EXERCISE

OBJECTIVE TYPE

Q.1 Which of the following is monomial

(A) x+y+z (B) 2xy (C) p+q+r+s (D) 2x-3

Q.2 The algebraic expression for the statement : Twice a number p plus 3 is 17 is:

(A) p+3=17 (B) 2+p+3=17 (C) 2p+3 =17 (D) 2p-3=17

Q.3 The algebraic expression of the statement 'product of numbers a and b subtracted from 7' is :

(A) ab- 7 (B) 7- ab (C) ab (D) 7ab

Q.4 Value of x^2- xy + y^2 when x = 0 & y =1 is :

(A) -1 (B) 0 (C) 1 (D) 4

Q.5 The numerical coefficient of – 7xyz

(A) 7 (B) -7 (C) 1 (D) - 1

Q.6 The coefficient of r of 2pqr

(A) 2 (B)pq (C) 2pq (D) 2pqr

Q.7 Write 2 x p x p x p x q x q in exponential form

(A) 2pq (B) $2p^3q^2$ (C) $2p^2q^2$ (D) $2p^3q^3$

Q.8 Solve for x : $\frac{3}{5}$ x = 27

(A) 9 (B) 45 (C) 5 (D) 54

Q.9 Solve for x : 7x – 19 = 30

(A) 7 (B) 9 (C) 11 (D) 13

Q.10 Solve for x : 2 (x + 7) = 5 (7 – x)

(A) 3 (B) 6 (C) 9 (D) 2

Q.11 7 less than a number x is :

(A) x + 7 (B) 7 – x (C) x – 7 (D) – x + 7

Q.12 Exponential form of P × P × P × _ _ _ _ 9 times is :

(A) 9P (B) 9 + P (C) P^9 (D) $3P^3$

Q.13 For what value of x, x + 9 = 7?

(A) 2 (B) 3 (C) – 2 (D) 4

Q.14 Mathematical form of statement "Five times a number is equal to 65" is :

(A) x = 5 × 65 (B) x + 5 = 65 (C) 5x = 65 (D) None of these

Q.15 The cost of 1 pen is Rs y, then cost of 5 pens is :

(A) y + 5 (B) 5y (C) y + 5 (D) y – 5

Q.16 6 taken away from the product of x andy is written as:

(A) 6-xy (B) 6-(x+y) (C) xy- 6 (D) (x + y)- 6

Q.17 Which verbal expression does not match the algebraic expression 13x ?

(A) 13 times x (B) x multiplied by 13

(C) 13 made into x groups (D) the product of x and 13

Q.18 Which equation has a solution - 3?

(A) x-3 = 6 (B) 6 + x = 3 (C) x- 6 = 3 (D) x- 6 =- 3

Q.19 For what value of x, x + 9 = 7 ?

(A) 2 (B) 3 (C) -2 (D) 4

Q.20 The sum of 3 times a number plus -7 is 14. What is that number ?

(A) 6 (B) -7 (C) 7 (D) -6

SUBJECTIVE TYPE

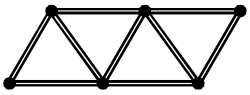
Q.1 Find the rule which gives the number of matchsticks required to make the following matchsti.6k patterns.

Use a variable to write the rule.

(i) a pattern of Z as

(ii) a pattern of S as

Q.2 In the given matchstick pattern of triangle. Find the general rule that gives number of matchsticks in terms of the number of triangles.



Q.3 Use $\square$, Δ etc. and mathematical symbols and rewrite the following statements :

(i) I think of a number, add 2 to it and the result is greater than 8.

(ii) I think of two numbers. Twice the first number added to 3 times the second number gives a result of 23.

Q.4 Rewrite each of the following statements without using symbols, begining each statement with : I think of .....

(i) $(\square + 3) > 9$

(ii) $(\square + 5) \times \Delta = 21$

Q.5 Give expressions for the following cases.

(i) Five times b added to 3 times c.

(ii) The quotient of x and y, if x is divided by y, added to the product of x and y.

(iii) The perimeter of a rectangle is twice the sum of its length and breadth.

(iv) The distance covered is product of speed and time.

Q.6 Write down the coefficient of :

(i) x in – 8xyz (ii) ab in 7abc

(iii) z in 8xyz (iv) a^2 in – $7a^2bc$

Q.7 Write down the numerical coefficient in each of the following :

(i) – 9xyz (ii) ab

(iii) –pqr (iv) –8y

Q.8 Shinchan went to market. He buys 2x kg of tomato, 7y kg of potato, z^2 kg of onion. How many kg of vegetable he bought.

