Solving Quadratics

agenda
Warm-Up

Activity (Parallel Modeling)

HW: Practice #1-9,with WORK SHOWN!

Grade Reminders
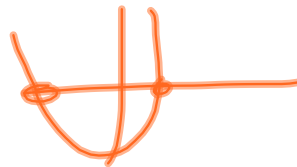
reminders
5.6 Due Tuesday

TEST Tuesday

ALL late HW due Tuesday!

Unit 8 Test Corrections due Next Thursday

warmup Wednesday))

Turn in your Simulation Review (with work attached if necessary) RIGHT NOW!!

34 A table of values for the quadratic function f is shown below.

x	f(x)
-8	-2.75
-7	0
-6	2.25
-5	4
-4	5.25
-3	6
-2	6.25
-1	6
0	5.25
1	4

If 3 is one solution to $f(x) = 0$, what is the value of the other solution?

Record your answer and fill in the bubbles on your answer document.

GrAdEs UpDaTe

THE 5TH SIX WEEKS ENDS FRIDAY 4/10.

30	31	1	2	3
ENGLISH I STAAR	ALGEBRA I SIMULATION	AM Tutoring PM Tutoring Simulation Review Due WED SCHOOL	AM Tutoring	AM Tutoring Unit 8 Notebook Check Due - last call.
6 PM Tutoring Extra Credit Due x3	7 AM Tutoring HW 5.4-5.5 DUE Unit 9 Test HW 5.6 Due Notebook Check	8 AM Tutoring PM Tutoring Extra Credit Due WED SCHOOL	9 AM Tutoring Unit 8 Test Corrections due by 9AM Bathroom Passes Due	10 Grades Turned in 9AM Quiz HW 5.7 Due

RED – 5th Six Weeks   BLUE – 6th Six Weeks

If you want to improve your grade, you will need to complete test corrections or make up & turn in any missing assignments by the listed date. Remember, if you are not eligible for test corrections, you must first attend a Wednesday school and have the teacher sign the corrections form. Please watch the videos before coming in for help.

Extra Credit opportunities at http://mskmathrhs.weebly.com
- Project (baseball cards, mathematician pamphlet, etc) (QZ)
- Special Products Video Notes (HW)
- Quadratic Formula Video Creation (QZ)
- Mixed STAAR Review questions (HW)

Solving Quadratics

Parallel Modeling

I will work the problem on the left. We will develop a set of steps to solve this type of problem, then you will solve the problem on the right.

TEACHER	STEPS	STUDENT
The length of a <u>photograph</u> (rectangle) is 1 cm less than twice the width. The area is 91 cm². Find the width and the length.	1) Draw /label a picture 2) Write an equation 3) move everything to one side (distribute, too!) 4) Decide what method to solve (graphing) 5) Solve (TWO)	The length of a rectangle is 4 m more than the width. The area is 30m². Find the width and the length.

$L = 2w - 1$

$\boxed{A = 91}$

$A = Lw$

$91 = (2w - 1)w$

$91 = 2w^2 - w$

$-91 \qquad\qquad -91$

$0 = 2w^2 - w - 91$

$w = \{7, -6.5\}$

width = 7 cm
length = 13 cm

Intersection
X=7   Y=0

Solving Quadratics

Now it's your turn! With your shoulder partner, you will repeat the process. Decide who is student A and student B.

You are responsible for your problem column <u>AND</u> the steps column. You and your partner should develop a set of steps that can work to solve BOTH problems. Use your notebook (especially the green flip book) for help!

Solving Quadratics

Student A	STEPS	Student B

FACTORING

2. Find the roots of $x^2 + 3x - 10 = 0$.

1) Solve for 0.
2) Find GCF, if any.
3) Factor using
　　　　a·c

(area model box: a^2 ・ x / x c) ⟩ Add to b

4) Set each factor equal to 0.
5) Solve both.

$\{-5, 2\}$

2. Find the solutions of $x^2 - 5x - 24 = 0$.

$\{-3, 8\}$

QUADRATIC FORMULA

3. Find the solutions of $4x^2 + 1 = -9x$

1) Solve for 0.
2) Find a, b, and c.
3) Find $b^2 - 4ac$ (discriminant)
4) Plug into formula
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
5) Simplify

$$x = \frac{-9 \pm \sqrt{65}}{8}$$

3. Find the solutions of $5x^2 = 2x + 18$

$$x = \frac{2 \pm \sqrt{364}}{10}$$

GRAPHING

4. An object is launched at 19.6 meters per second from a 58.8 meter tall platform. The equation for the object's height y, at time t seconds after launch is $y(t) = -4.9t^2 + 19.6t + 58.8$, where s is in meters. When does the object strike the ground?

6 seconds

1) cross out not important info.
2) Solve for "y"
3) Put equation into $y_1 =$
4) $y_2 = 0$
5) Graph. Make sure you can see BOTH x-intercepts.
6) 2nd TRACE
5: intersect
mouse over to x-int.
ENTER ENTER ENTER
7) Repeat #6 for other
8) Determine reasonableness.

