

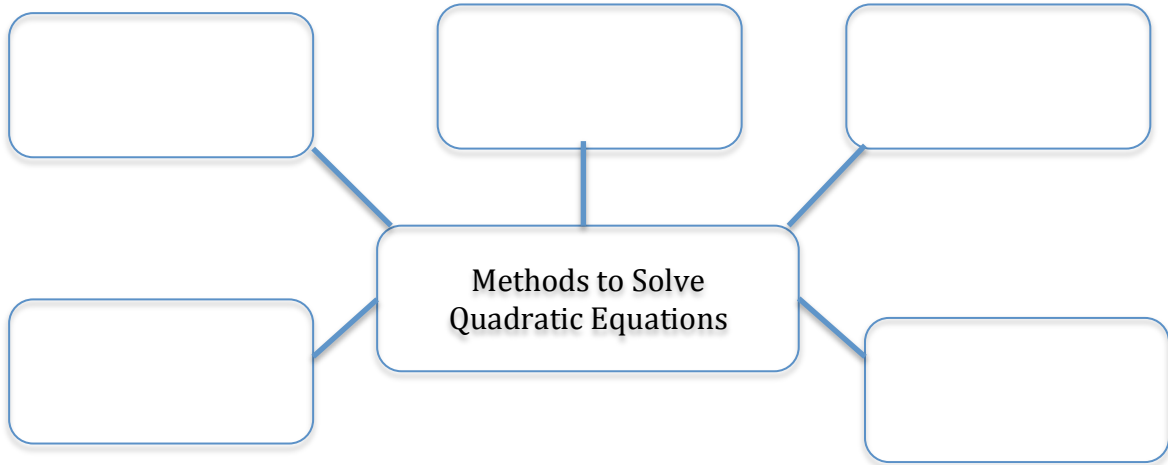
Algebra 2
4-7 The Quadratic Formula

Name _____
Date _____ **A#7**

Goal: 1. To solve quadratic equations using the Quadratic Formula
2. To determine the number of solutions by using the discriminant



Summary: List the five methods to solve quadratic equations



Deriving the Quadratic Formula: Arrange the sentence strips in the proper order and copy or glue the steps.

1. Standard form
2. Isolate constant
3. Divide by a
4. Find missing term
5. Add missing term to both sides
6. Factor the trinomial; simplify right side
7. Take square roots of both sides
8. Solve for x
9. Simplify

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Write the Quadratic Formula six more times:

Ex 1 Solve using the Quadratic Formula. Round your answer to the nearest hundredths, if necessary.

a. $x^2 + 9x + 14 = 0$

b. $4x^2 + 3 = 9x$

Practice Solve using the Quadratic Formula. Round your answer to the nearest hundredths, if necessary.

a. $4x^2 - 13x = -3$

b. $-12x + 7 = 5 - 2x^2$



Ex 2 Your school sells yearbooks every spring. The total profit p made depends on the amount x the school charges for each yearbook. The profit is modeled by the equation $p = -2x^2 + 70x + 520$. What is the smallest amount in dollars the school can charge for a yearbook and make a profit of at least \$1000?

Practice Engineers can use the formula $d = 0.05s^2 + 1.1s$ to estimate the minimum stopping distance d in feet for a vehicle traveling s miles per hour.

- a. If a car can stop after 65 feet, what is the fastest it could have been traveling when the driver put on the brakes?

b. Reasoning Explain how you knew which of the two solutions from the Quadratic Formula to use. (*Hint:* Remember this is a real situation.)

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Determining the Number of Real Solutions

The discriminant is the radicand of the Quadratic Formula. It is the prophet of the formula that helps predict _____: $D = b^2 - 4ac$

When the discriminant is ...	There are ___ real solutions...	And the sketch of the function might look like...	Also, when solving using square roots...
			$x^2 = +$
			$x^2 = 0$
			$x^2 = -$

Ex 3 How many solutions do the following equations have?

a. $x^2 - 3x - 4 = 0$

b. $x^2 + 6x + 10 = 0$

c. $9x^2 - 6x + 1 = 0$

Practice How many solutions do the following equations have?

a. $4x^2 + 7 = 9x$

b. $x^2 - 4x = -4$

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

A. Error:	B. Error:
C. Error:	D. Error: