## 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 $(7 x-4 y)$ and $(3 x-7 y)$.
Mark (1)

Q 3 Using suitable identity find $(a+3)(a+2)$.
Mark (1)

Q 4 Using identity $(a+b)^{2}=a^{2}+2 a b+b^{2}$ find the value of $103^{2}$.
Mark (1)

Q 5 Using identity $(a-b)^{2}=a^{2}-2 a b+b^{2}$ find the value of $98^{2}$.
Mark (1)

Q 6 Using identity find $(2 x+3)^{2}$.
Mark (1)

Q 7 Subtract $7 x-3 x^{2}$ from $4 x+8 x^{2}$.
Mark (1)

Q 8 Using suitable identity find $(7 x-3 y)^{2}$.
Mark (1)

Q 9 Add $4 x^{2}+2 x y-4$ and $7 x^{2}-3 x y+4$.
Mark (1)

Q 10 Find the product of $4 x, 7 x^{2},-2 x$.
Mark (1)

Q 11 Find the product of $\left(x^{2}-y^{2}\right)(2 x+y)$.
Marks (2)

Q 12 Simplify: $(x y+y z)^{2}-(x y-y z)^{2}$
Marks (2)

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

Q 14 Multiply: $\left(a^{2}+2 c^{2}\right)(3 a-3 c)$

> Marks (2)

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

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

Q 17 Simplify: $\left(x^{2}-y^{2}\right)^{2}$
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 $3 \mathrm{a}(4 \mathrm{a}-5)+3$ and find its value for $\mathrm{a}=3$.
Marks (2)

Q 20 Using suitable identity find $\left(6 x^{2}-5 / 3\right)^{2}$.
Marks (2)

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

Marks (3)

Q $22 \operatorname{Using}(x+a)(x+b)=x^{2}+(a+b) x+a b$ find $105 \times 107$.
Marks (3)

Q 23 Using identity find the value of $(7.2)^{2}$.
Marks (3)

Q 24 Using identity evaluate $297 \times 303$.
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 $(x y+y z)^{2}-2 x^{2} y^{2} z$. Find the value when $x=-1$,
$\mathrm{y}=1$ and $\mathrm{z}=2$.
Marks (4)

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

## Most Important Questions

Q 1 What are algebraic expressions?

Q 2 Expressions consists of $\qquad$ \& $\qquad$ .

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 $\qquad$ .

Q 5 When numbers/literals are multiplied, they are called $\qquad$ .

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

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

Q 8 A monomial is an expression in which $\qquad$ .

Q 9 A binomial is an expression in which $\qquad$ .

Q 10 While multiplying two monomials, Coefficient of product = $\qquad$ X $\qquad$ .

Q 11 Identify the terms, their coefficients for the expression: $0.75 x+0.44 y+1.56 z x$

Q 12 Classify the following as binimials and trinomials:
$2 a+3 b, 2 x+3 y-5, a+4,12 x+13 y+17 z$

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:

| $2 a b c$ | and bac, |
| :--- | :--- |
| $x^{2} y^{2} z$ | and $y^{2} z x^{2}$. |
| $7 x$ | and $3 y$ |
| $x y+z$ | and $x y z$ |

Q 16 Add:
$2 p^{2} q^{2}-3 p q+4 \&$
$5+7 p q-3 p^{2} q^{2}$

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

Q 19 Find the product of : $2 \mathrm{z}, 4 \mathrm{y}, 2 \mathrm{y}^{2} \& 6 x y z$

Q 20 Find : a) $13 \mathrm{mn} \times 13 \mathrm{np}$
b) $-4 x y \times-7 x^{2} y$

Q 21 State the distributive property.

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

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

Q 24 Whenever we multiply a binomial by a binomial, we get $\qquad$ terms in the product.

Q 25 Whenever we multiply a binomial by a trinomial, we get $\qquad$ terms in the product.

Q 26 Find : $\mathrm{a}^{2}(2 \mathrm{ab}-5 \mathrm{c})$

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

Q 28
Find:
$\left(-\frac{7}{3} p q\right) \times\left(\frac{6}{5} p q r\right)$
Q29 Find: $\left(3 x^{6}\right) \times\left(6 x^{12}\right) \times\left(9 x^{18}\right)$

Q 30 Find using distributive property:
$125 \times 42$

Q 31 Find: $a b\left(a^{2}+b c+c^{2}\right)$

Q 32
Find : $5 m\left(m^{2}+m+1\right)$ and evaluate for $m=1$.
Multiply:
(2.5a-0.5b) and (2.5a $+0.5 b+c$ )

Q 34 Multiply: $(a b+5)\left(a+c^{2}\right)(b+6)$

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

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

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

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 $40(x+a)(x+b)=$ $\qquad$
$\mathrm{Q} 41(\mathrm{a}-\mathrm{b})^{2}=$ $\qquad$

Q $42(x-a)(x+a)=$ $\qquad$ .

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

Q44 If $x+y=12$ and $x y=32$. 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 : $(2 x+5 y)(2 x+3 y)$

Q 49 Find: $(2 x-y)(2 x+y)\left(4 x^{2}+y^{2}\right)$

Q 50 Multiply :

$$
\left[\mathrm{p}^{2}+(\mathrm{qr})^{2}\right]\left[\mathrm{p}^{2}-(\mathrm{qr})^{2}\right]
$$

and evaluate for $\mathrm{p}=1, \mathrm{q}=2, \mathrm{r}=3$.

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

Q 52 Find the product :

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

