

CHAPTER-2 | Polynomials

QUIZ  
PART-13

1. By expanding  $(x + 3y)^2$  we get:

- A.  $x^2 + 9y^2 - 6xy$
- B.  $x^2 + 9y^2 + 12xy$
- C.  $x^2 + 9y^2 - 12xy$
- D.  $x^2 + 9y^2 + 6xy$  (A)

**Explanation:** The expansion of  $(x + 3y)^2$  is  $x^2 + 2(x)(3y) + (3y)^2$  which simplifies to  $x^2 + 9y^2 - 6xy$

2. If we do not multiply directly, the value of  $103 \times 107$  will be:

- A. 11921
- B. 11021
- C. 11821
- D. 11521 (A)

**Explanation:** By using the identity  $(a+b)(a-b) = a^2 - b^2$ , we can calculate  $103 \times 107 = (105-2)(105+2) = 105^2 - 2^2 = 11025 - 4 = 11921$

3. Which identity represents the difference of squares?

- A.  $(x + y)^2 = x^2 + 2xy + y^2$
- B.  $(x - y)^2 = x^2 - 2xy + y^2$
- C.  $(x^2 - y^2) = (x - y)(x + y)$
- D.  $(x + a)(x + b) = x^2 + x(a + b) + ab$  (C)

**Explanation:** The difference of squares identity states that  $x^2 - y^2$  can be factored into  $(x - y)(x + y)$

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

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

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

5. What is the result of expanding  $(x - y)^3$ ?

- A.  $x^3 + y^3 - 3xy(x - y)$
- B.  $x^3 - y^3 - 3xy(x - y)$
- C.  $x^3 - y^3 + 3xy(x + y)$
- D.  $x^3 - y^3 - 3xy(x + y)$  (B)

**Explanation:** The expansion of  $(x - y)^3$  is  $x^3 - y^3 - 3xy(x - y)$

6. What is the expanded form of  $(x + y)^3$ ?

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

**Explanation:** The expansion of  $(x + y)^3$  is  $x^3 + y^3 + 3xy(x + y)$

7. What is the identity for  $(x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$

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

**Explanation:** The identity  $(x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$  simplifies to  $x^3 + y^3 + z^3 - 3xyz$

8. Which identity represents the square of a binomial?

- A.  $(x + y)^2 = x^2 + 2xy + y^2$
- B.  $(x - y)^2 = x^2 - 2xy + y^2$
- C.  $(x + y)^2 = x^2 + y^2$
- D.  $(x + y)^2 = x^2 + 2xy$  (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  $(x + a)(x + b)$ ?

- A.  $x^2 + x(a + b) + ab$
- B.  $x^2 + x(a - b) + ab$
- C.  $x^2 + x(a + b) - ab$
- D.  $x^2 + x(a + b)$  (A)

**Explanation:** The expansion of  $(x + a)(x + b)$  is  $x^2 + x(a + b) + ab$

10. What is the value of  $(x + 3)^2$  when expanded?

- A.  $x^2 + 9 + 6x$
- B.  $x^2 + 9x + 6$
- C.  $x^2 + 6x + 9$
- D.  $x^2 + 3x + 6$  (C)

**Explanation:** The expansion of  $(x + 3)^2$  is  $x^2 + 2(x)(3) + 3^2$  which simplifies to  $x^2 + 6x + 9$