

EXERCISE # 1

- Q.1** If a letter has no coefficient written before it, the coefficient _____ is understood.
(A) 0 (B) 1
(C) -1 (D) None of these
- Q.2** The terms whose literal factors are same are called _____ terms.
(A) like (B) unlike
(C) monomial (D) None of these
- Q.3** If $m = 2$, then value of $9 - 5m$ is
(A) 1 (B) 0
(C) -1 (D) 2
- Q.4** Identify monomials, binomials and trinomials from the following expressions :
(i) $y^3 + 2$ (ii) $9x^2y$
(iii) $2 - a^2 - 2b^2$ (iv) $6a^2b^2 - 8ab - 5ab$
- Q.5** Write the coefficient of
(i) x in $-6y^2x$ (ii) a in $-3a$
(iii) b in $\frac{1}{5}ba$ (iv) x in $-5xy^2$
- Q.6** Add $9 + x - 2x^2$, $6 - x + 2x^2 + 3x^3$, $4x^3 - x - 8$.
- Q.7** Subtract $-4xy^2 - 2xy - 5x^2y$ from the sum of $-x^2y + xy^2$ and $2xy + 4x^2y$.
- Q.8** To what expression must $4x - 3x^3 + 8x^2 + 6$ be added so as to make zero.
- Q.9** If $A = 2x^2 - 5x - 7$, $B = x^2 + 4x - 3$, $C = -4x^2 - 4x + 3$, find $A - B - C$.
- Q.10** Simplify combining like terms :
(i) $a - (a - b) - b - (2b - a)$
(ii) $2x - 3y - 2xy - (2x - 3y + xy) + 6xy + y - x$
- Q.11** Simplify the expressions and find their value if x is equal to 3.
(i) $3(3x - 1) + 4x + 9$
(ii) $6x + 4 + 3(4x - 8)$
- Q.12** Add the following terms :
(i) x^2y , $6x^2y$, $-8x^2y$
(ii) ab^2 , $-2ab^2$, $8ab^2$, $14ab^2$
- Q.13** Add the following terms :
(i) $5x - 6y$, $8x + 7y$, $-4x + 3y$
(ii) $6x^3 + 8 + 7x - 8x^2$, $3x^2 - 9 - 8x$, $3x - x^2 + 2x^3$
- Q.14** Subtract :
(i) $x^3 + 3x^2y + 6xy^2 - 2y^3$ from $y^3 - 4xy^2 - 5x^2y$
(ii) $7x^3 - 9x^2 + 5x - 3$ from $6 - 5x + 7x^2 - 9x^3$
- Q.15** What should be added to $2a^2 + ab + b^2$ to get $3a^2 + 4ab$?
- Q.16** What should be subtracted from $4a + 16b + 20$ to get $-11a + 2b - 26$?
- Q.17** From the sum of $a - 3b + 12$ and $-a + 15$, subtract $4a + b - 30$.
- Q.18** From the sum of $6 + 4y + y^2$ and $8 - 5y + 3y^2$, subtract the sum of $6y^2 - 4y$ and $-y^2 + 4y + 9$.

ANSWER KEY

1. (B) 2. (A) 3. (C) 4. (i) Binomial (ii) Monomial (iii) Trinomial (iv) Binomial
5. (i) $-6y^2$ (ii) -3 (iii) $\frac{1}{5}a$ (iv) $-5y^2$ 6. $7 - x + 7x^3$ 7. $8x^2y + 4xy + 5xy^2$
8. $-4x + 3x^3 - 8x^2 - 6$ 9. $5x^2 - 5x - 7$ 10. (i) $-2b + a$ (ii) $-x + 3xy + y$
11. (i) $(13x + 6)$, 45 (ii) $(18x - 20)$, 34 12. (i) $-x^2y$ (ii) $21ab^2$ 13. (i) $9x + 4y$ (ii) $8x^3 - 6x^2 + 2x - 1$

14. (i) $3y^3 - 10xy^2 - 8x^2y - x^3$ (ii) $9 - 10x + 16x^2 - 16x^3$
 16. $15a + 14b + 46$ 17. $-4a - 4b + 57$ 18. $-y^2 - y + 5$

