# Practice Worksheet on Formulas of Abbreviated Multiplication

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## Long Answer Questions

1. Explain the formula for squaring a binomial $(a + b)^2$ and provide an example.

2. Describe the formula for the difference of squares $(a^2 - b^2)$ and give an example.

3. Explain the formula for the cube of a binomial $(a + b)^3$ and give an example.

4. Explain the formula for $(a^3 - b^3)$ and give an example.

5. Explain how to factor the sum of cubes $(a^3 + b^3)$. Give an example.

6. Explain how to factor the difference of cubes $(a^3 - b^3)$. Provide an example.

7. Explain what is meant by squaring a binomial and what the result is.

8. Explain the process of multiplying two binomials and provide an example.

## Multiple Choice Questions

1. Which of the following is the correct formula for $(a + b)^2$?

a) $(a + b)^2 = a^2 + 2ab + b^2$
b) $(a + b)^2 = a^2 + b^2$
c) $(a + b)^2 = a^2 - 2ab + b^2$
d) $(a + b)^2 = a^2 - b^2$

2. What is the result of the difference of squares $(a^2 - b^2)$?

a) $a^2 + b^2$
b) $a^2 - b^2$
c) $a^2 + 2ab + b^2$
d) $a^3 + b^3$

3. How can you factor $a^3 + b^3$?

a) $(a + b)(a + b)$
b) $(a - b)(a - b)$
c) $(a + b)(a^2 - ab + b^2)$
d) $(a - b)(a^2 + ab + b^2)$

4. How can you factor $a^3 - b^3$?

a) $(a - b)(a^2 + ab + b^2)$
b) $(a + b)(a^2 - ab + b^2)$
c) $(a + b)(a^2 + ab + b^2)$
d) $(a - b)(a^2 - ab + b^2)$

5. What is the expansion of $(a + b)^2$?

a) $a^2 + 2ab - b^2$
b) $a^2 + 2ab + b^2$
c) $a^2 - 2ab + b^2$
d) $a^2 - b^2$

6. What is the result of $(x+2)(x-2)$?

a) $(x + 2)(x - 2) = x^2 - 4x + 4$
b) $(x + 2)(x - 2) = x^2 - 4$
c) $(x + 2)(x - 2) = x^2 + 4$
d) $(x + 2)(x - 2) = x^2 + 4x + 4$

7. What is the expansion of $(a+b)^3$?

a) $a^2 - b^2$
b) $a^2 + b^2$
c) $a^3 + 3a^2b + 3ab^2 + b^3$
d) $a^3 - 3a^2b + 3ab^2 - b^3$

8. What is the result of $(a+b)^2$?

a) $2ab$
b) $a^2 + 2ab + b^2$
c) $a^2 - b^2$
d) $a^2 - 2ab + b^2$

# Answer Key

## Long Answer Questions - Expected Responses

1. Explain the formula for squaring a binomial $(a + b)^2$ and provide an example.

Expected Answer: The square of a binomial is the sum of the square of the first term, twice the product of the two terms, and the square of the second term.

2. Describe the formula for the difference of squares $(a^2 - b^2)$ and give an example.

Expected Answer: It is the difference between the square of the first term and the square of the second term.

3. Explain the formula for the cube of a binomial $(a + b)^3$ and give an example.

Expected Answer: The product is the cube of the first term plus three times the square of the first term multiplied by the second term, plus three times the first term multiplied by the square of the second term, plus the cube of the second term.

4. Explain the formula for $(a^3 - b^3)$ and give an example.

Expected Answer: It is the difference between the cube of the first term and the cube of the second term, plus three times the product of the first term squared and the second term, and minus three times the product of the first term and the second term squared.

5. Explain how to factor the sum of cubes $(a^3 + b^3)$. Give an example.

Expected Answer: The sum of cubes is factored as $(a + b)(a^2 - ab + b^2)$.

6. Explain how to factor the difference of cubes $(a^3 - b^3)$. Provide an example.

Expected Answer: The difference of cubes is factored as $(a - b)(a^2 + ab + b^2)$.

7. Explain what is meant by squaring a binomial and what the result is.

Expected Answer: This is when you multiply a binomial by itself; it results in a trinomial (a polynomial with three terms).

8. Explain the process of multiplying two binomials and provide an example.

Expected Answer: It is a method of multiplying polynomials that involves multiplying each term in the first polynomial by each term in the second polynomial and adding the resulting terms.

## Multiple Choice Questions - Correct Answers

1. Which of the following is the correct formula for $(a + b)^2$?

Correct Answer: $(a + b)^2 = a^2 + 2ab + b^2$

2. What is the result of the difference of squares $(a^2 - b^2)$?

Correct Answer: $a^2 - b^2$

3. How can you factor $a^3 + b^3$?

Correct Answer: $(a + b)(a^2 - ab + b^2)$

4. How can you factor $a^3 - b^3$?

Correct Answer: $(a - b)(a^2 + ab + b^2)$

5. What is the expansion of $(a + b)^2$?

Correct Answer: $a^2 + 2ab + b^2$

6. What is the result of $(x+2)(x-2)$?

Correct Answer: $(x + 2)(x - 2) = x^2 - 4$

7. What is the expansion of $(a+b)^3$?

Correct Answer: $a^3 + 3a^2b + 3ab^2 + b^3$

8. What is the result of $(a+b)^2$?

Correct Answer: $a^2 + 2ab + b^2$