

## CHAPTER-2 | Polynomials

### QUIZ PART-14

1. What is the expanded form of  $(3a + 4b + 5c)^2$ ?

- A.  $9a^2 + 16b^2 + 25c^2 + 24ab + 30ac + 40bc$   
 B.  $9a^2 + 16b^2 + 25c^2 - 24ab + 30ac + 40bc$   
 C.  $9a^2 + 16b^2 + 25c^2 + 24ab + 30ac - 40bc$   
 D.  $9a^2 + 16b^2 + 25c^2 - 24ab - 30ac - 40bc$  (A)

**Explanation:** The expanded form of  $(3a + 4b + 5c)^2$  involves squaring each term and adding twice the product of every pair of distinct terms. The result is  $9a^2 + 16b^2 + 25c^2 + 24ab + 30ac + 40bc$

2. What is the expanded form of  $(4a - 2b - 3c)^2$ ?

- A.  $16a^2 + 4b^2 + 9c^2 - 16ab + 24ac + 12bc$   
 B.  $16a^2 + 4b^2 + 9c^2 - 16ab - 24ac - 12bc$   
 C.  $16a^2 + 4b^2 + 9c^2 + 16ab - 24ac - 12bc$   
 D.  $16a^2 + 4b^2 + 9c^2 + 16ab + 24ac + 12bc$  (B)

**Explanation:** Expanding  $(4a - 2b - 3c)^2$  gives  $16a^2 + 4b^2 + 9c^2 - 16ab - 24ac - 12bc$

3. Which of the following is the factorized form of  $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$ ?

- A.  $(2x - y - z)(2x - y + z)$   
 B.  $(2x + y - z)(2x + y + z)$   
 C.  $(2x + y + z)(2x - y - z)$   
 D.  $(x - y + z)(x + y - z)$  (A)

**Explanation:** The given expression can be factorized as  $(2x - y - z)(2x - y + z)$

4. What is the expanded form of  $(3a + 4b)^3$ ?

- A.  $27a^3 + 64b^3 + 108a^2b + 144ab^2$   
 B.  $27a^3 + 64b^3 - 108a^2b + 144ab^2$   
 C.  $27a^3 + 64b^3 + 108a^2b - 144ab^2$   
 D.  $27a^3 + 64b^3 + 108a^2b + 144ab^2$  (A)

**Explanation:** The expansion of  $(3a + 4b)^3$  results in  $27a^3 + 64b^3 + 108a^2b + 144ab^2$

5. What is the expanded form of  $(5p - 3q)^3$ ?

- A.  $125p^3 - 27q^3 - 75p^2q + 45pq^2$   
 B.  $125p^3 + 27q^3 - 75p^2q - 45pq^2$   
 C.  $125p^3 + 27q^3 + 75p^2q - 45pq^2$   
 D.  $125p^3 - 27q^3 + 75p^2q - 45pq^2$  (A)

**Explanation:** The expansion of  $(5p - 3q)^3$  gives  $125p^3 - 27q^3 - 75p^2q + 45pq^2$

6. How do you evaluate  $105 \times 106$  using identities?

- A.  $(100 + 5)(100 + 6)$   
 B.  $(100 + 5)(100 - 6)$   
 C.  $(100 - 5)(100 + 6)$   
 D.  $(100 + 5)(100 + 10)$  (A)

**Explanation:** By using the identity for the product of two binomials, we can rewrite  $105 \times 106$  as  $(100 + 5)$

7. Which identity helps to factorize the expression  $8x^3 + 27y^3$ ?

- A.  $(x + y)(x^2 - xy + y^2)$   
 B.  $(x - y)(x^2 + xy + y^2)$   
 C.  $(x + y)(x^2 + xy + y^2)$   
 D.  $(x - y)(x^2 - xy + y^2)$  (C)

**Explanation:** The identity for the sum of cubes is  $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$  which can be applied to factor  $8x^3 + 27y^3$  as  $(2x + 3y)(4x^2 - 6xy + 9y^2)$

8. Which identity is used for  $(x + y)^2$ ?

- A.  $x^2 + 2xy + y^2$   
 B.  $x^2 + 2xy - y^2$   
 C.  $x^2 - 2xy + y^2$   
 D.  $x^2 - y^2 + 2xy$  (A)

**Explanation:** The identity for the square of a binomial  $(x + y)^2$  is  $x^2 + 2xy + y^2$

9. What is the expanded form of  $(x + y + z)^2$ ?

- A.  $x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$   
 B.  $x^2 + y^2 + z^2 + 2xy + 2yz + zx$   
 C.  $x^2 + y^2 + z^2 + 3xy + 3yz + 3zx$   
 D.  $x^2 + y^2 + z^2 + xy + yz + zx$  (A)

**Explanation:** The expansion of  $(x + y + z)^2$  gives  $x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$

10. What is the factorized form of  $x^3 - y^3$ ?

- A.  $(x - y)(x^2 + xy + y^2)$   
 B.  $(x + y)(x^2 - xy + y^2)$   
 C.  $(x - y)(x^2 - y^2)$   
 D.  $(x + y)(x^2 + y^2)$  (A)

**Explanation:** The difference of cubes formula states that  $x^3 - y^3$  can be factored as  $(x - y)(x^2 + xy + y^2)$