. Number of Match sticks = $2n + 1$, where n is number of triangles.

(i) Put = $n = 6$

Number of match sticks = $2 \times 6 + 1 = 13$

(ii) $n = 10$

Number of match sticks = $2 \times 10 + 1 = 21$

(iii) $n = 20$

Number of match sticks = $2 \times 20 + 1 = 41$

(iv) $n = x$

Number of match sticks = $2x + 1$

10. Number of match sticks = 5n + 1, where n is no. of houses

(i) n = 4

Number of matchsticks = 5 × 4 + 1 = 21

(ii) n = 6

Number of match sticks = 5 × 6 + 1 = 31

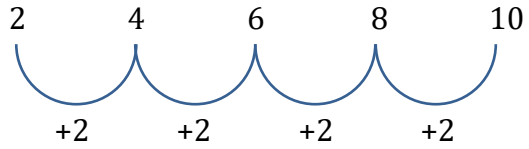
(iii) n = 20

Number of match sticks = 5 × 20 + 1 = 101

(iv) n = x

Number of match sticks = 5x + 1

11.



Let a number be x,

$x - 2, x, \underbrace{x+2}_{\text{First No.}}, \underbrace{x+2\times 2}_{\text{Second No.}}, x + 2 \times 3, \ldots\ldots x + 2n$

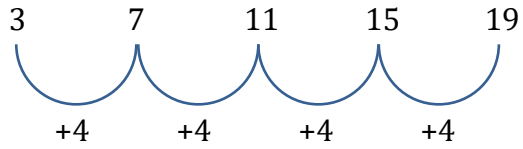
(i) x + 2

(ii) x – 2

(iii) x + 4

(iv) x + 2 × 10, x + 20

12.



