

9. Algebraic Expressions and Identities

Q 1 Using identity $(x - a)(x + a) = x^2 - a^2$ find $6^2 - 5^2$.

Mark (1)

Q 2 Find the product of $(7x - 4y)$ and $(3x - 7y)$.

Mark (1)

Q 3 Using suitable identity find $(a + 3)(a + 2)$.

Mark (1)

Q 4 Using identity $(a + b)^2 = a^2 + 2ab + b^2$ find the value of 103^2 .

Mark (1)

Q 5 Using identity $(a - b)^2 = a^2 - 2ab + b^2$ find the value of 98^2 .

Mark (1)

Q 6 Using identity find $(2x + 3)^2$.

Mark (1)

Q 7 Subtract $7x - 3x^2$ from $4x + 8x^2$.

Mark (1)

Q 8 Using suitable identity find $(7x - 3y)^2$.

Mark (1)

Q 9 Add $4x^2 + 2xy - 4$ and $7x^2 - 3xy + 4$.

Mark (1)

Q 10 Find the product of $4x$, $7x^2$, $-2x$.

Mark (1)

Q 11 Find the product of $(x^2 - y^2)(2x + y)$.

Marks (2)

Q 12 Simplify: $(xy + yz)^2 - (xy - yz)^2$

Marks (2)

Q 13 Using identity find the product of $\left(\frac{a}{2} + \frac{3b}{4}\right) \left(\frac{a}{2} + \frac{3b}{4}\right)$

Marks (2)

Q 14 Multiply: $(a^2 + 2c^2)(3a - 3c)$

Marks (2)

Q 15 Simplify: $(x + y)(2x - 3y + z) - (2x - 3y)z$

Marks (2)

Q 16 Subtract $3x(x - 4y + 5z)$ from $4x(2x - 3y + 10z)$.

Marks (2)

Q 17 Simplify: $(x^2 - y^2)^2$

Marks (2)

Q 18 Using suitable identity find the product of $\left(\frac{2}{3}x - 5\right)\left(\frac{2}{3}x + 5\right)$.

Marks (2)

Q 19 Simplify $3a(4a - 5) + 3$ and find its value for $a = 3$.

Marks (2)

Q 20 Using suitable identity find $(6x^2 - 5/3)^2$.

Marks (2)

Q 21 Using identity $a^2 - b^2 = (a + b)(a - b)$,
find $(1.02)^2 - (0.98)^2$.

Marks (3)

Q 22 Using $(x + a)(x + b) = x^2 + (a + b)x + ab$ find 105×107 .

Marks (3)

Q 23 Using identity find the value of $(7.2)^2$.

Marks (3)

Q 24 Using identity evaluate 297×303 .

Marks (3)

Q 25 Using identity find the value of $(4.7)^2$.

Marks (3)

Q 26

Simplify $\left(\frac{5}{3}x + \frac{3}{4}y\right)^2 - \left(\frac{5}{3}x - \frac{3}{4}y\right)^2$ and also evaluate it when $x = 2$ and $y = -1$.

Marks (4)

Q 27 Simplify $(xy + yz)^2 - 2x^2y^2z$. Find the value when $x = -1$,
 $y = 1$ and $z = 2$.

Marks (4)

Q 28 Simplify: $(1.5x - 4y)(1.5x + 4y + 3) - 4.5x + 12y$

Marks (4)

Most Important Questions

Q 1 What are algebraic expressions?

Q 2 Expressions consists of _____ & _____ .

Q 3 T/F.

The value of an expression changes with the value chosen for the variables it contains.

Q 4 When numbers/literals are added or subtracted, they are called _____ .

Q 5 When numbers/literals are multiplied, they are called _____.

Q 6 The terms in the expression $4ab + 5a(b + c)$ are:

Q 7 The factors in the term $5a(b + c)$ are :

Q 8 A monomial is an expression in which _____ .

Q 9 A binomial is an expression in which _____ .

Q 10 While multiplying two monomials, Coefficient of product = _____ X _____.