15. $a^2 + 3ab - b^2$

EXERCISE # 2

Q.1 Get the algebraic expressions in the following cases using variables, constants and arithmetic operations :

- (i) Add twice of x and y
 (ii) Subtract y from thrice of x
 (iii) One-third of the product of a and b
 (iv) Square of x is subtracted from square of y
 (v) Subtract 25 from the sum of a and b

Q.2 Classify the following expressions as Monomial, Binomial, Trinomial :

- (i) $2x + 7$ (ii) $5a^2b + 3ab^2$
 (iii) 0 (iv) $-6x + by - 9z^2$

Q.3 Identify the monomials, binomials and trinomials from the following expressions :

- (i) $5x^2$ (ii) $x^3 - 1$
 (iii) $x^2 - y^2$ (iv) $4x^2 - 3y + 3$
 (v) $3x^2 + 2x + 5$ (vi) $-xyz$
 (vii) $a^3 + b^3 - 3ab$ (viii) $3x - z$

Q.4 Write the coefficient of :

- (i) x in $(-2x)$ (ii) 5 in $5abc$
 (iii) y^2 in $\frac{7}{8}x^2y^2z^3$ (iv) x^2 in $x^3 - 2x + 3$
 (v) x in $-3xy^2z$ (vi) p in $-3pq^3r^4$

Q.5 Write the numerical coefficient of each of the following :

- (i) xy (ii) $-6yz$
 (iii) $7abc$ (iv) $-2x^3y^2z$

Q.6 Write the numerical coefficient of each term in the following expression :

$$-2x^2y^2 - \frac{1}{5}xy^4 + z$$

Q.7 Identify like terms in each of the following :

- (i) $x^3, y^2, 2x^3, z^2$
 (ii) $3xy, yz, 4x, \frac{yz}{2}$

- (iii) $-2x^2y, x^2z, -yx^2, x^2y^2$
 (iv) $cab^2, a^2bc, b^2ac^2, c^2ab, a^2b^2c, abc, acb^2$

Q.8 Add the following :

- (i) The length of a rectangle is $x^2 - x$ and its width is $x - 4$. Find its perimeter.
 (ii) $\left(\frac{1}{3}y^2 - \frac{2}{4}y + 5\right) - \left(\frac{2}{7}y - \frac{2}{3}y^2 + 2\right)$
 and $-\left(\frac{1}{7}y - 3 + 2y^2\right)$

Q.9 Simplify each of the expression :

- (i) $\frac{1}{2}a - \frac{1}{3}a + \frac{1}{4}a$
 (ii) $(a + b - c) + (b + c - a) + (c + a - b)$
 (iii) $2b - a - b - 2c - b + a - (a - b - c)$

Q.10 Subtract the lower expression from the upper expression and check :

- (i) $3x^3 - 7x^2 + 4x - 10$
 $2x^3 + 5x^2 - 6x + 2$
 (ii) $-5a^2 - 7a + 8$
 $3a^2 - 7a + 8$

Q.11 Subtract the first expression from the second :

- (i) $-5x^2 - y^2, 4x^2 + y^2$
 (ii) $5x^2 + 3x, 5x^2 - 3x$

Q.12 How much is $x + 2y - 3z$ greater than $-x - y - 5z$?

Q.13 Subtract the sum of $(8a - 6a^2 + 9)$ and $(-10a - 8 + 8a^2)$ from -3 .

Q.14 How much less than $x - 4y + 3z$ is $3x - 6y - z$?

Q.15 What must be added to $6x - 4y + 3z$ to obtain $3x - 2y + 7z$?

Q.16 By how much does $-4a^2b - 3ab^2 + b^2$ exceed $a^3 + 2a^2b + 6ab^2 - b^2$?

Q.17 The perimeter of a triangle is $7x - 10$. One of the sides is $x - 6$, and another is $3x + 2$. Find the third side.

Q.18 The sum of two expressions is $x^2 - y^2 - 2xy + y - 7$. If one of them is $2x^2 + 3y^2 - 7y + 1$. Find the other.

Q.19 From the sum of $3x - y + z$ and $-y - z$, subtract $3x - y - z$. What is the coefficient of x in the result?

Q.20 What must be added to $5x^3 - 2x^2 + 6x + 7$ to make the sum $x^3 + 3x^2 - x + 1$?