x, x + 4, x + 4 × 2, x + 4 × 3, ... x + 4n

(i) x + 4

(ii) x + 8

(iii) x + 12

(iv) x + 4 × 10, x + 40

13. Given :

(i) x + 2 = 6

x = 6 – 2

x = 4

(ii) x + 6 = 2

x = 2 – 6

x = – 4

(iii) $y + 8 = 5$

$y = 5 - 8$

$y = -3$

(iv) $x + 4 = -3$

$x = -3 - 4$

$x = -7$

(v) $y + 2 = -8$

$y = -8 - 2$

$y = -10$

(vi) $b + 2.5 = 4.2$

$b = 4.2 - 2.5$

$b = 1.7$

(vii) $p + 4.6 = 8.5$

$p = 8.5 - 4.6$

$p = 3.9$

(viii) $y + 3.2 = -6.5$

$y = -6.5 - 3.2$

$y = -9.7$

(ix) $a + 8.9 = -12.6$

$a = -12.6 - 8.9$

$a = -21.5$

(x) $x + \frac{7}{3} = 5$

$x = 5 - \frac{7}{3}$

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

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

(xi) $z + 2 = \frac{21}{5}$

$z = \frac{21}{5} - 2$

$z = \frac{11}{5}$

$z = 2\frac{1}{5}$

(xii) $m + \frac{7}{2} = \frac{17}{4}$

$m = \frac{17}{4} - \frac{7}{2}$

$m = \frac{17-14}{4}$

$m = \frac{3}{4}$

(xiii) $x + 2 = 1\frac{1}{4}$

$x = \frac{5}{4} - 2$

$x = -\frac{3}{4}$

(xiv) $y + \frac{16}{3} = 4$

$y = 4 - \frac{16}{3}$

$y = \frac{12-16}{3}$

$y = -\frac{4}{3}$

$y = -1\frac{1}{3}$

(xv) $a + \frac{16}{5} = \frac{3}{2}$

$a = \frac{3}{2} - \frac{16}{5}$

$a = \frac{15-32}{10}$

$a = \frac{-17}{10} = -1\frac{7}{10}$

14. Given :

(i) $x - 3 = 2$

$x = 2 + 3$

$x = 5$

(ii) $m - 2 = -5$

$m = -5 + 2$

$m = -3$

(iii) $b - 5 = 7$

$b = 7 + 5$

$b = 12$

(iv) $a - 2.5 = -4$

$a = -4 + 2.5$

$a = -1.5$

(v) $y - \frac{7}{2} = 6$

$y = 6 + \frac{7}{2}$

$y = \frac{12+7}{2}$

$y = \frac{19}{2}$

$y = 9\frac{1}{2}$

(vi) $z - \frac{7}{3} = -6$

$z = -\frac{6}{1} + \frac{7}{3}$

$z = \frac{-18+7}{3}$

$z = \frac{-11}{3}$

$z = -3\frac{2}{3}$

(vii) $p - 5.4 = 2.7$

$p = 2.7 + 5.4$

$p = 8.1$

(viii) $x - 1.5 = -4.9$

$x = -4.9 + 1.5$

$x = -3.4$

(ix) $n - 4 = \frac{-21}{5}$

$n = \frac{-21}{5} + \frac{4}{1}$

$n = \frac{-21+20}{5}$

$n = \frac{-1}{5}$

15. Given :

(i) $3x = 12$

$x = \frac{12}{3}$

$x = 4$

(ii) $2y = 9$

$y = \frac{9}{2}$

$y = 4\frac{1}{2}$

(iii) $5z = 8.5$

$z = \frac{8.5}{5}$

$z = 1.7$

(iv) $2.5\ m = 7.5$

$m = \frac{7.5}{2.5}$

$m = 3$

(v) $3.2p = 16$

$p = \frac{16}{3.2} \times 10$

$p = 5$

(vi) $2a = 4.6$

$a = \frac{4.6}{2}$

$a = 2.3$

16. Given :

(i) $\frac{x}{2} = 5$

$x = 2 \times 5$

$x = 10$

(ii) $\frac{y}{3} = -2$

$y = -2 \times 3$

$y = -6$

(iii) $\frac{a}{5} = -15$

$a = -15 \times 5$

$a = -75$

(iv) $\frac{z}{4} = \frac{13}{4}$

$z = \frac{13}{4} \times 4$

$z = 13$

(v) $\frac{m}{6} = \frac{5}{2}$

$m = \frac{5}{2} \times 6$

$m = 15$

(vi) $\frac{n}{7} = -2.8$

$n = -2.8 \times 7$

$n = -19.6$

