Chapter—9

Algebraic Expressions and Identities

1. Classify the following polynomials as monomials, binomials or trinomials.
(i) $7 + a + 5b$ (ii) $3b^2 - 5b^2$ (iii) pqr

2. Add $7x^2 - 4x + 5$, $-3x^2 + 2x - 1$ and $5x^2 - x + 9$.

3. Subtract $\frac{2}{3}y^3 - \frac{2}{7}y^2 - 5$ from $\frac{1}{3}y^3 + \frac{5}{7}y^2 + y - 2$

4. Complete the following table of products:

First monomial $\rightarrow$ Second monomial $\downarrow$	$11x$	$-10qp$	$4a^2b^2$	$2x^2y^2$	$-3\,mn^2$
$5x$	$55x^2$				
$7pq$		$-70p^2q^2$			
$6a^2b^2$				$12a^2b^2x^2y^2$	
$-9x^2y^2$					
$8\,m^2n$			$32a^2b^2m^2n$		

5. Fill in the blanks:
(i) The number of terms in the product of $(3x^2 + 6xy + 5y^2)$ and $(3x + 4y - 13)$ is.....
(ii) In the product of $(4a^3 + 5a^2 - 11a)$ and $(-15 + 3a - 7a^2)$, the coefficient of a^4 is.....
(iii) The value of $(3a - 4b + 2) \times (5a + 6)$ for $a = 1$ and $b = -2$ is .....
(iv) The value of $\frac{(67.542)^2 - (32.458)^2}{75.458 - 40.374}$ is.....
(v) Find the product:
$(A + B).(A - B).(A^2 + B^2).(A^4 + B^4)$ =.....

6. Write whether true or false.
(i) If, $a + \frac{1}{a} = 7$, then $a^2 + \frac{1}{a^2} = 49$
(ii) The product of a binomial and a trinomial will always have 5 terms.
(iii) $(3x^2 + 5y^2) \times (5x^5 + 8y^3) = 15x^7 + 24x^2y^3 + 25x^5y^2 + 40y^5$

7. If $(3x - 5y) = 10$ and $xy = 5$, then find the value of $9x^2 + 25y^2$.

8. If $x + y = 9$ and $xy = 14$, find $x^2 - y^2$.

9. (i) Given $(x^2 + y^2) = 74$ and $xy = 35$, find the value of $x + y$ and $x - y$.

(ii) If $x + \frac{1}{x} = 4$, find the value of $\left(x^2 + \frac{1}{x^2}\right)$ and $\left(x^4 + \frac{1}{x^4}\right)$

10. Choose the correct option :

(i) The power of the algebraic expression $7xy + 3xy^2 - x^3y^2 + 4$ is

(A) 1 (B) 2 (C) 5 (D) 3

(ii) Which of the following algebraic expressions is a polynomial?

(A) $2m^2 - 5m + 6$ (B) $m^2 + \sqrt{m} + 11$ (C) $m^3 - 7m^{2/3} + 6$ (D) $m + \frac{5}{m} - 7$

(iii) The product of $(7a - 8b)$ and $(7a - 8b)$ is

(A) $14a^2 - 112ab + 16b^2$ (B) $49a^2 + 112ab - 64b^2$

(C) $49a^2 - 112ab + 64b^2$ (D) $49a^2 - 112ab - 64b^2$

(iv) If $(5x - 7)(2x + 4) = 10x^2 - px - 28$, then p is

(A) 3 (B) 5 (C) -6 (D) -7

(v) What must be added to $7z^3 - 11z^2 - 129$ to get $5z^2 + 7z - 92$?

(A) $7z^3 + 16z^2 + 7z + 37$ (B) $-7z^3 + 16z^2 + 7z + 37$

(C) $-7z^3 + 16z^2 + 7z - 37$ (D) $-7z^3 - 7z^2 + 7z - 37$

11. If $A = 5x + 11y - 15z$, $B = 12x - 13y + 19z$, $C = 7x - 6y + 21z$, then find:

(i) $A + B + C$ (ii) $A - B - C$ (iii) $A + B - C$ (iv) $A - B + C$

12. If the perimeter of a rectangular field is $(16a + 8b - 6c)$ units and one of its side is $(5a + 3b - 4c)$ units, find the other side

13. Using suitable identities evaluate the following:

(i) $(93)^2$ (ii) $(12.5)^2 - (7.5)^2$ (iii) 93×109

14. Simplify the following.

(i) $(x^2 + y^2)^2 - (x^2 - y^2)^2$

(ii) $(5x + 11)^2 + (5x - 11)^2$

15. Complete the following:

	Length (*l*)	**Breadth (*b*)**	**Height (*h*)**	**Volume (*lbh*)**
(i)	$4xy$	$-12xz$	$-5zy$	.....
(ii)	$-x^4$	$-x^3$	x^2	.....
(iii)	$-2mn$	$-9lmn$	$6nl$	.....