Graphing Quadratics Using Vertices, Y-Intercepts, and Zeros
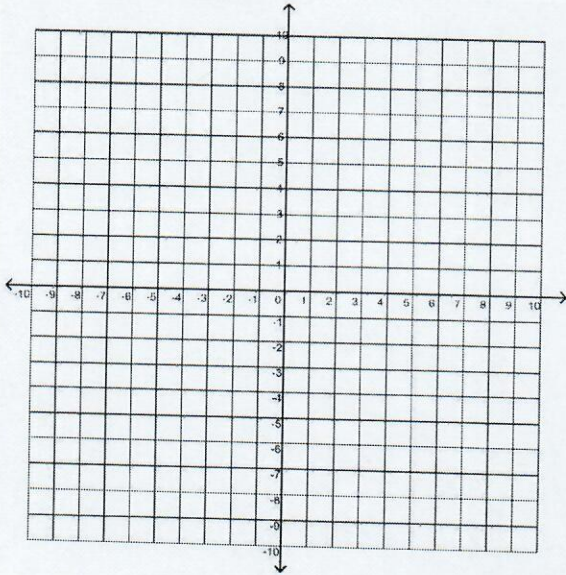
PART I: Draw a parabola using the information about its parts listed for each number. Use the colors indicated to draw the vertex, y-intercept, and roots/zeros.
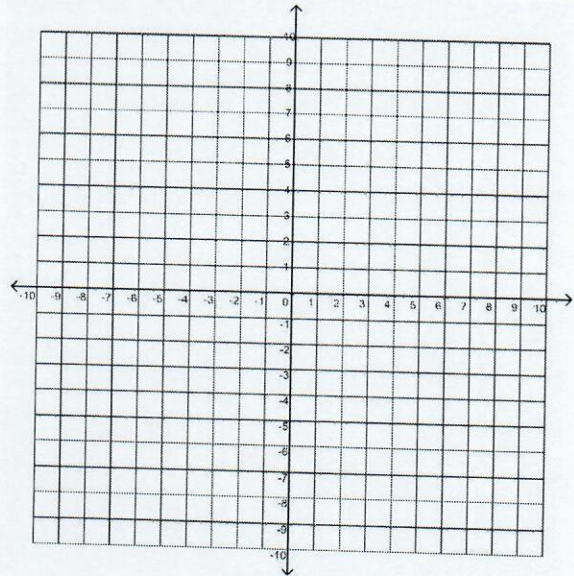
Vertex: yellow
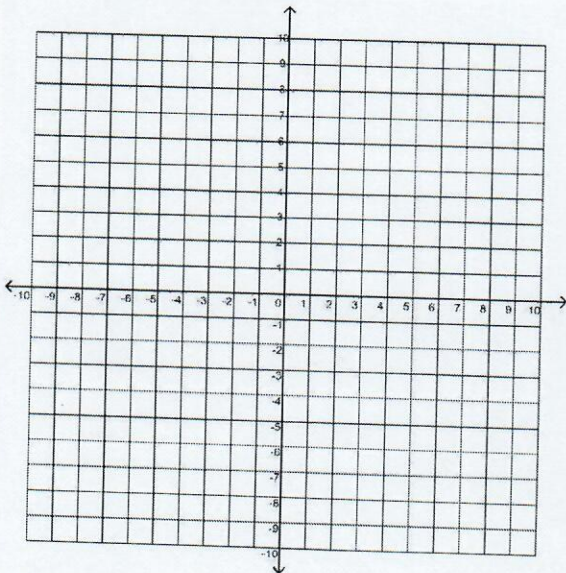**y-intercept:** pink
zeros: green

