

UNIQUE STUDY POINT

AMITESH NAGAR, INDORE

PRACTICE PAPER 01 (2026-27)

CHAPTER 04 EXPRESSIONS USING LETTER-NUMBERS

Prepared by: SUMEET SAHU | Website : [Click Here](#) | WhatsApp Channel : [Click Here](#)

Class : VII

Subject : Mathematics

Time : 1 hr 30 min

M.M. : 40

General Instructions :

- This question paper contains **21** questions divided into **four** sections A, B, C and D.
- **Section A** has 10 multiple choice questions of 1 mark each.
- **Section B** has 5 short answer questions of 2 marks each.
- **Section C** has 4 short answer questions of 3 marks each.
- **Section D** has 2 case based questions of 4 marks each.
- All questions are compulsory. Use of a calculator is **not** permitted.

SECTION - A

This section consists of 10 multiple choice questions of 1 mark each.

1. The expression for the perimeter of a square with side s is 1
(A) $4s$ (B) $s + 4$ (C) $4 + s$ (D) s^4
2. The value of $3x + 5$ when $x = 4$ is 1
(A) 12 (B) 17 (C) 22 (D) 7
3. Which of the following are like terms ? 1
(A) $3x$ and $3y$ (B) $5x^2$ and $5x$ (C) $4ab$ and $-7ab$ (D) $2x$ and $2x^2$
4. The number of terms in the expression $4x^2 - 3xy + 7$ is 1
(A) 2 (B) 4 (C) 1 (D) 3
5. Which expression represents '5 more than twice a number n ' ? 1
(A) $5n + 2$ (B) $2n + 5$ (C) $2n - 5$ (D) $5n - 2$
6. In the expression $7p - 3q + 4$, the coefficient of q is 1
(A) -3 (B) 3 (C) 7 (D) 4
7. The sum of $3x + 2y$ and $5x - 4y$ is 1
(A) $8x + 2y$ (B) $2x - 2y$ (C) $8x - 6y$ (D) $8x - 2y$
8. The value of $2p + 3q$ when $p = 2$ and $q = 4$ is 1
(A) 10 (B) 14 (C) 16 (D) 20

Directions (Q. 9 and Q. 10) : In each of the following questions, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**. Choose the correct option : **(A)** Both A and R are true and R is the correct explanation of A. **(B)** Both A and R are true but R is not the correct explanation of A. **(C)** A is true but R is false. **(D)** A is false but R is true.

9. **Assertion (A) :** $3x + 5x = 8x$. 1
Reason (R) : Terms with the same variable and same power are like terms and can be added by adding their coefficients.
10. **Assertion (A) :** The expression $2x + 3$ and $3 + 2x$ represent the same value for any value of x . 1
Reason (R) : Addition is commutative, so the order of terms in an expression does not change its value.

SECTION - B

This section consists of 5 questions of 2 marks each.

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11. Write algebraic expressions for the following : (i) 4 more than three times a number p. 2
(ii) 7 less than twice a number q.
12. Find the value of the following expressions when $a = 3$ and $b = 2$: (i) $4a - 3b$ (ii) $a^2 + 2b$. 2
13. Add : $(3x + 2y - z) + (5x - 4y + 3z)$. 2
14. The cost of 1 pen is Rs p and the cost of 1 notebook is Rs n. Write an expression for the total cost of 5 pens and 3 notebooks. Find the total cost when $p = 8$ and $n = 12$. 2
15. Subtract $(2a - 3b + c)$ from $(5a + b - 2c)$. Find the value of the result when $a = 2$, $b = 1$ and $c = 3$. 2

SECTION - C

This section consists of 4 questions of 3 marks each.

16. The perimeter of a regular hexagon is 48 cm. Write a formula for the perimeter P of a regular hexagon with side s. Hence find the side length. If each side is increased by 2 cm, write the new perimeter as an expression in s and find its value for the original s. 3
17. Simplify by combining like terms : $5x^2 + 3x - 2 - 2x^2 + 7x + 5$. 3
18. Write the first five terms of the pattern whose n-th term is $3n - 1$. Find the 10th term and the sum of the first 5 terms. 3
19. Ravi earns Rs $3x$ per day and Meena earns Rs $(2x + 50)$ per day. Write an expression for their combined weekly earnings (7 days). Find the combined earnings when $x = 200$. 3

SECTION - D

This section consists of 2 case based questions of 4 marks each.