Simplify the following (Q.21 to Q.29) :

Q.21 $a - \frac{1}{3} [(a^2 - 5b) - 2 \{2a^2 - (3c - 2b)\}]$

Q.22 $xy - [yz - zx - \{yx - (zy - xz) - (xy - zy)\}]$

Q.23 $4x^3 - [9x^2 - \{-5x^3 - (2 - 7x^2) + 6x\}]$

Q.24 $-a - [a + \{a + b - 2a - (a - b)\} - b]$

Q.25 $x - [\{zy - (5x + y - z) + 2x^2\} - (x^2 - 3y)]$

Q.25 $x - [\{zy - (5x + y - z) + 2x^2\} - (x^2 - 3y)]$

Q.26 $20x - [15x^3 + 5x^2 - \{8x^2 - (4 - 2x - x^3) - 5x^3\} - 2x]$

Q.27 $2a - 3b - [3a - 2b - \{a - c - (a - 2b)\}]$

Q.28 $-4x^2 + \{(2x^2 - 3) - (4 - 3x^2)\}$

Q.29 $2a - [4b - \{4a - (3b - 2a + 2b)\}]$

Q.30 What is the value of $4x + x - 2x^2 + x - 1$, if $x = -1$?

Q.31 Find the value of the following expressions :

(i) $(x + y)^2 - (x - y)^2$, if $x = \frac{1}{2}$, $y = \frac{1}{4}$

(ii) $(x - y)^2 + 4xy$, if $x = \frac{1}{3}$, $y = 2$

(iii) $(x + y)^2 - (x^2 + y^2 + 2xy)$, if $x = 1$, $y = -1$

(iv) $(x^2 - y^2) - (x + y)(x - y)$, if $x = -1.7$, $y = -3.9$

ANSWER KEY

1. (i) $2x + y$ (ii) $3x - y$ (iii) $\frac{1}{3}ab$ (iv) $y^2 - x^2$ (v) $(a + b) - 25$
2. (i) Binomial (ii) Binomial (iii) Monomial (iv) Trinomial
3. (i) Monomial (ii) Binomial (iii) Binomial (iv) Trinomial (v) Trinomial
(vi) Monomial (vii) Trinomial (viii) Binomial
4. (i) -2 (ii) abc (iii) $\frac{7}{8}x^2z^3$ (iv) x (v) $-3y^2z$ (vi) $-3q^3r^4$
5. (i) 1 (ii) -6 (iii) 7 (iv) -2
6. Coefficient of $x^2y^2 = -2$, Coefficient of $xy^4 = -\frac{1}{5}$, Coefficient of $z = 1$
7. (i) x^3 and $2x^3$ (ii) yz and $\frac{yz}{2}$ (iii) $-2x^2y$ and $-yx^2$ (iv) cab^2 and acb^2
8. (i) $2x^2 - 8$ (ii) $-y^2 - \frac{13}{14}y + 6$
9. (i) $\frac{5}{12}a$ (ii) $(a + b + c)$ (iii) $-a + b - c$
10. (i) $x^3 - 12x^2 + 10x - 12$ (ii) $-8a^2$
11. (i) $9x^2 + 2y^2$ (ii) $-6x$
12. $2x + 3y + 2z$
13. $2a - 2a^2 - 4$
14. $-2x + 2y + 4z$
15. $-3x + 2y + 4z$
16. $a^3 + 6a^2b + 9ab^2 - 2b^3$
17. $3x - 6$
18. $-x^2 - 4y^2 - 2xy + 8y - 8$
19. $z - y$, Coeff. of $x = 0$
20. $-4x^3 + 5x^2 - 7x - 6$
21. $a^2 + a + 3b - 2c$
22. $xy - yz + 2xz$
23. $-x^3 - 2x^2 + 6x - 2$
24. $-b$
25. $-x^2 - 6x - zy - 2y - z$
26. $-19x^3 + 3x^2 + 24x - 4$
27. $b - c - a$
28. $x^2 - 7$
29. $8a - 5b$
30. -9
31. (i) $\frac{1}{2}$ (ii) $\frac{49}{9}$ (iii) 0 (iv) 0

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