1.   Vertex: (– 2, – 1)
     y-int: 3
     zeros: – 3 and – 1
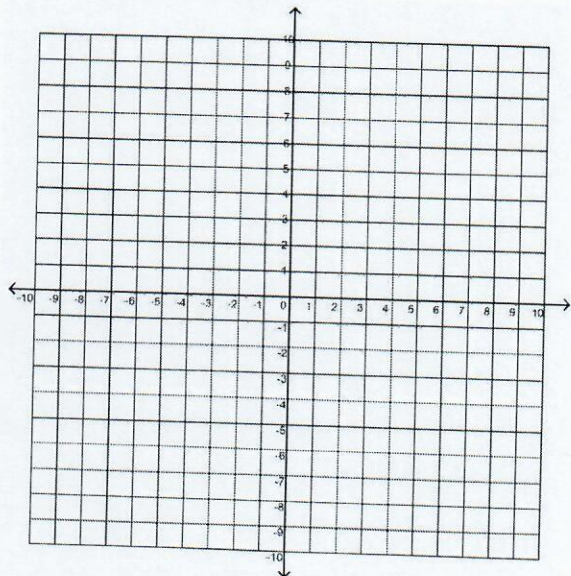

2.   Vertex: (– 1, 2)
     y-int: 3
     zeros: None
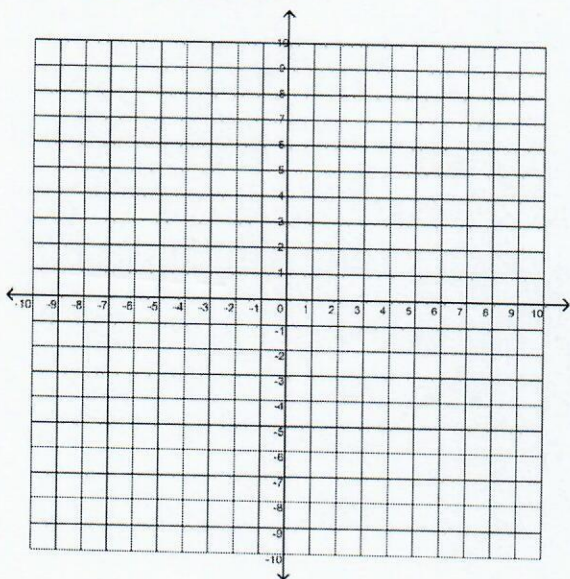

3.   Vertex: (– 3, 1)
     y-int: 10
     zeros: None
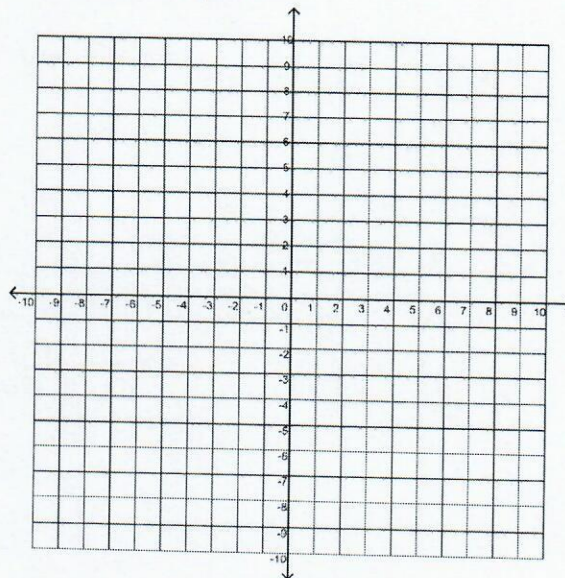

4.   Vertex: (– 3, 1)
     y-int: – 8
     zeros: – 4 and – 2
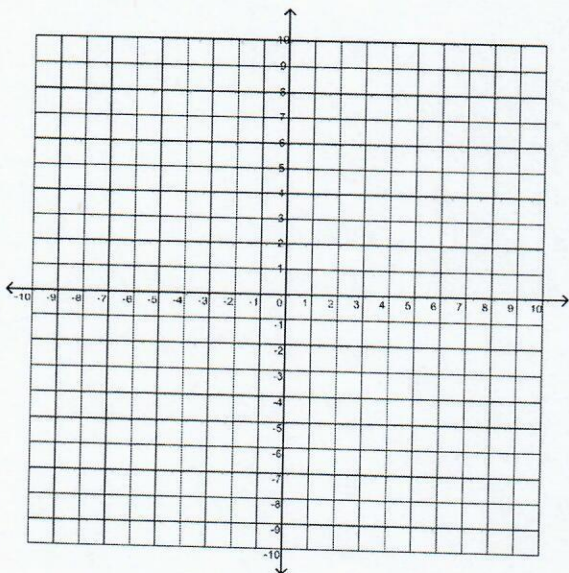
5. Vertex: (3, 4)
    y-int: – 5
    zeros: 1 and 5
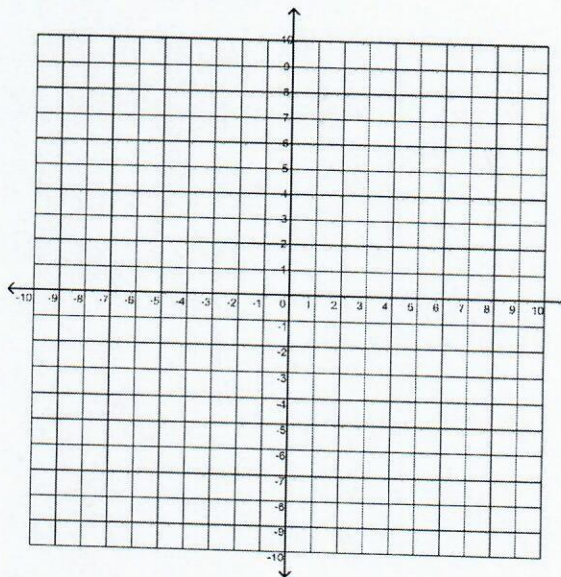