20. A student is studying number patterns using letter-numbers. 4
(i) The sum of three consecutive integers starting from n is $n + (n+1) + (n+2)$. Simplify this expression.
(ii) Find the sum when $n = 10$.
(iii) The student claims that the sum of three consecutive integers is always a multiple of 3. Verify this using the simplified expression.
(iv) Write an expression for the sum of FOUR consecutive integers starting from n and simplify. Is it always a multiple of 4 ?
21. A rectangular garden has length $(3x + 2)$ m and breadth $(x + 5)$ m. 4
(i) Write an expression for the perimeter of the garden.
(ii) Find the perimeter when $x = 4$.
(iii) Write an expression for how much greater the length is than the breadth.
(iv) If the perimeter is 60 m, form an equation and find x.

----- All the Best -----

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SECTION - A (Answer Key)

Q	1	2	3	4	5	6	7	8	9	10
Ans	(A)	(B)	(C)	(D)	(B)	(A)	(D)	(C)	(A)	(A)

SECTION A - Detailed Answers (1 mark each)

- The expression for the perimeter of a square with side s is 1
(A) $4s$ (B) $s + 4$ (C) $4 + s$ (D) s^4
Ans (A) : Perimeter of a square = $4 \times \text{side} = 4s$.
- The value of $3x + 5$ when $x = 4$ is 1
(A) 12 (B) 17 (C) 22 (D) 7
Ans (B) : $3(4)+5=12+5=17$.
- Which of the following are like terms ? 1
(A) $3x$ and $3y$ (B) $5x^2$ and $5x$ (C) $4ab$ and $-7ab$ (D) $2x$ and $2x^2$
Ans (C) : Like terms have the same variable with the same power. $4ab$ and $-7ab$ both have 'ab'.
- The number of terms in the expression $4x^2 - 3xy + 7$ is 1
(A) 2 (B) 4 (C) 1 (D) 3
Ans (D) : The three terms $4x^2$, $-3xy$ and 7 are separated by $+$ and $-$ signs.
- Which expression represents '5 more than twice a number n ' ? 1
(A) $5n + 2$ (B) $2n + 5$ (C) $2n - 5$ (D) $5n - 2$
Ans (B) : Twice n is $2n$; 5 more than that is $2n+5$.
- In the expression $7p - 3q + 4$, the coefficient of q is 1
(A) -3 (B) 3 (C) 7 (D) 4
Ans (A) : The coefficient of q in $7p-3q+4$ is -3 .
- The sum of $3x + 2y$ and $5x - 4y$ is 1
(A) $8x + 2y$ (B) $2x - 2y$ (C) $8x - 6y$ (D) $8x - 2y$
Ans (D) : $(3x+2y)+(5x-4y)=(3+5)x+(2-4)y=8x-2y$.
- The value of $2p + 3q$ when $p = 2$ and $q = 4$ is 1
(A) 10 (B) 14 (C) 16 (D) 20
Ans (C) : $2(2)+3(4)=4+12=16$.
- Assertion (A) : $3x + 5x = 8x$. 1
Reason (R) : Terms with the same variable and same power are like terms and can be added by adding their coefficients.
Ans (A) : Both true and R correctly explains A: $3x$ and $5x$ are like terms (same variable x , same power 1), so their sum is $(3+5)x=8x$.
- Assertion (A) : The expression $2x + 3$ and $3 + 2x$ represent the same value for any value of x . 1
Reason (R) : Addition is commutative, so the order of terms in an expression does not change its value.
Ans (A) : Both true and R correctly explains A: $2x+3$ and $3+2x$ have the same terms in different order; by commutativity of addition, both equal the same value.

SECTION B - Short Answer (2 marks each)

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11. Write algebraic expressions for the following : (i) 4 more than three times a number p . (ii) 7 less than twice a number q . 2

Solution : (i) $3p + 4$. (ii) $2q - 7$.

12. Find the value of the following expressions when $a = 3$ and $b = 2$: (i) $4a - 3b$ (ii) $a^2 + 2b$. 2

Solution : (i) $4(3) - 3(2) = 12 - 6 = 6$. (ii) $3^2 + 2(2) = 9 + 4 = 13$.