Q 11 Identify the terms, their coefficients for the expression:

$$0.75x + 0.44y + 1.56zx$$

Q 12 Classify the following as binomials and trinomials:

$$2a + 3b, 2x+3y-5, a+4, 12x+13y+17z$$

Q 13 What are the polynomials? Give an example.

Q 14 What are like and unlike terms?

Q 15 Classify as like and unlike terms:

$$\begin{array}{ll} 2abc & \text{and } bac, \\ x^2y^2z & \text{and } y^2zx^2. \\ 7x & \text{and } 3y \\ xy+z & \text{and } xyz \end{array}$$

Q 16 Add:

$$2p^2q^2 - 3pq + 4 \text{ \&}$$

$$5 + 7pq - 3p^2q^2$$

Q 17 Add: $-8x^2 + 2y^2z - 11$ and $-2x^2 + 9y^2z - 1$

Q 18 Subtract $4p^2q + 5pq + 5pq^2 - 8p + 7q - 10$ from $18 - 3p - 11q + 5pq - 2pq^2 + 5p^2q$

Q 19 Find the product of : $2z$, $4y$, $2y^2$ & $6xyz$

Q 20 Find : a) $13mn \times 13np$

b) $-4xy \times -7x^2y$

Q 21 State the distributive property.

Q 22 T/F: $n(4 + m) = 4n + nm$

Q 23 T/F : $p(9 - p) = 9p - 2p$

Q 24 Whenever we multiply a binomial by a binomial, we get _____terms in the product.

Q 25 Whenever we multiply a binomial by a trinomial, we get _____terms in the product.

Q 26 Find : $a^2(2ab - 5c)$

Q 27 Simplify $x(x - 3) + 2$ and evaluate for $x = 2$.

Q 28

Find:

$$\left(-\frac{7}{3}pq\right) \times \left(\frac{6}{5}pqr\right)$$

Q 29 Find : $(3x^6) \times (6x^{12}) \times (9x^{18})$

Q 30 Find using distributive property :

$$125 \times 42$$

Q 31 Find : $ab(a^2 + bc + c^2)$

Q 32

Find : $5m(m^2 + m + 1)$ and evaluate for $m = 1$.

Multiply :

Q 33 $(2.5a - 0.5b)$ and $(2.5a + 0.5b + c)$

Q 34 Multiply : $(ab + 5)(a + c^2)(b + 6)$

Q 35 Simplify : $(m + n)(3m + n) + (m + 2n)((m - n)$

Q 36 Simplify: $(3.5e - 4.5f)(1.5e + 4f + ef) - 4.5e + 10f$

Q 37 Simplify : $(3.5e - 4.5f)(1.5e + 4f + ef) - 4.5e + 10f$

Q 38 What is an identity.

Q 39 True/False

An equation, which is true for only certain values of the variable in it, is not an identity.

Q 40 $(x + a)(x + b) =$ _____

Q 41 $(a - b)^2 =$ _____

Q 42 $(x - a)(x + a) = \underline{\hspace{2cm}}$.

Q 43 If $x + \frac{1}{x} = 6$, find $x^2 + \frac{1}{x^2}$.

Q 44 If $x + y = 12$ and $xy = 32$. Find the value of $x^2 + y^2$.

Q 45 Find using identities: 106^2

Q 46 Find using identities:
 $(4.8)^2$

Q 47 Find using identities:
 $(-p + q)(-p + q)$

Q 48 Find : $(2x + 5y)(2x + 3y)$

Q 49 Find : $(2x - y)(2x + y)(4x^2 + y^2)$

Q 50 Multiply :

$$[p^2 + (qr)^2][p^2 - (qr)^2]$$

and evaluate for $p = 1, q = 2, r = 3$.

Q 51 Derive the identity : $(x + a)(x + b) = x^2 + (a + b)x + ab$

Q 52 Find the product : $(a - \frac{b}{2} - 1)(a + \frac{b}{2} + 1)$