Algebra 1: Problem Set 9B

Mr. Chamberlain

Name ____________________

Date ____________________ Period ________

FYI

So far, we have learned to solve Quadratic Equations by "Square Rooting"

This is done by isolating the variable term, and then taking the square root of both sides.
For Example: *Solve:* $3x^2 + 13 = 61$

$3x^2 + 13 = 61$	<subtract 13 from both sides>
$3x^2 = 48$	<divide both sides by 3>
$x^2 = 16$	<take the square root of both sides>
$x = \pm 4$	

So, two solutions: 4 and –4. Gosh, that was EASY!!

BUT, what if there is a **quadratic trinomial** such as $x^2 + 8x + 15 = 0$? There is more than one variable term, so it cannot be isolated by simply "square rooting" as we did in the above example.

Hmmmm… but what can we attempt with a **quadratic trinomial**? We can try to **FACTOR IT**, of course!! What is more fun than that??!!

Recall the Zero Product Property:

$$\text{If } a \cdot b = 0, \text{ then either } a \text{ must} = 0 \text{ or } b \text{ must} = 0$$

Let's give it try:

$x^2 + 8x + 15 = 0$	<FACTOR!>
$(x+5)(x+3) = 0$	<Solve using the zero product property>
$x = -5, -3$	these are the values of x that make the equation true

Soooo, a quadratic equation still can have two solutions. Using the Zero Product Property in this manner is sometimes referred to as:

"FINDING THE ZEROES" OF A FUNCTION

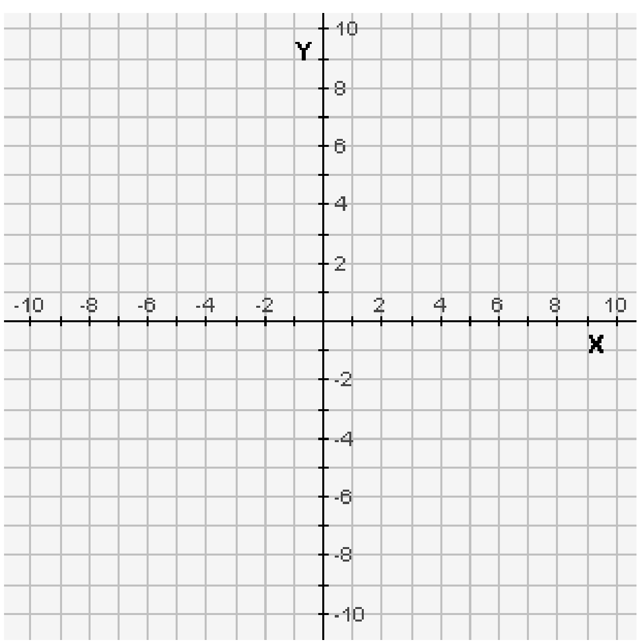
When graphed in the coordinate plane, the "zeroes" will be the *x*-intercepts.

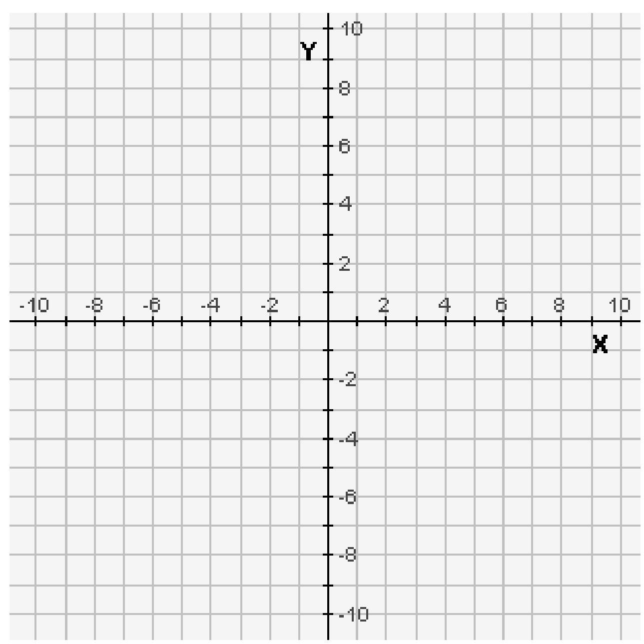
Find the zeroes (*x*-intercepts) of each quadratic function below:

