
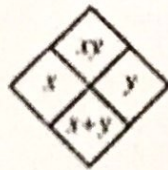


<p><b>1) Casey's Pattern:</b></p> 	<p><b>2) Diamond Problem:</b></p> 
<p><b>3) Quadratic Expression:</b></p> <p>Names based on Number of terms:</p> <p><i>monomials:</i> <math>15xy^2</math> and <math>-2m</math></p> <p><i>binomials:</i> <math>16m^2 - 25</math> and <math>7h^9 + \frac{1}{2}h</math></p> <p><i>trinomials:</i> <math>12 - 3k^2 + 5k</math> and <math>x^2 - 15x + 26</math></p>	<p><b>4) Factored Form:</b></p> $6x^2 + 7x + 2 = (2x + 1)(3x + 2)$
<p><b>5) Factoring Quadratics given Area as a Sum:</b> Factoring a quadratic that is in the form of a sum (ex. <math>2x^2 + 7x + 6</math>), means to find the area as a product and write it as (length x width).</p> <p>factor: <math>2x^2 + 7x + 6</math></p> <p>Step 1: _____ Step 2: _____</p> <p>Step 3: _____</p> <p>Factors: _____</p>	<p><b>6) Special Cases of Quadratics:</b> if one of the three terms is missing from a quadratic (ex. <math>9x^2 - 4</math>), use a zero in place of that term when filling out the generic rectangle. Then factor using the same steps (generic rectangle + diamond problem)</p> <p>Ex: Factor:</p> <p>a) <math>9x^2 - 4</math></p> <p>b) <math>3x^2 + 5x</math></p>

**7) Zero Product Property:** If the product of two or more numbers is zero, one of the numbers must be zero. This property is used to solve for the solutions (the roots, the *x-intercepts*) of a quadratic equation when the equation can be written as a product of factors.

Ex a) Solve  $(2x + 3)(x + 1) = 0$

b) Find the x intercepts (roots) of  $2x(3x - 4) = 0$



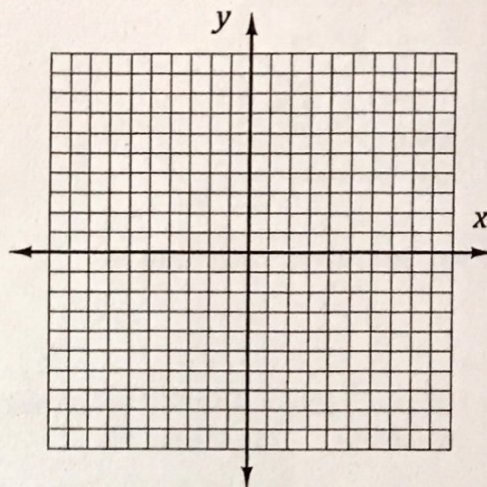
**8) Graphing a parabola:** Sketch a parabola by finding the *x-intercepts* and the *y-intercept* of a quadratic ( $y = ax^2 + bx + c$ ). Use the Zero Product Property to find the *x-intercepts*.

y-intercept:

Graph:  $y = x^2 - 8x + 7$

x-intercept:

Vertex:



**9) Quadratic Formula:** Formula used to find the *x-intercepts* (also known as *roots*) of a quadratic equation ( $ax^2 + bx + c$ ) that is not factorable.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve using the quadratic formula:  $x^2 - 5x + 9 = 0$

**10) Solving a quadratic equation using the Zero Product Property & the Quadratic Formula:**

Zero Product Property

$$3x^2 + x - 14 = 0$$

Quadratic Formula

$$3x^2 + x - 14 = 0$$