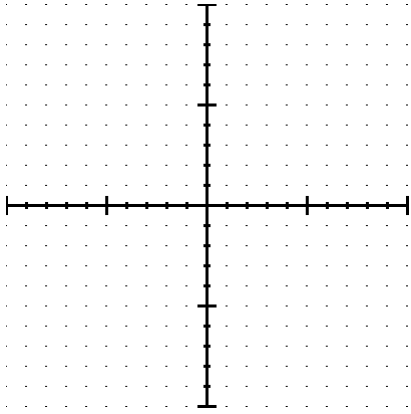


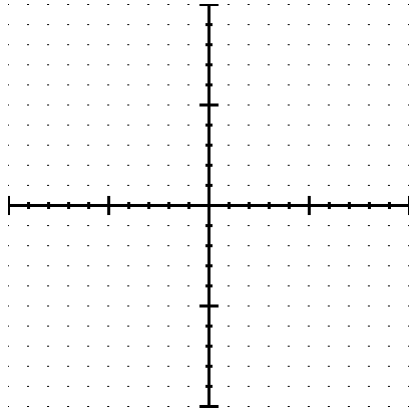
For the following equations, use your **graphing calculator** to find the solutions (also called x-intercepts or **zeros**). Make a **sketch** of your graph as well. Also, draw the axis of symmetry.

$$0 = (x - 4)(x + 2)$$



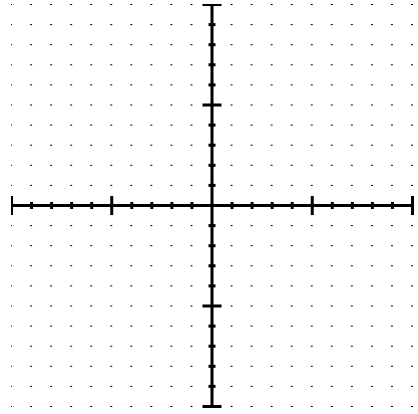
Solutions: _____

$$0 = \frac{1}{2}(x + 8)(x + 1)$$



Solutions: _____

$$0 = (2x - 1)(x + 3)$$



Solutions: _____

Now make a couple of observations:

- how do the solutions relate to the equation?

- where is the axis of symmetry in relation to the solutions? More specifically, if you were given the solutions of a quadratic equation where m and n , where would the axis of symmetry be?

Zero Product Property:

Solve by Factoring:

- (if not already factored) Write equation in standard form equal to 0
- Factor
- Set each part of the product equal to 0
- Solve

Ex: $x^2 - 6x = -5$

Tricky Examples:

$$28m^2 = -8m$$

$$q(q + 19) = -34$$

Solve the following equation by factoring and using the zero product property. Circle your answers!

1) $(y + 9)(y - 1) = 0$

2) $(c + 6)(c + 8) = 0$

3) $\left(g - \frac{1}{8}\right)(g + 18) = 0$

4) $(2n - 14)(3n + 9) = 0$

5) $b^2 + 6b = 0$

6) $6h^2 = 3h$

7) $n^2 - 7n - 30 = 0$

8) $a^2 - 5a = 50$

9) $b^2 + 5 = 8b - 10$

10) $s(s + 1) = 72$

11) $x^2 - 10(x - 1) = -11$

- (1) $y = 1, -9$ (2) $c = -6, -8$ (3) $g = \frac{1}{8}, -18$ (4) $n = 7, -3$ (5) $b = 0, -6$ (6) $h = 0, \frac{2}{1}$ (7) $n = 10, -3$ (8) $a = 10, -5$ (9) $b = 3, 5$ (10) $s = 8, -9$ (11) $x = 3, 7$