EXERCISE PAGE: 107

In questions 1 to 23, out of the four given options, only one is correct. Write the correct answer.

1. If each match box contains 50 matchsticks, the number of matchsticks required to fill n such boxes is

(A) 50 + n **(B) 50n** **(C) 50÷ n** **(D) 50 – n**

Solution:-

(B) 50n

From the question it is given that, number of match sticks in each match box = 50

Then, the number of matchsticks required to fill n such boxes = 50 × n

= 50n

2. Amulya is x years of age now. 5 years ago her age was

(A) (5 – x) years **(B) (5 + x) years**

(C) (x – 5) years **(D) (5 ÷ x) years**

Solution:-

(C) (x – 5) years

Current age of amulya = x

Then, 5 years ago her age was = (x - 5) years

3. Which of the following represents 6 × x

(A) 6x **(B) 6 x** **(C) 6 + x** **(D) 6 – x**

Solution:-

(A) 6x

4. Which of the following is an equation?

(A) x + 1 **(B) x – 1** **(C) x – 1 = 0** **(D) x + 1 > 0**

Solution:-

(C) x – 1 = 0

An expression with a variable, constants and the sign of equality (=) is called an equation.

5. If x takes the value 2, then the value of x + 10 is

(A) 20 **(B) 12** **(C) 5** **(D) 8**

Solution:-

(B) 12

From the question it is given that, value of x is 2.

Now substitute the value of x in x + 10

= 2 + 10
= 12

6. If the perimeter of a regular hexagon is x metres, then the length of each of its sides is

(A) (x + 6) metres **(B) (x ÷ 6) metres**
(C) (x – 6) metres **(D) (6 ÷ x) metres**

Solution:-

(B) (x ÷ 6) metres

We know that, perimeter of hexagon = number of sides × length of each sides

Given, the perimeter of a regular hexagon is x metres

Then, the length of each of its sides = (x/6) metres

= (x ÷ 6) metres

7. Which of the following equations has x = 2 as a solution?

(A) x + 2 = 5 **(B) x – 2 = 0** **(C) 2x + 1 = 0** **(D) x + 3 = 6**

Solution:-

(B) x – 2 = 0

Transforming – 2 from left hand side to right hand side it becomes 2.

Then, x = 2

8. For any two integers x and y, which of the following suggests that operation of addition is commutative ?

(A) x + y = y + x **(B) x + y > x**
(C) x – y = y – x **(D) x × y = y × x**

Solution:-

(A) x + y = y + x

Let us assume a and b are the two integers,

Then, commutative law of addition = a + b = b + a

Where, a = x, b = y

Therefore, commutative law of addition = x + y = y + x

9. Which of the following equations does not have a solution in integers?

(A) x + 1 = 1 **(B) x – 1 = 3** **(C) 2x + 1 = 6** **(D) 1 – x = 5**

Solution:-

(C) 2x + 1 = 6

Consider the equation, 2x + 1 = 6

Transforming 1 from left hand side to right hand side it becomes -1.
2x = 6 – 1
2x = 5
X = 5/2

10. In algebra, a × b means ab, but in arithmetic 3 × 5 is
(A) 35 (B) 53 (C) 15 (D) 8
Solution:-
(C) 15

11. In algebra, letters may stand for
(A) known quantities (B) unknown quantities
(C) fixed numbers (D) none of these
Solution:-
(B) unknown quantities

12. "Variable" means that it
(A) can take different values (B) has a fixed value
(C) can take only 2 values (D) can take only three values
Solution:-
(A) can take different values
The word 'variable' means something that can vary, i.e., change. The value of a variable is not fixed. We use a variable to represent a number and denote it by any letter such as l, m, n, p, x, y, z etc.

13. 10 – x means
(A) 10 is subtracted x times (B) x is subtracted 10 times
(C) x is subtracted from 10 (D) 10 is subtracted from x
Solution:-
(C) x is subtracted from 10

14. Savitri has a sum of Rs x. She spent Rs 1000 on grocery, Rs 500 on clothes and Rs 400 on education, and received Rs 200 as a gift. How much money (in Rs) is left with her?
(A) x – 1700 (B) x – 1900 (C) x + 200 (D) x – 2100
Solution:-
(A) x – 1700

From the question it is given that,
Savitri has a sum of Rs x
She spent money on grocery = ₹ 1000
She spent money on clothes = ₹ 500
She spent money on education = ₹ 400
She received gift = ₹ 200
Total money spent by Savitri = 1000 + 500 + 400 = ₹ 1900
Then,
Total money left with her after deducting = ₹ (x - 1900)
Therefore, money left with her after adding gift money = (x - 1900) + 200
= x – 1700

