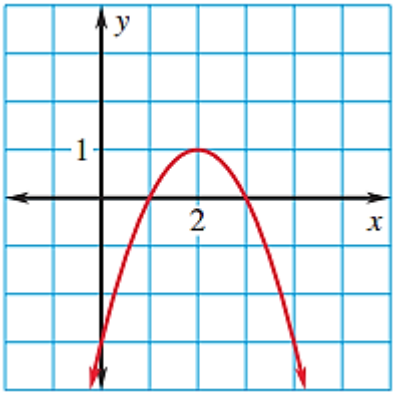
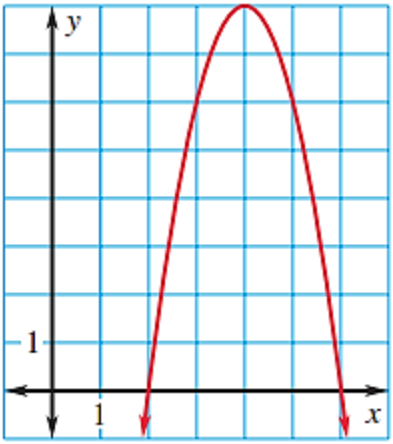
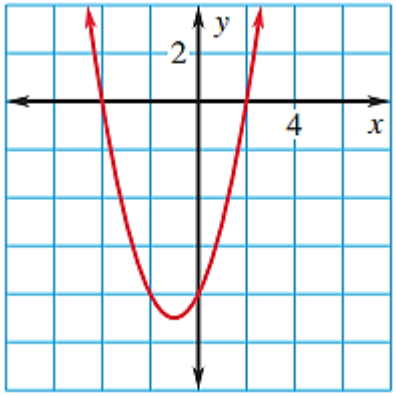
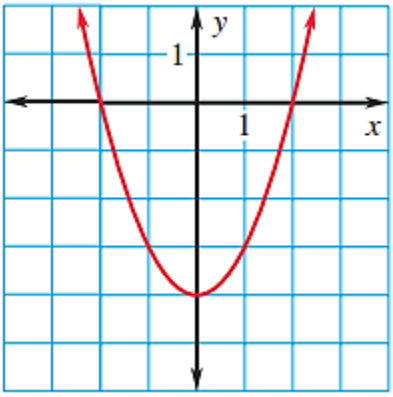
Algebra 1
Unit 3A Review – Quadratic Equations

Name:_____
Date: _____ Period: _____

What you need to know & be able to do	Things to remember	Examples	
1. Solve a quadratic function by graphing	Determine where the graph crosses the x-axis. Solution is written as x = _____. Solutions are called: x-intercepts zeros roots	a. Solve by graphing  	b. Solve by graphing 
2. Determine the equation of a parabola using its zeros.	The zeros and factors in the equation have opposite signs.	a. Create an equation, in factored form, to represent the following graph.  Y =	b. Create an equation, in factored form, to represent the following graph.  Y =
3. Solve equations in factored form.	Zero Product Property	a. Solve $(x - 7)(x + 3) = 0$	b. Solve: $(x - 4)(5x - 7) = 0$
4. Solve equations by factoring when a = 1.		a. Solve $x^2 - 9x + 20 = 0$	b. Solve $x^2 - 6x - 16 = 0$

		c. $x^2 - 13x + 47 = 7$	d. $x^2 - 100 = 0$
5. Solve equations by factoring when a is not 1		a. Solve $5x^2 - 16x + 12 = 0$	b. Solve $3x^2 - 18x + 15 = 0$
		c. Solve $3x^2 + 2x - 8 = 0$	d. $6x^2 - 5x - 11 = -5$
6. Solve equations by factoring GCF	Use factoring by GCF when you have two terms (a & b) and both contain an x. One of the solutions will always be 0.	a. $x^2 - 4x = 0$	b. $12x^2 = -36x$
7. Solve equations by finding square roots.	Use solving by square roots when your equations have parenthesis or two terms (a & c). PEMDAS (backwards)	a. $x^2 = 12$	b. $8x^2 = 392$
		c. $7x^2 - 3 = 445$	d. $(x - 4)^2 = 9$

		e. $2(x + 2)^2 = 72$	f. $3(x – 3)^2 + 2 = 26$
8. Solve equations by completing the square	Move the c term to the right side Use $\left(\frac{b}{2}\right)^2$ to complete the square and then apply square root method	a. Solve $x^2 + 4x + 11 = 10$	b. Solve $x^2 – 16x + 52 = 0$
9. Solve equations by using Quadratic Formula	Use Q.F. when the equation is in standard form and number diamonds does not work. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	a. $x^2 + 10x + 15 = 0$	b. $2x^2 + 10x = 1$
		c. $3x^2 + 6x + 3 = 0$	d. $8x^2 -4x + 7 = 2$

10. Use the discriminant to determine the number of solutions	Discriminant: $b^2 - 4ac$ If the discriminant is: Positive: two real Zero: one real Negative: zero real	a. Calculate the discriminant and tell number of solutions: $6x^2 + 2x + 1 = 0$	b. Calculate the discriminant and tell how many times it will cross the x-axis. $6x^2 - 7x - 3 = 0$
11. Determine the best method for solving quadratic equations.	Use graphic organizer to determine the best method for solving each equation.	a. $x^2 - 9 = 5$	b. $5x^2 - 7x = 0$
		c. $3(x + 5)^2 = 64$	d. $x^2 + 12x + 30 = -5$
		e. $6x^2 + 8x + 1 = 0$	f. $3x^2 + 13x + 12 = 0$
		g. $5(x - 2)^2 = 125$	h. $x^2 - 16 = 0$

		i. $5x^2 - 3x - 1 = 7$	j. $x^2 - 15x + 56 = 0$
12. Applications of Quadratics	Break-even point: revenue = cost	a. The total revenue and total cost functions for the production and sale of x TV's are given as: $R(x) = 190x - 0.2x^2$ & $C(x) = 3550 + 24x$. How many TVs does the company need to sell to break even?	b. A ball is thrown into the air from a height of 4 feet at time t = 0. The function that models this situation is $h(t) = -16t^2 + 63t + 4$, where t is measured in seconds and h is the height in feet. When will the ball be at 50 feet?