Q.9 Write down separately the terms of the following algebraic expression.

(i) 7p – 8q

(ii) 9 + abc – 2c

Q.10 Write down the algebraic expressions whose terms are given below :

(i) 3x, – 4y, 5z (ii) $7xy^2$, $-8yz$, $7x^2z$

Q.11 Separate monomials, binomials and trinomials from the following :

abc, a + b + c, ab + c, 2x – 3y + 5z, 4xy + 1, 7

Q.12 If A = 2, B = –1, C = –3, find the value of :

(i) A + B – C

(ii) (A + B) (B + C) (C + A)

(iii) (A – B) (B – C) (C – A)

Q.13 Find the solution of 5x – 3 = 17 using trial and error method :

Q.14 Is x = 3 is the solution of equation 5x – 7 = 6

Q.15 Solve for x :

(i) 5x + 7 = 27

(ii) 9x – 5 = 3 (x + 7) – 20

Q.16 Write the given statements in the mathematical form using signs and symbols :

(i) Two times six equals twelve.

(ii) Twelve divided by x, equals three.

(iii) Ten decreased by three equals seven.

(iv) a plus b minus c equals two.

(v) Five is greater than p.

Q.17 State the following in words :

(i) 7 + 3 (ii) 3 – 4 + 5 (iii) a + b – c

(iv) 5 × 4 (v) p × q × r (vi) $\frac{x \times z}{y}$

Q.18 Write the following in exponential form :

(i) p × p × p × - - - - 11 times

(ii) a × a × a × - - - - 21 times

(iii) 14 × p × p × p × p × q

(iv) 7 × x × x × x × x × x × y × y

Q.19 Write down the following in product form :

(i) x^3y^4 (ii) $7y^6$ (iii) $8xy^2z^3$ (iv) $11a^4b^4c^4$

Q.20 Write each of the following statements as an equation :

(i) A number increased by 10 equals 26

(ii) Five times a number is equal to 65.

(iii) Thrice a number decreased by 5 is equal to 27

(iv) If a number is doubled and 30 subtracted from the result, we get 56.

(v) The sum of three consecutive integers is 34.

Q.21 Write a statement for each of the equations given below :

(i) $5x = 40$ (ii) $x + 8 = 15$ (iii) $25 - x = 7$ (iv) $x - 5 = 3$

Q.22 Verify by substitution that :

(i) The root of $3x + 4 = 13$ is 3.

(ii) the root of $5x - 8 = 7$ is 3.

(iii) The root of $\frac{4x}{7} - 12 = 0$ is 21.

(iv) The root of $3x = \frac{20}{7} - x$ is $\frac{5}{7}$

Q.23 Solve the following equations by the trial and error method :

(i) $x + 7 = 12$ (ii) $x - 15 = 20$ (iii) $5x = 30$

Q.24 Solve the given equation :

(i) $x + 6 = 2$ (ii) $a - 3 = 4$ (iii) $x + 3 = 6$

(iv) $a - 2 = 0$ (v) $1 = y - 7$ (vi) $7x - 6 = 1$

Q.25 Solve the given equations :

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

(iv) $6a + 6 = 12$ (v) $-2x + 4 = -8$ (vi) $a + 6 = 8 + \frac{1}{2}$

ANSWER KEY

OBJECTIVE :

1.	B	**2.**	C	**3.**	B	**4.**	B
5.	B	**6.**	C	**7.**	B	**8.**	B
9.	A	**10.**	A	**11.**	C	**12.**	C
13.	C	**14.**	C	**15.**	B	**16.**	C
17.	C	**18.**	B	**19.**	C	**20.**	C

SUBJECTIVE :

1. (a) No of matchsticks required = 3a
where a = no. of $\mathbb{Z}$
(b) No of matchsticks required = 5a
where a = no. of $\mathbb{S}$

2. No. of matchsticks required = 2n + 1
Where n = no. of triangles

3. (i) $\square$ + 2 > 8 (ii) 23

4. (i) I think of a number, when 3 in added to it the result is more than 9
(ii) I think of two no. when 5 is added to first and then it multiplied with second given product 21.