6. Vertex: (– 1, – 4)
    y-int: – 5
    zeros: None

7. Vertex: (– 1, 4)
    y-int: 5
    zeros: None

8. Vertex: (– 2, 4)
    y-int: 0
    zeros: – 4 and 0

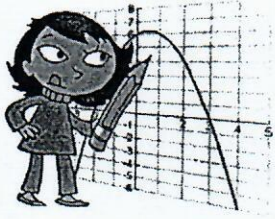**PART II:** Match each quadratic expression with its graph. You will _not_ use every graph! *Put the graph number on the blank.*

_____ a. $-x^2 - 6x - 8$

_____ b. $x^2 + 6x + 10$

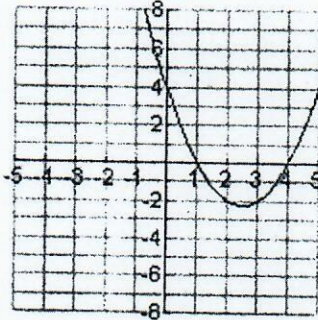_____ c. $-x^2 - 2x - 5$

_____ d. $-x^2 - 4x$
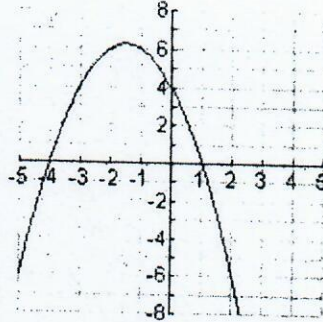
GRAPHING FROM FACTORED FORM

Name: _____

When done with activity, you should be able to graph quadratic equations.

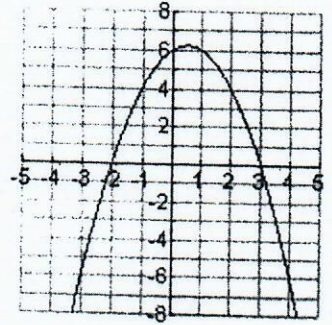Put the equation number on the graph. Do 1-6 on day 3 and 7-12 on day 4.

1. $y = -(x+2)(x-3)$
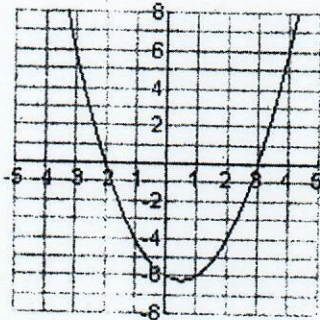
2. $f(x) = (x-2)(x+3)$
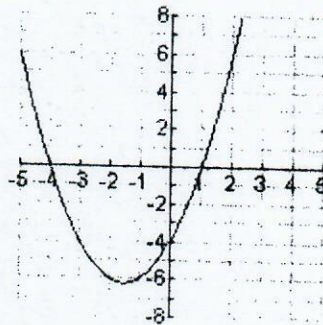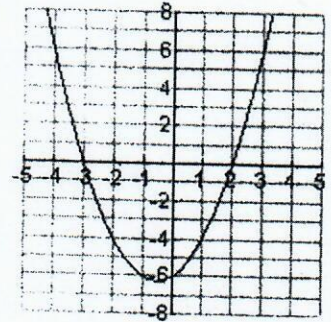
3. $g(x) = (x-3)(x+2)$