17. Given:

(i) $-2x = 8$

$x = -\frac{8}{2}$

$x = -4$

(ii) $-3.5y = 14$

$y = \frac{-14}{35} \times 10$

$y = -4$

(iii) $-5z = 4$

$z = \frac{-4}{5} = -0.8$

(iv) $-5 = a + 3$

$a = -5 - 3$

$a = -8$

(v) $P + 5 = 2$

$P = 2 - 5$

$P = -3$

(vi) $m - 2.7 = 4.5$

$m = 4.5 + 2.7$

$m = 7.2$

(vii) $x - \frac{7}{3} = \frac{17}{5}$

$x = \frac{51+35}{15}$

$x = \frac{86}{15}$

$x = 5\frac{11}{15}$

(viii) $m + \frac{25}{7} = 5$

$m = \frac{35-25}{7}$

$m = \frac{10}{7}$

$m = 1\frac{3}{7}$

(ix) $y - 4 = \frac{-11}{5}$

$y = \frac{-11}{5} + \frac{4}{1}$

$y = \frac{9}{5}$

$y = 1\frac{4}{5}$

18. Given :

(i) $2x + 5 = 17$

$2x = 17 - 5$

$2x = 12$

$x = \frac{12}{2}$

$x = 6$

(ii) $3y - 2 = 1$

$3y = 1 + 2$

$3y = 3$

$y = \frac{3}{3}$

$y = 1$

(iii) $5p + 4 = 29$

$5p = 29 - 4$

$5p = 25$

$p = \frac{25}{5}$

$p = 5$

(iv) $4a - 3 = -27$

$4a = -27 + 3$

$4a = -24$

$a = -\frac{24}{4}$

$a = -6$

19. Given :

(i) $\frac{x}{3} - 5 = 2$

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

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

$x = 21$

(ii) $\frac{y}{2} - 3 = 8$

$\frac{y}{2} = 8 + 3$

$\frac{y}{2} = 11$

$y = 2 \times 11$

$y = 22$

(iii) $\frac{z}{7}+1=\frac{5}{2}$

$\frac{z}{7}=\frac{5}{2}-1$

$\frac{z}{7}=\frac{5-2}{2}$

$\frac{z}{7}=\frac{3}{2}$

$z=\frac{3\times 7}{2}$

$z=\frac{21}{2}$

$z=10\frac{1}{2}$

(iv) $\frac{a}{2.4}-5=2.4$

$\frac{a}{2.4}=2.4+5$

$\frac{a}{2.4}=7.4$

$a=7.4\times 2.4$

$a=17.76$

(v) $\frac{b}{1.6}+3=-2.5$

$\frac{b}{1.6}=-2.5-3$

$\frac{b}{1.6}=-5.5$

$b=-5.5\times 1.6$

$b=-8.80$

20. Given :

(i) $-8m+2=10$

$-8m=10-2$

$-8m=8$

$m=-\frac{8}{8}$

$m=-1$

(ii) $4x + 2x = 3 + 5$

$6x = 8$

$x = \frac{8}{6} = \frac{4}{3}$

$x = 1\frac{1}{3}$

(iii) $4x - x + 5 = 8$

$3x = 8 - 5$

$3x = 3$

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

$x = 1$

(iv) $6x + 2 = 2x + 10$

$6x - 2x = 10 - 2$

$4x = 8$

$x = \frac{8}{4}$

$x = 2$

(v) $18 - (2a - 12) = 8a$

$18 - 2a + 12 = 8a$

$18 + 12 = 8a + 2a$

$30 = 10a$

$\Rightarrow 10a = 30$

$a = \frac{30}{10}$

$a = 3$

(vi) $3x + 5 + 2x + 6 + x = 4x + 2$

$3x + 2x + x - 4x = 21 - 5 - 6$

$6x - 4x = 21 - 11$

$2x = 10$

$x = \frac{10}{2} \Rightarrow x = 5$

(vii) $3.5x - 9 - 3 = x + 1$

$3.5x - x = 1 + 9 + 3$

$2.5\,x = 13$

$x = \frac{13}{25} \times 10$

$x = \frac{26}{5}$

$x = 5\frac{1}{5}$

(viii) $8x + 6 + 2x - 4 = 4x + 5$

$8x + 2x - 4x = 8 + 4 - 6$

$10x - 4x = 12 - 6$

$6x = 6$

$x = \frac{6}{6}$

$x = 1$

(ix) $-m + (3m - 6m) = -8 - 14$

$-m + (-3m) = -22$

$-m - 3m = -22$

$-4m = -22$

$m = \frac{-22}{-4}$