5. (i) 5b + 3c (ii) $\frac{x}{y} + xy$
(iii) P = 2(l + b) (iv) d = s × t

6. (i) –8yz (ii) 7c (iii) 8xy (iv) –7bc

7. (i) –9 (ii) 1 (iii) –1 (iv) –8

8. $(2x + 7y + z^2)$ kg

9. (i) 7p, –8q (ii) 9, abc, –2c

10. (i) 3x – 4y + 5z (ii) $7xy^2 - 8yz + 7x^2z$

11. Monomials are : abc, 7
Binomials are : ab + c, 4xy + 1
Trinomials are: a + b + c, 2x – 3y + 5z

12. (i) 4 (ii) 4 (iii) –30

13.

x	LHS = 5x – 3	RHS = 17
1	5x1 – 3 = 2	17
2	5x2 – 3 = 7	17
3	5x3 – 3 = 12	17
4	5x4 – 3 = 17	17

14. 6

15. (i) 4 (ii) 1

16. (i) 2 × 6 = 12 (ii) 12 ÷ x = 3
(iii) 10 – 3 = 7 (iv) a + b – c = 2
(v) 5 > p

17. (i) seven plus three
(ii) Three minus four plus five
(iii) a plus b minus c
(iv) product of five and four
(v) product of p, q and r
(vi) product of x and z divided by y

18. (i) p^{11} (ii) a^{21}
(iii) $14p^4 + q$ (iv) $7x^4y^2$

19. (i) x × x × x × y × y × y× y
(ii) 7 × y × y × y × y × y × y
(iii) 8 × x × x × y × y × z × z × z
(iv) 11 × a × a × a × a × b × b × b × b × c × c × c × c

20. (i) x + 10 = 26
(ii) 5x = 65
(iii) 3x – 5 = 27
(iv) 2x – 30 = 56
(v) x + (x + 1) + (x + 2) = 34

21. (i) five times a number equals 40
(ii) a number increased by 8 equals 15
(iii) 25 exceeds a number by 7
(iv) 5 subtracted from thrice a number is 16

23. (i) 5 (ii) 35 (iii) 6

24. (i) –4 (ii) 7 (iii) 3
(iv) 2 (v) 8 (vi) 1

25. (i) 10 (ii) 2 (iii) 2
(iv) 1 (v) 6 (vi) $2\frac{1}{2}$

EXERCISE -2

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) $50 \div n$ (D) $50 - n$

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) $(5 \div x)$ years

3. Which of the following represents $6 \times$

(A) $6x$ (B) $x/6$ (C) $6 + x$ (D) $6 - x$

4. Which of the following is an equation?

(A) $x + 1$ (B) $x - 1$ (C) $x - 1 = 0$ (D) $x + 1 > 0$

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

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

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) $(x \div 6)$ metres

(C) $(x - 6)$ metres (D) $(6 \div x)$ 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) $x + 3 = 6$

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) $x \times y = y \times x$

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) $1 - x = 5$

10. In algebra, $a \times b$ means ab, but in arithmetic 3×5 is

(A) 35 (B) 53 (C) 15 (D) 8

11. In algebra, letters may stand for

(A) known quantities (B) unknown quantities

(C) fixed numbers (D) none of these

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

13. $10 - x$ means

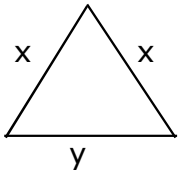
(A) 10 is subtracted x times (B) x is subtracted 10 times

(C) x is subtracted from 10 (D) 10 is subtracted from x

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) $x - 2100$

15. The perimeter of the triangle shown in Figure is



(A) $2x + y$ (B) $x + 2y$ (C) $x + y$ (D) $2x - y$

16. The area of a square having each side x is
(A) x x x (B) $4x$ (C) $x + x$ (D) $4 + x$

17. The expression obtained when x is multipled by 2 and then subtracted from 3 is
(A) $2x - 3$ (B) $2x + 3$ (C) $3 - 2x$ (D) $3x - 2$

18. $\frac{q}{2} = 3$ has a solution
(A) 6 (B) 8 (C) 3 (D) 2

19. $x - 4 = -2$ has a solution
(A) 6 (B) 2 (C) – 6 (D) – 2

20. $\frac{4}{2} = 2$ denotes a
(A) numerical equation (B) algebraic expression
(C) equation with a variable (D) false statement

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) $\frac{p}{q}$

22. The equation $4x = 16$ is satisfied by the following value of x
(A) 4 (B) 2 (C) 12 (D) –12

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) $x + 13 = 27$

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 _____.

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

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 _____.

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

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

29. 'x exceeds y by 7' can be expressed as _____.

30. '8 more than three times the number x' can be written as _____.

31. Number of pencils bought for Rs x at the rate of Rs 2 per pencil is _____.

32. The number of days in w weeks is _____.

33. Annual salary at r rupees per month alongwith a festival bonus of Rs 2000 is _____.

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

35. The variable used in the equation $2p + 8 = 18$ is _____.

36. x metres = _____ centimetres

37. p litres = _____ millilitres

38. r rupees = _____ paise

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

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

In question 41 to 45, state whether the statements are true or false.