13. Add : $(3x + 2y - z) + (5x - 4y + 3z)$. 2

Solution : $(3x + 2y - z) + (5x - 4y + 3z) = 8x - 2y + 2z$.

14. The cost of 1 pen is Rs p and the cost of 1 notebook is Rs n . Write an expression for the total cost of 5 pens and 3 notebooks. Find the total cost when $p = 8$ and $n = 12$. 2

Solution : Total cost = $5p + 3n$. When $p = 8$, $n = 12$: $5(8) + 3(12) = 40 + 36 = \text{Rs } 76$.

15. Subtract $(2a - 3b + c)$ from $(5a + b - 2c)$. Find the value of the result when $a = 2$, $b = 1$ and $c = 3$. 2

Solution : $(5a + b - 2c) - (2a - 3b + c) = 3a + 4b - 3c$. At $a = 2, b = 1, c = 3$: $6 + 4 - 9 = 1$.

SECTION C - Short Answer (3 marks each)

16. The perimeter of a regular hexagon is 48 cm. Write a formula for the perimeter P of a regular hexagon with side s . Hence find the side length. If each side is increased by 2 cm, write the new perimeter as an expression in s and find its value for the original s . 3

Solution : $P = 6s$. $6s = 48 \rightarrow s = 8$ cm. New perimeter = $6(s + 2) = 6s + 12$. At $s = 8$: $48 + 12 = 60$ cm.

17. Simplify by combining like terms : $5x^2 + 3x - 2 - 2x^2 + 7x + 5$. 3

Solution : $5x^2 - 2x^2 + 3x + 7x - 2 + 5 = 3x^2 + 10x + 3$.

18. Write the first five terms of the pattern whose n -th term is $3n - 1$. Find the 10th term and the sum of the first 5 terms. 3

Solution : n -th term = $3n - 1$. Terms: **2, 5, 8, 11, 14**. 10th term = $3(10) - 1 = 29$. Sum = $2 + 5 + 8 + 11 + 14 = 40$.

19. Ravi earns Rs $3x$ per day and Meena earns Rs $(2x + 50)$ per day. Write an expression for their combined weekly earnings (7 days). Find the combined earnings when $x = 200$. 3

Solution : Ravi weekly = $21x$, Meena weekly = $7(2x + 50) = 14x + 350$. Combined = $35x + 350$. At $x = 200$: $35(200) + 350 = 7000 + 350 = \text{Rs } 7350$.

SECTION D - Case Based (4 marks each)

20. A student is studying number patterns using letter-numbers. 4

(i) The sum of three consecutive integers starting from n is $n + (n + 1) + (n + 2)$. Simplify this expression.

Ans : $n + (n + 1) + (n + 2) = 3n + 3 = 3(n + 1)$.

(ii) Find the sum when $n = 10$.

Ans : $3(10) + 3 = 33$.

(iii) The student claims that the sum of three consecutive integers is always a multiple of 3. Verify this using the simplified expression.

Ans : $3n + 3 = 3(n + 1)$. Since $3(n + 1)$ is divisible by 3 for any integer n , the sum is **always a multiple of 3**.

(iv) Write an expression for the sum of FOUR consecutive integers starting from n and simplify. Is it always a multiple of 4 ?

Ans : $n + (n + 1) + (n + 2) + (n + 3) = 4n + 6 = 2(2n + 3)$. This is always even but **not always a multiple of 4**. (e.g. $n = 1$: $1 + 2 + 3 + 4 = 10$, not div by 4.)

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21. A rectangular garden has length $(3x + 2)$ m and breadth $(x + 5)$ m.

4

(i) Write an expression for the perimeter of the garden.

Ans : Perimeter = $2[(3x+2)+(x+5)] = 2[4x+7] = 8x+14$ m.

(ii) Find the perimeter when $x = 4$.

Ans : $8(4)+14=32+14=46$ m.

(iii) Write an expression for how much greater the length is than the breadth.

Ans : $(3x+2)-(x+5)=2x-3$ m.

(iv) If the perimeter is 60 m, form an equation and find x .

Ans : $8x+14=60 \rightarrow 8x=46 \rightarrow x=5.75$. (Accept decimal.)