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 + 0.44 y + 1. 56 zx

Q 12 Classify the following as binimials 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:
2abc and bac,
x^2y^2z and y^2zx^2.
7x and 3y
xy+z and xyz

Q 16 Add:
$2p^2q^2 - 3pq + 4$ &

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

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 X 42

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

Q 32

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

Q 33 $$\text{Multiply : } (2.5a - 0.5b) \text{ and } (2.5a + 0.5b + c)$$

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 $(x - a)(x + a) =$ _____.

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

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

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 : $(a - \frac{b}{2} - 1)(a + \frac{b}{2} + 1)$