4. When an object is thrown upwards on Mars, the equation for the object's distance in feet, d, in terms of time in seconds, t, is $d(t) = -49t^2 + 147t$. How long does it take for an object thrown on Mars to return to the surface?

3 seconds

Practice - Solving Quadratics   **pp 652-659**
Name _____   Date _____   Period _____

**Solve the equations below. Round solutions to the nearest hundredth, if necessary.
State which method you used to solve.**

1. $x^2 + 5x + 6 = 0$

5. $x(x+5) = y$

2. $x^2 - 3 = 2x$
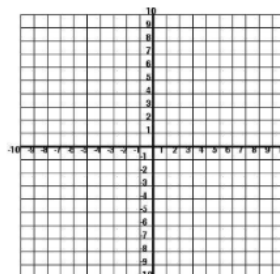
6. $x^2 - 5x = 0$

3. $(x-5)^2 = 100$

7. $0 = x^2 + 12$

4. $0 = x^2 - 4$

8. $-3.2x^2 - x + 10 = y$

9. Given $y = 2x^2 - 6x - 8$, find the following information below.
   a. Line of symmetry: _____
   b. Min/Max vertex: _____
   c. Solution(s): _____
   d. Graph the quadratic.
   e. Domain: _____ Range: _____

hW HELP SOLVING QUADR

Remember: When you are solving quadratic equations, GRAPHING or QUADRATIC FORMULA always works! Make sure you get all the terms on one side before using either method. If you use graphing, sketch a graph of the equation to prove your solutions.

As always, NO WORK = NO CREDIT!

1. {-2,-3}
2. {-1, 3}
3. {-5, 15} * Square Roots will work here!
4. {-2, 2} *Square Roots will work here!
5. {-5, 0}
6. {0, 5}
7. No Solution *Square Roots will work here!
8. {-1.93, 1.62}
9. Use your blue book from the beginning of the unit!
Make sure you plot at least 3 points to make the graph.

Algebra I – Unit 9: Topic 3 – Solving Quadratics by Graphing

Practice - Solving Quadratics by Graphing   **pp 622-624**

Name _____   Date _____   Period _____

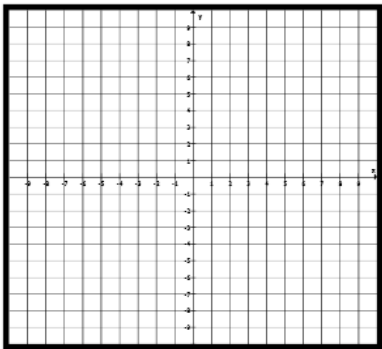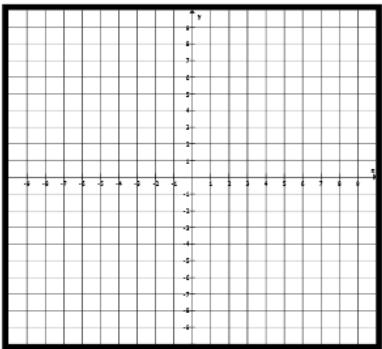**Complete the table including the solution(s) of the quadratic. Then graph the quadratic equation.**
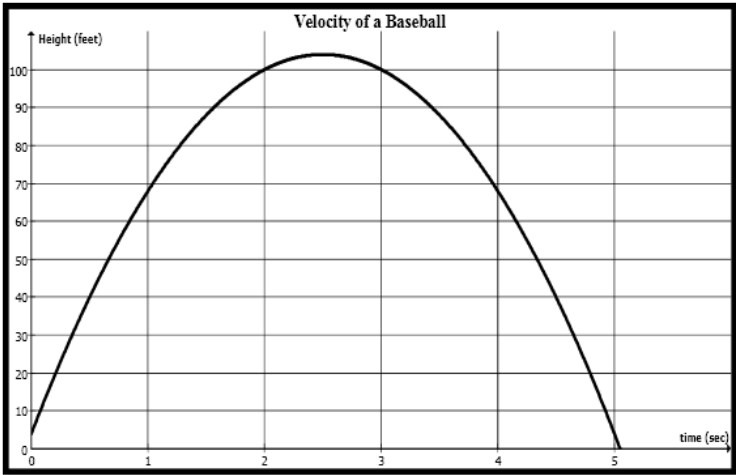
1. $x^2 + 7x + 10 = 0$ 2. $x^2 + 5x = -6$

x					
y					

x					
y					

3. A baseball coach uses a pitching machine to simulate pop flies during practice. The baseball is shot out of the pitching machine with a velocity of 80 feet per second. The quadratic function $y = -16x^2 + 80x + 4$, shown below, models the height of the baseball after x seconds.

A. Approximately, how long does the baseball stay in the air?

B. What is the maximum height that the baseball reaches?

Velocity of a Baseball