4. $h(x) = (x-4)(x+1)$

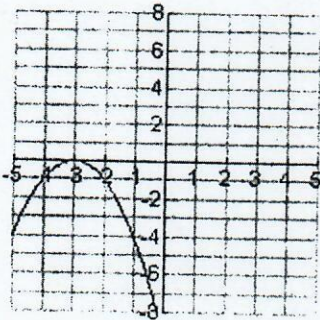5. $k(x) = (x-1)(x+4)$

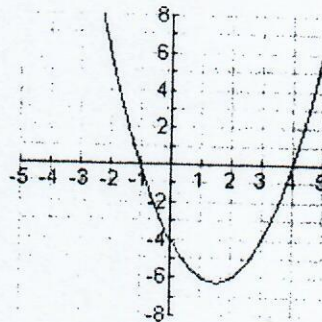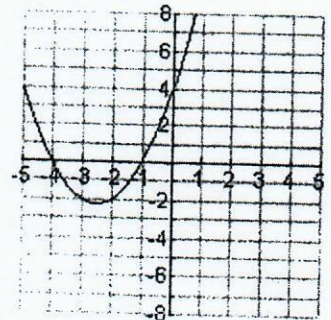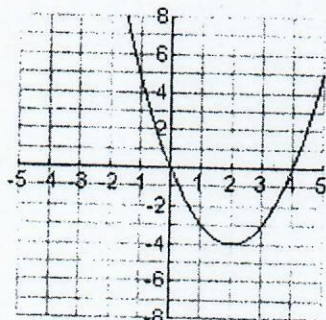6. $t(x) = -(x-1)(x+4)$
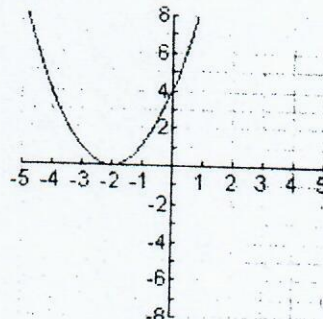
7. $y = (x-1)(x-4)$

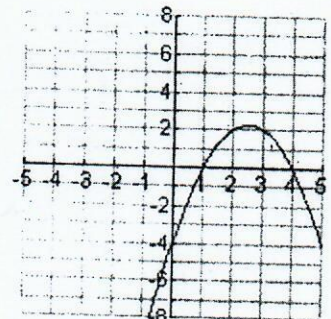8. $y = -(x-1)(x-4)$

9. $f(x) = (x-0)(x-4)$

10. $g(x) = (x+2)(x+2)$

11. $h(x) = -(x+3)(x+3)$

12. $k(x) = (x+4)(x+1)$

What do you see that helps match the equations to their graphs quickly?

Day 5   Name: _____

Model Problem	Steps	Your Turn
Solve for x: $$4x^2 + 2x = 5$$		*Solve for x:* $$4x^2 - 2x = 7$$
$$4x^2 + 2x - 5 = 0$$	Write in standard form (=0)	
$$a = 4$$ $$b = 2$$ $$c = -5$$	Identify **a**, **b**, and **c** values	
$$x = \dfrac{-(\ ) \pm \sqrt{(\ )^2 - 4(\ )(\ )}}{2(\ )}$$	Substitute **a**, **b**, and **c** values into a template for the quadratic formula (use parentheses!)	
$$x = \dfrac{-(2) \pm \sqrt{(2)^2 - 4(4)(-5)}}{2(4)}$$		
$$x = \dfrac{-2 \pm \sqrt{84}}{8}$$	Use the calculator to evaluate $b^2 - 4ac$ and simplify	
$$x = \dfrac{-2 \pm \sqrt{4 \cdot 21}}{8}$$	Simplify the square root	
$$x = \dfrac{-2 \pm \sqrt{4}\sqrt{21}}{8}$$		
$$x = \dfrac{-2 \pm 2\sqrt{21}}{8}$$		
$$x = \dfrac{-2}{8} \pm \dfrac{2\sqrt{21}}{8}$$	Separate into two fractions	
$$x = \dfrac{-1}{4} \pm \dfrac{1\sqrt{21}}{4} \text{ or } x = \dfrac{-1 \pm \sqrt{21}}{4}$$	Simplify the fractions to evaluate in *simplest radical form*	
$$x = \dfrac{-2 + \sqrt{84}}{8} \approx 0.9$$	Use the graphing calculator and the "Alpha y=" button to evaluate the fractions, *to the nearest tenth*	
$$x = \dfrac{-2 - \sqrt{84}}{8} \approx -1.4$$		

Day 6

Error Analysis: Multi-Step Equations

Directions: Read the problem below. The problem was solved incorrectly. Find the error that was made and explain it. Then answer the problem correctly.

Problem	Explain Mistake Made	Correct Work and Answer
Solve: $2(x+4)-8=3x+10-4$ Student Work: $2(x+4)-8=3x+10-4$ $2x+8-8=3x+6$ $2x=3x+6$ $-3x \quad -3x$ $x=6$	_____ _____ _____ _____ _____ _____ _____	Answer: _____

Day 7

? ? ? ?

Error Analysis: Multi-Step Equations

Directions: Read the problem below. The problem was solved incorrectly. Find the error that was made and explain it. Then answer the problem correctly.

Problem	Explain Mistake Made	Correct Work and Answer
Solve: $2x - 8 + 3x + 2 = 4x + 10 + 3x - 6$ Student Work: $2x - 8 + 3x + 2 = 4x + 10 + 3x - 6$ $5x - 6 = 7x + 16$ $-5x \quad\quad -5x$ $-6 = 2x + 16$ $-16 \quad\quad -16$ $\dfrac{-22}{2} = \dfrac{2x}{2}$ $-11 = x$	_____ _____ _____ _____ _____ _____ _____	 Answer: _____