Name:_____   Class #:_____

LESSON 16: Quadratic Equations
    ☐ General form of quadratic function: $f(x) = ax^2 + bx + c$
    ☐ Parabola- the graph of a quadratic function
    ☐ Standard form of quadratic equation: $ax^2 + bx + c = 0$
    ☐ Three scenarios for x-intercepts of parabola
        • No x-intercepts: no real solution to equation $ax^2 + bx + c = 0$
        • One x-intercept: One solution to equation $ax^2 + bx + c = 0$
        • Two x-intercepts: Two solution to equation $ax^2 + bx + c = 0$
    ☐ Principle of Square Roots: If $x^2 = k$, then $x = \sqrt{k}$ or $x = -\sqrt{k}$
    ☐ Method of completing the square
    ☐ To complete the square for $x^2 + bx$, add $\left(\frac{b}{2}\right)^2$
    ☐ To solve quadratic equation by completing the square

In problems 1 – 4, add a constant to make the expression a perfect square trinomial.
    ➢   Identify each step you take in the solution.
    ➢   EXPLAIN WHY you are taking each step

1. $w^2 + 6w$

2. $t^2 - 7t$

5. $\quad x^2 - \frac{11}{2}x$

6. $\quad m^2 + \frac{5}{4}m$

Mini-Lecture: Solve the following quadratic equation using three different methods:

$$x^2 + 6x = 16$$

Method 1: Solve by factoring   Method 2: Complete the Square
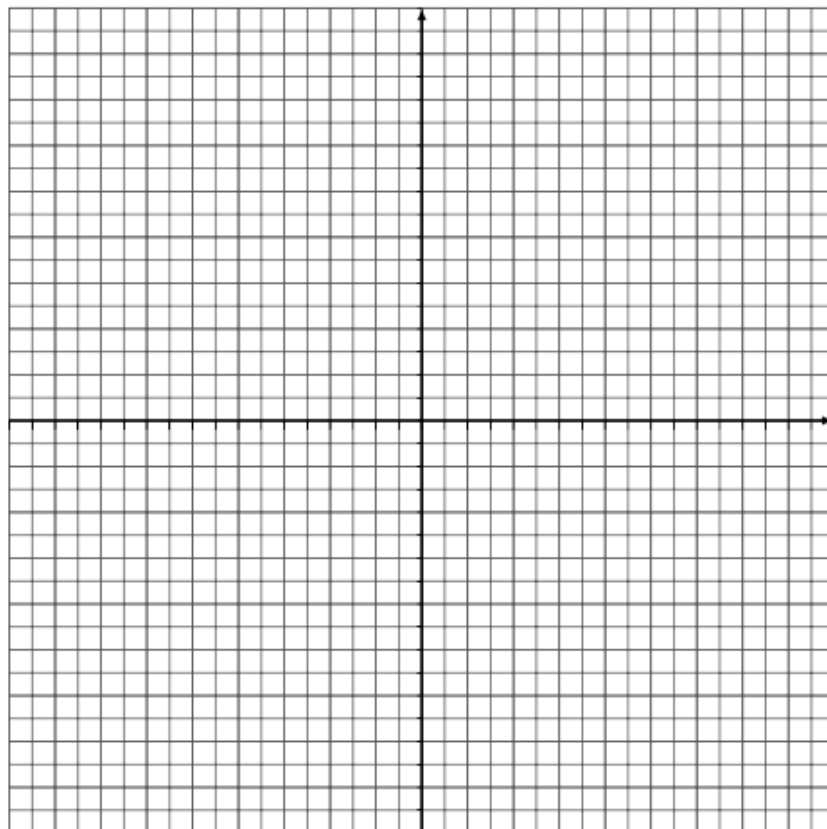
Method 3: Solve Graphically
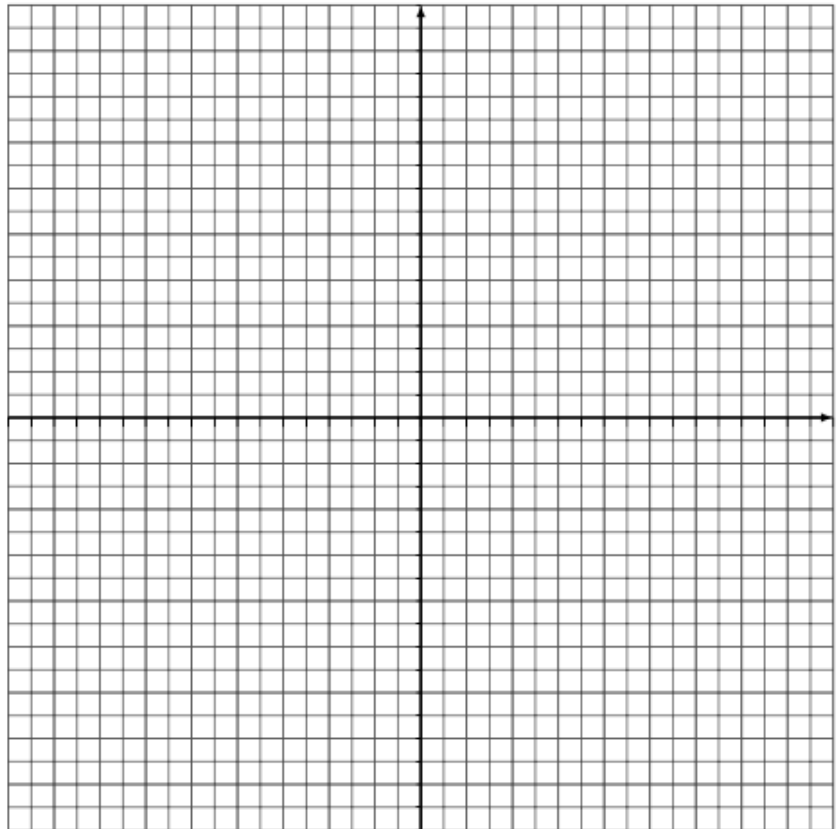
7.   Solve the following quadratic equation using three different methods:

$$x^2 - 12x = -32$$

Method 1: Solve by factoring   Method 2: Complete the Square

Method 3: Solve Graphically

Problem 18 - 21:   Solve each of the following quadratic equations by completing the square.

8. $x^2 - 6x = -1$

9. $t^2 - 8t = 9$

10. $x^2 + 5x = -3$

11. $3t^2 + 7t - 2 = 0$