15. The perimeter of the triangle shown in Fig. 7.1 is

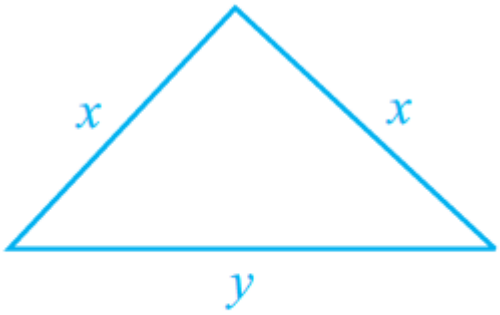

Fig. 7.1

(A) 2x + y **(B) x + 2y** **(C) x + y** **(D) 2x – y**

Solution:-

(A) 2x + y
Given triangle is an isosceles triangle,
So, perimeter of isosceles triangle = 2 × x + y
= 2x + y

16. The area of a square having each side x is

(A) x × x **(B) 4x** **(C) x + x** **(D) 4 + x**

Solution:-

(A) x × x
We know that, area of square = side × side
Given, square having a side x.
So, area of triangle = x × x
= x^2

17. The expression obtained when x is multiplied by 2 and then subtracted from 3 is
(A) 2x – 3 (B) 2x + 3 (C) 3 – 2x (D) 3x – 2
Solution:-
(C) 3 – 2x
From the question it is given that,
X is multiplied by 2 = x × 2 = 2x
Then, x is multiplied by 2 and then subtracted from 3 = 3 – 2x

18. q/2 = 3 has a solution
(A) 6 (B) 8 (C) 3 (D) 2
Solution:-
(A) 6
Consider the given equation q/2 = 3
By cross multiplication we get, q = 6

19. x – 4 = – 2 has a solution
(A) 6 (B) 2 (C) – 6 (D) – 2
Solution:-
(B) 2
Consider the given equation x – 4 = -2
Transform – 4 from left hand side to right hand side it becomes 4.
x = - 2 + 4
X = 2

20. 4/2 = 2 denotes a
(A) numerical equation (B) algebraic expression
(C) equation with a variable (D) false statement
Solution:-
(A) numerical equation
4/2 = 2
By cross multiplication we get,
4 = 4

21. Kanta has p pencils in her box. She puts q more pencils in the box. The total number of pencils with her are
(A) p + q (B) pq (C) p – q (D) p q

Solution:-

(A) p + q

From the question it is given that,

Kanta has p pencils in her box

She puts q more pencils in the box

The total number of pencils with her are = p + q

22. The equation 4x = 16 is satisfied by the following value of x

(A) 4 (B) 2 (C) 12 (D) –12

Solution:-

(A) 4

Consider the given equation 4x = 16

Then, value of x is,

X = 16/4 … [divide both numerator and denominator by 4]

X = 4

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

(A) x – 27 = 13 (B) x – 13 = 27

(C) x + 27 = 13 (D) x + 13 = 27

Solution:-

(D) x + 13 = 27

Let us assume the number be ‘x’,

Then, adding 13 to the number = x + 13

Therefore, x + 13 = 27

In question 24 to 40, fill in the blanks to make the statements true:

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

Solution:-

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

From the question,

Time taken to travel a distance = h hours

Travel at a speed of 40 km/h

So, total distance travelled = 40 × h

= 40h

25. p kg of potatoes are bought for Rs 70. Cost of 1kg of potatoes (in Rs) is

_____.

Solution:-

p kg of potatoes are bought for Rs 70. Cost of 1kg of potatoes (in Rs) is 70/p.

Given, p kg of potatoes are bought for ₹ 70

Then, cost of 1 kg of potato = 70/p

26. An auto rickshaw charges Rs 10 for the first kilometre then Rs 8 for each such subsequent kilometre. The total charge (in Rs) for d kilometres is _____.

Solution:-

An auto rickshaw charges Rs 10 for the first kilometre then Rs 8 for each such subsequent kilometre. The total charge (in Rs) for d kilometres is 8d + 2.

From the question it is given that,

An auto rickshaw charges ₹ 10 for the first kilometre

Then ₹ 8 for each such subsequent kilometre.

So, The total charge (in Rs) for d kilometres is = 10 + (d - 1)8

= 10 + 8d – 8

= 2 + 8d

27. If 7x + 4 = 25, then the value of x is _____.

Solution:-

If 7x + 4 = 25, then the value of x is 3.