$m = 5\frac{1}{2}$

(x) $5x - 14 = x - (24 + 4x)$

$5x - 14 = x - 24 - 4x$

$5x - x + 4x = -24 + 14$

$8x = -10$

$x = \frac{-10}{8}$

$x = -1\frac{1}{4}$

21. $3a = -2.1$

$a = -\frac{2.1}{3}$

$a = -0.7$

22. $\frac{z}{4} = -1.5$

$z = 4 \times (-1.5)$

$z = -6$

23. $\frac{z}{6} = -\frac{5}{3}$

$z = -\frac{5}{3} \times 6$

$z = -10$

24. $-5x = 10$

$x = \frac{-10}{5}$

$x = -2$

25. $2.4z = -4.8$

$z = \frac{-4.8}{2.4}$

$z = -2$

26. $2y - 5 = -11$

$2y = -11 + 5$

$2y = -6$

$y = \frac{-6}{2}$

$y = -3$

27. $2x + 4.6 = 8$

$2x = 8 - 4.6$

$2x = 3.4$

$x = \frac{3.4}{2}$

$x = 1.7$

28. $5y - 3.5 = 10$

$5y = 10 + 3.5$

$5y = 13.5$

$y = \frac{13.5}{5}$

$y = 2.7$

29. $3x + 2 = -2.2$

$3x = -2.2 - 2$

$3x = -4.2$

$x = \frac{-4.2}{3}$

$x = -1.4$

30. $\frac{y}{2}-5=1$

$\frac{y}{2}=1+5$

$\frac{y}{2}=6$

$y = 6 \times 2$

$y = 12$

31. $\frac{z}{3}-1=-5$

$\frac{z}{3}=-5+1$

$\frac{z}{3}=-4$

$z=-4\times3$

$z = -12$

32. $\frac{x}{4}+3.6=-1.1$

$\frac{x}{4}=-1.1-3.6$

$\frac{x}{4}=-4.7$

$x = 4 \times (-4.7)$

$x = -18.8$

33. $-3y - 2 = 10$

$-3y = 10 + 2$

$-3y = 12$

$y=-\frac{12}{3}$

$y = -4$

34. $4z - 5 = 3 - z$

$4z + z = 3 + 5$

$5z = 8$

$z = \frac{8}{5}$

$\mathbf{z = 1\frac{3}{5}}$

$(z = 1.6)$

35. $7x - 3x + 2 = 22$

$4x = 22 - 2$

$4x = 20$

$x = \frac{20}{4}$

$x = 5$

36. $6y + 3 = 2y + 11$

$6y - 2y = 11 - 3$

$4y = 8$

$y = \frac{8}{4}$

$y = 2$

37. $3(x + 5) = 18$

$x + 5 = \frac{18}{3}$

$x + 5 = 6$

$x = 6 - 5$

$x = 1$

38. $5(x - 2) - 2(x + 1) = 3$

$5x - 10 - 2x - 2 = 3$

$5x - 2x = 3 + 10 + 2$

$3x = 15$

$x = 15/3$

$x = 5$

39. $\frac{5x-3}{4} = 3$

$5x - 3 = 3 \times 4$

$5x - 3 = 12$

$5x = 12 + 3$

$5x = 15$

$x = \frac{15}{5}$

$x = 3$

40. $3(2x + 1) - 2(x - 5) - 5(5 - 2x) = 16$

$6x + 3 - 2x + 10 - 25 + 10x = 16$

$6x - 2x + 10x = 16 + 25 - 3 - 10$

$4x + 10x = 41 - 13$

$14x = 28$

$x = \frac{28}{14}$

$x = 2$

41. Let a number to be 'x'

$x - 7 = 12$

$x = 12 + 7$

$x = 19$

42. Let a number to be ′x′.

$\frac{x}{4}+\frac{x}{6}=15$

$\frac{3x+2x}{12}=15$

$5x = 12 \times 15$

$x = \frac{12\times15}{5}$

$x = 36$

43. Let a whole number to be ′x′

$5(x + 7) = 45$

$x + 7 = \frac{45}{5}$

$x + 7 = 9$

$x = 9 - 7$

$x = 2$

44. Let smaller number be x

Larger number = 15 + x

$x + 15 + x = 71$

$2x + 15 = 71$

$2x = 71 - 15$

$2x = 56$

$x = \frac{56}{2}$

$x = 28$

Larger no. = 15 + x

= 15 + 28

= 43

45. Let three consecutive number x, x + 1, x + 2

$x + x + 1 + x + 2 = 78$

$3x + 3 = 78$

$3x = 78 - 3$

$3x = 75$

$x = \frac{75}{3}$

$x = 25$

So, x, x + 1, x + 2

25, 26, 27