Quiz 1.2: Factoring Polynomials

Multiple Choice: *Choose the letter that corresponds to the correct answer. Write the answer in your answer sheet.*

1. Numbers or expressions that can be expressed to the power of 3 are called:
   A. Difference of Two Cubes
   B. Difference of Two Squares
   C. Perfect Cube
   D. Perfect Square

2. The process of describing an algebraic expression as the product of two or more expressions is called:
   A. Cubing Polynomials
   B. Factoring Polynomials
   C. Multiplying Polynomials
   D. Squaring Polynomials

3. When a polynomial is multiplied by itself, then it is a:
   A. Difference of Two Cubes
   B. Difference of Two Squares
   C. Perfect Cube
   D. Perfect Square

4. The reverse process of getting the product of any number or algebraic expression is called:
   A. Cubing
   B. Factoring
   C. Multiplying
   D. Squaring

5. Describe the difference between factoring the sum of two cubes and factoring the difference of two cubes. How do these two methods differ?
   A. The sign of the middle term in the factorization
   B. The number of terms in each factor
   C. The presence of a common monomial factor
   D. The use of a specific formula for each type of polynomial

6. When factoring a polynomial by grouping, what is the first step?
   A. Identify the common monomial factor
   B. Separate the polynomial into two groups
   C. Factor out the common binomial factor
   D. Combine the factored terms

7. Which method of factoring is used to factor the polynomial $x^2 - 9$?
   A. Factoring by grouping
   B. Factoring the difference of two squares
   C. Factoring perfect square trinomials
   D. Factoring the sum and difference of two cubes

8. Which method of factoring is most appropriate for the polynomial $3x^2 - 6x + 3$?
   A. Factoring by grouping
   B. Factoring the difference of two squares
   C. Factoring perfect square trinomials
   D. Factoring the sum and difference of two cubes

9. What is the common monomial factor in the polynomial $4x^3 - 8x^2 + 12x$?
   A. $2x$ B. $4x$ C. $12x$ D. $4x^2$

10. The volume of a cube is given by $V = x^3 - 8$. Factor the expression completely to find the length of a side of the cube.
    A. $(x-2)^2$ B. $(x-2)(x+2)$ C. $(x-2)(x^2-2x+4)$ D. $(x-2)(x^2+2x+4)$

11. Factor the polynomial $2x^3 - 4x^2 + 2x$ completely.
    A. $2x^2(x-1)$ B. $2x(x-1)^2$ C. $2x(x-1)(x+1)$ D. $2x^2(x-1)(x+1)$

12. Factor the polynomial $4a^3 - 16a^2b + 16ab^2$ completely.
    A. $4a(a-2b)^2$ B. $4a^2(a-2b)$ C. $4a(a-2b)(a+3b)$ D. $4a^2(a-2b)(a+3b)$

13. Factor the polynomial $9x^4 - 4y^4$ completely.
    A. $(3x^2-2y^2)(3x^2-2y^2)$ B. $(3x^2+2y^2)(3x^2+2y^2)$ C. $(3x^2+2y)(3x^2-2y)$ D. $(3x^2-2y^2)\,(3x^2+2y^2)$

Answer Key

1. Numbers or expressions that can be expressed to the power of 3 are called:

   Solution:

   A. Difference of Two Cubes
   C. Perfect Cube
   B. Difference of Two Squares
   D. Perfect Square

2. The process of describing an algebraic expression as the product of two or more expressions is called:

   Solution:

   A. Cubing Polynomials
   C. Multiplying Polynomials
   B. Factoring Polynomials
   D. Squaring Polynomials

3. When a polynomial is multiplied by itself, then it is a:

   Solution:

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   C. Perfect Cube
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4. The reverse process of getting the product of any number or algebraic expression is called:

   Solution:

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   B. Factoring
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   Solution:

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   Solution:

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   Solution:

   A. Factoring by grouping
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   B. Factoring the difference of two squares
   D. Factoring the sum and difference of two cubes

8. Which method of factoring is most appropriate for the polynomial $3x^2 - 6x + 3$?

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9. What is the common monomial factor in the polynomial $4x^3 - 8x^2 + 12x$?

   Solution:

   A. $2x$
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   D. $4x^2$

10. The volume of a cube is given by $V = x^3 - 8$. Factor the expression completely to find the length of a side of the cube.

    Solution:

    A. $(x - 2)^2$
    B. $(x - 2)(x + 2)$
    C. $(x - 2)(x^2 - 2x + 4)$
    D. $(x - 2)(x^2 + 2x + 4)$

11. Factor the polynomial $2x^3 - 4x^2 + 2x$ completely.

Solution:

A. $2x^2(x-1)$ B. $2x(x-1)^2$ C. $2x(x-1)(x+1)$ D. $2x^2(x-1)(x+1)$

12. Factor the polynomial $4a^3 - 16a^2b + 16ab^2$ completely.

Solution:

A. $4a(a-2b)^2$ B. $4a^2(a-2b)$ C. $4a(a-2b)(a+3b)$ D. $4a^2(a-2b)(a+3b)$

13. Factor the polynomial $9x^4 - 4y^4$ completely.

Solution:

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