1) Set the quadratic equation = zero (i.e. make y=0)
2) Factor the quadratic
3) Use the Zero Product Property to determine the value(s) of *x* that solve the equation
4) Find the Vertex (HINT! Use your knowledge of symmetry of a parabola!)
5) Sketch a graph of the quadratic function (aka parabola) CHEAT with the graphing calculator!

1. $y = x^2 - 8x + 12$

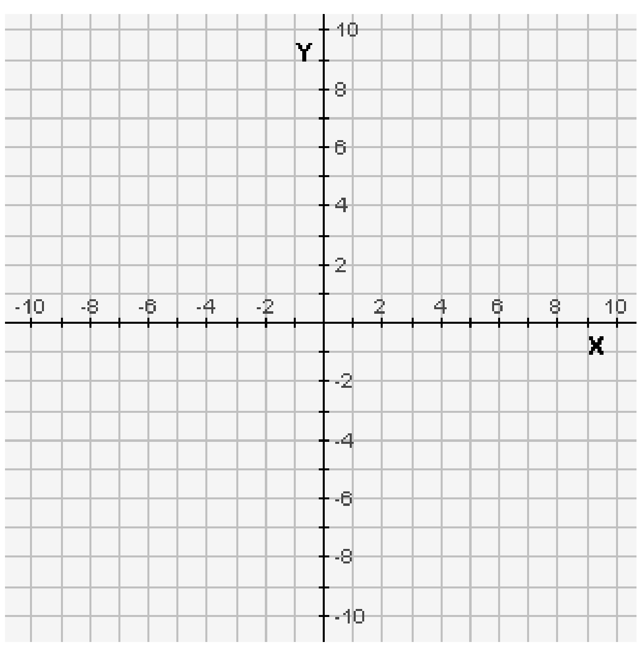
2. $y = x^2 - 6x + 8$

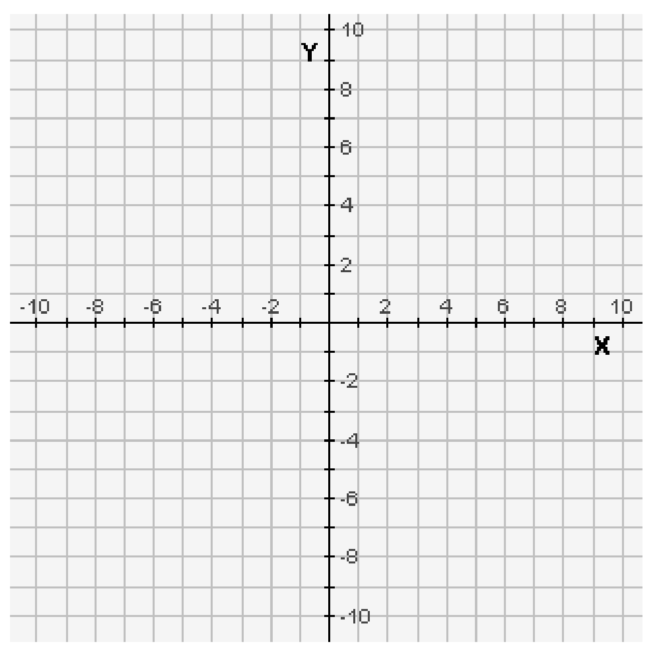




3. $y = x^2 - 2x - 8$

4. $y = x^2 + 2x - 8$





5. $y = x^2 + 10x + 24$

6. $y = x^2 + 2x - 3$