41. 0 is a solution of the equation $x + 1 = 0$

42. The equations $x + 1 = 0$ and $2x + 2 = 0$ have the same solution.

43. If m is a whole number, then $2m$ denotes a multiple of 2.

44. The additive inverse of an integer x is $2x$.

45. If x is a negative integer, $-x$ is a positive integer.

46. $2x - 5 > 11$ is an equation.

47. In an equation, the LHS is equal to the RHS.

48. In the equation $7k - 7 = 7$, the variable is 7.

49. $a = 3$ is a solution of the equation $2a - 1 = 5$

50. The distance between New Delhi and Bhopal is not a variable.

51. t minutes are equal to $60t$ seconds.

52. $x = 5$ is the solution of the equation $3x + 2 = 20$

53. 'One third of a number added to itself gives 8', can be expressed as

54. The difference between the ages of two sisters Leela and Yamini is a variable.

55. The number of lines that can be drawn through a point is a variable.

In questions 56 to 74, choose a letter x, y, z, p etc...., wherever necessary, for the unknown (variable) and write the corresponding expressions:

56. One more than twice the number.

57. 20oC less than the present temperature.

58. The successor of an integer.

59. The perimeter of an equilateral triangle, if side of the triangle is m.

60. Area of the rectangle with length k units and breadth n units.

61. Omar helps his mother 1 hour more than his sister does.

62. Two consecutive odd integers.

63. Two consecutive even integers.

64. Multiple of 5.

65. The denominator of a fraction is 1 more than its numerator.

66. The height of Mount Everest is 20 times the height of Empire State building.

67. If a note book costs Rs p and a pencil costs Rs 3, then the total cost (in Rs) of two note books and one pencil.

68. z is multiplied by -3 and the result is subtracted from 13.

69. p is divided by 11 and the result is added to 10.

70. x times of 3 is added to the smallest natural number.

71. 6 times q is subtracted from the smallest two digit number.

72. Write two equations for which 2 is the solution.

73. Write an equation for which 0 is a solution.

74. Write an equation whose solution is not a whole number.

In questions 75 to 84, change the statements, converting expressions into statements in ordinary language:

75. A pencil costs Rs p and a pen costs Rs $5p$.

76. Leela contributed Rs y towards the Prime Minister's Relief Fund. Leela is now left with Rs $(y + 10000)$.

77. Kartik is n years old. His father is $7n$ years old.

78. The maximum temperature on a day in Delhi was p°C. The minimum temperature was $(p - 10)^{\circ}$C.

79. John planted t plants last year. His friend Jay planted $2t + 10$ plants that year.

80. Sharad used to take p cups tea a day. After having some health problem, he takes $p - 5$ cups of tea a day.

ANSWER KEY

1.	(B)	2.	(C)	3.	(A)	4.	(C)	5.	(B)	6.	(B)	7.	(B)
8.	(A)	9.	(C)	10.	(C)	11.	(B)	12.	(A)	13.	(C)	14.	(A)
15.	(A)	16.	(A)	17.	(C)	18.	(A)	19.	(B)	20.	(A)	21.	(A)
22.	(A)	23.	(D)	24.	$40h$	25.	70/p	26.	$8d + 2$	27.	3	28.	-9
29.	$x = y + 7$			30.	$3x + 8$	31.	x/2	32.	$7w$	33.	$12x + 2000$		
34.	$10t + u$			35.	p	36.	$100x$	37.	$1000p$	38.	$100x$	39.	$n + 7$
40.	$100 - f$			41.	F	42.	T	43.	T	44.	F	45.	T
46.	F	47.	T	48.	F	49.	T	50.	T	51.	T	52.	F
53.	F	54.	F	55.	F	56.	$2x + 1$	57.	$t - 20$	58.	$n + 1$	59.	$3m$

60. kn 61. $x + 1$ 62. $2n + 1$ and $2n + 3$ 63. $2m$ and $2m + 2$ 64. $5n$

65. x/x+1 66. $20y$, where y is height of Empire State Building. 67. $2p + 3$

68. $13 - (-3)\,z$ (=13+3z) 69. $10 + \frac{p}{11}$ 70. $3x + 1$ 71. $10 - 6\,q$

72. $3y + 4 = 10$, $2x - 3 = 1$ 73. $2t + 3 = 3$ 74. $x + 1 = 0$