Consider the equation, 7x + 4 = 25

Transposing 4 from left hand side to right hand side it becomes -4,

7x = 25 – 4

7x = 21

X = 21/7

X = 3

28. The solution of the equation 3x + 7 = –20 is _____.

Solution:-

The solution of the equation 3x + 7 = –20 is -9.

Consider the equation, 3x + 7 = –20

Transposing 7 from left hand side to right hand side it becomes -7,

3x = - 20 – 7

3x = - 27

X = -27/3

X = - 9

29. 'x exceeds y by 7' can be expressed as _____.
Solution:-
'x exceeds y by 7' can be expressed as x = y + 7.

30. '8 more than three times the number x' can be written as _____.
Solution:-
'8 more than three times the number x' can be written as 3x + 8.
As per the condition given in the question, three times the number x = 3x
So, 8 more than three times the number x = 3x + 8

31. Number of pencils bought for Rs x at the rate of Rs 2 per pencil is _____.
Solution:-
Number of pencils bought for Rs x at the rate of Rs 2 per pencil is x/2.
From the question it is given that, cost of pencil = ₹ x
Amount per pencil = ₹ 2
Therefore, number of pencil bought = ₹ x/2

32. The number of days in w weeks is _____.
Solution:-
The number of days in w weeks is 7w.
We know that, there are 7 days in a week.
Therefore, number of days in w weeks is 7w.

33. Annual salary at r rupees per month along with a festival bonus of Rs 2000 is _____.
Solution:-
Annual salary at r rupees per month along with a festival bonus of Rs 2000 is ₹12r + 2000.
From the question it is given that,
Salary per month is r rupees
a festival bonus of ₹ 2000
Therefore, Annual salary at r rupees per month along with a festival bonus of Rs 2000 is ₹ 12r + 2000

34. The two digit number whose ten's digit is 't' and units's digit is 'u' is _____.
Solution:-

The two digit number whose ten's digit is 't' and units's digit is 'u' is 10t + u.
From the question,
Two digit number whose ten's digit is 't'
Two digit number whose unit's digit is 'u'
Then, the number = 10 × t + 1 × u
= 10t + u

35. The variable used in the equation 2p + 8 = 18 is _____.
Solution:-
The variable used in the equation 2p + 8 = 18 is p.
The word 'variable' means something that can vary, i.e., change. The value of a variable is not fixed. We use a variable to represent a number and denote it by any letter such as l, m, n, p, x, y, z etc

36. x metres = _____ centimetres
Solution:-
x metres = x × 100 centimetres
we know that, 1 meter = 100 centimeter.
Therefore, x metres × 100 centimetres = x100 centimetres

37. p litres = _____ millilitres
Solution:-
p litres = p× 1000 millilitres
we know that, 1 litre = 1000 millilitres
Therefore, p litres × 1000 millilitres = p1000 milliliters.

38. r rupees = _____ paise
Solution:-
r rupees = r100 paise
we know that, 1 rupee = 100 paise

39. If the present age of Ramandeep is n years, then her age after 7 years will be _____.
Solution:-
If the present age of Ramandeep is n years, then her age after 7 years will be n + 7.

40. If I spend f rupees from 100 rupees, the money left with me is _____ rupees.

Solution:-
If I spend f rupees from 100 rupees, the money left with me is 100 - f rupees.

In question 41 to 45, state whether the statements are true or false.
41. 0 is a solution of the equation x + 1 = 0
Solution:-
False.
Consider the equation, x + 1 = 0
Then, x = -1

42. The equations x + 1 = 0 and 2x + 2 = 0 have the same solution.
Solution:-
True.
Consider equations x + 1 = 0
So, x = -1
Consider the equation, 2x + 2 = 0
Divide both the side by 2,
Then we get, x + 1 = 0
Therefore, x = - 1

43. If m is a whole number, then 2m denotes a multiple of 2.
Solution:-
True.

44. The additive inverse of an integer x is 2x.
Solution:-
False.
Additive inverse of x is – x

45. If x is a negative integer, – x is a positive integer.
Solution:-
True.

46. 2x – 5 > 11 is an equation.
Solution:-
False.

An expression with a variable, constants and the sign of equality (=) is called an equation.

47. In an equation, the LHS is equal to the RHS.
Solution:-
True

48. In the equation 7k – 7 = 7, the variable is 7.
Solution:-
False.
In the equation 7k – 7 = 7, the variable is k.