Name: _____ Period: _____ Date: _____

Factoring to Solve Quadratic Equations Guided Notes

A **quadratic equation** is of the form:

$$ax^2 + bx + c = 0$$

Where, $a \neq 0$.

ax^2 ⇒ **Quadratic term**

bx ⇒ **Linear term**

c ⇒ **Constant term**

Zero-Product Property

This property is important when solving the quadratic equations.

If:

$ab = 0$ ⇒ $a = 0$ or $b = 0$

Problem 1: What are the solutions of the quadratic equation $y = (x + 2)(x - 3)$?

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Solution by Factorization

In this method, the middle term of the quadratic equation $ax^2 + bx + c = 0$ i.e. bx is re-written as a sum of two terms mx and nx such that:

$$\Rightarrow \quad (\pm mx) \quad + \quad (\pm nx) \quad = \quad (\pm bx)$$

$$\Rightarrow \quad (\pm mx) \quad \times \quad (\pm nx) \quad = \quad (\pm acx^2)$$

- The algebraic **sum** of two terms is equal to the middle term.
- The algebraic **product** of two terms is equal to the product of the quadratic term and the constant term.

After this, the equation can be simplified and written as $(x \pm m)(x \pm n) = 0$ and zero product property can be applied to find the values of x.

Problem 2: Find the solution of the quadratic equation $x^2 - x - 6$.