Factorization When an Expression is a Perfect Square

A. Choose the Correct Answer:

1. The factorized form of $a^2 + 2ab + b^2$ is:

a) $(a + b)(a - b)$ b) $(a + b)^2$

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

2. Which of the following expressions is a perfect square?

a) $x^2 - 4x + 4$ b) $x^2 + 6x + 9$

c) $x^2 - 9x + 5$ d) $x^2 + 2x + 1$

3. The expression $x^2 - 2xy + y^2$ factorizes to:

a) $(x + y)^2$ b) $(x - y)^2$

c) $(x + y)(x - y)$ d) $(x^2 + y^2)$

4. The factorized form of $4a^2 + 4ab + b^2$ is:

a) $(2a + b)^2$ b) $(2a + b)(2a - b)$

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

5. Which of the following is NOT a perfect square expression?

a) $m^2 + 6m + 9$ b) $x^2 + 8x + 16$

c) $4x^2 + 9y^2$ d) $p^2 - 4p + 4$

B. Write the Missing Terms to Complete the Sentences:

1. $(a + b)^2 = a^2 +$ _____ $+ b^2$

2. $(a - b)^2 = a^2 -$ _____ $+ b^2$

3. The factorized form of $x^2 + 4x + 4$ is _____

4. $9m^2 + 12mn + 4n^2 =$ (_____)^2

5. Perfect square expressions have _____ terms

C. Figure out the answers to these questions:

1. Factorize $x^2 + 10x + 25$

2. Factorize $4x^2 + 12xy + 9y^2$

3. Factorize $m^2 - 6m + 9$

4. Factorize $16a^2 - 8ab + b^2$

5. Factorize $p^2 + 14p + 49$

D. Mark each sentence with a True (✓) or False (✗):

1. $(a + b)^2 = a^2 + 2ab + b^2$. _____
2. $(a – b)^2 = a^2 + 2ab + b^2$. _____
3. $x^2 + 2x + 1 = (x + 1)^2$. _____
4. $4a^2 + 4ab + b^2 = (2a + b)^2$. _____
5. Perfect square expressions can always be factorized into two identical binomials. _____

E. Challenge yourself with these questions:

1. Factorize $x^2 + 2x + 1$
2. Factorize $9x^2 – 12xy + 4y^2$
3. Factorize $a^2 + 6a + 9$
4. Factorize $25m^2 + 10mn + n^2$
5. Factorize $36p^2 – 12pq + q^2$