

Name: _____

<p style="text-align: center;">Assignments for Algebra 1 Unit 9 Quadratics, Part 1</p>
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__Day 1, Quadratic Transformations: p.1-2

__Day 2, Vertex Form of Quadratics: p. 3

__Day 3, Solving Quadratics: p. 4-5

__Day 4, No Homework (be sure you're caught up)

__Day 5, Moving Words Worksheet: p. 6

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__Day 7, Quadratics Graphs: p. 9

__Day 8, Using Vertex Form: p.10

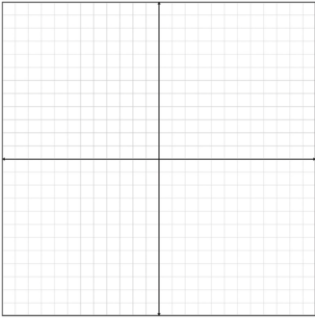
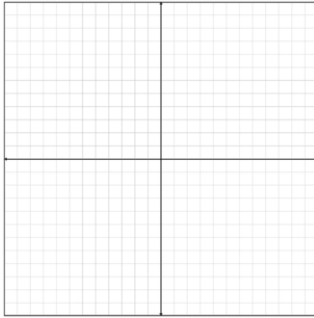
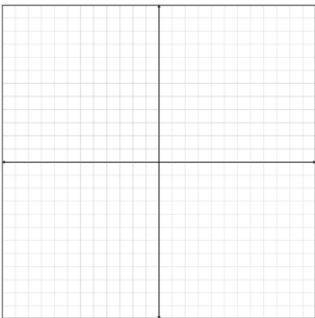
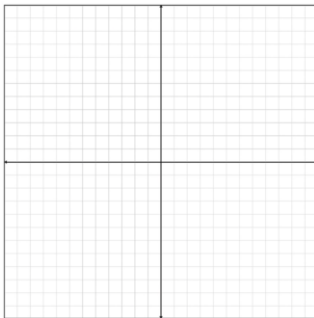
__Day 10, Vertex Form: p. 11

Quadratic Function Day 1 HW
 Transformations WS

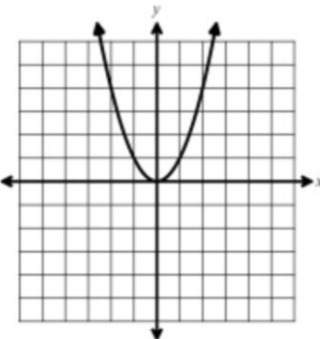
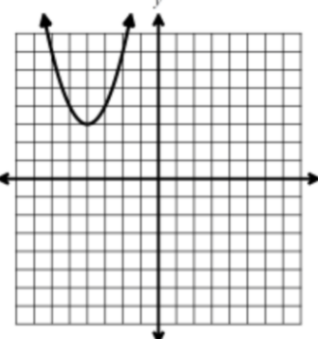
Name _____

Date _____ Per _____

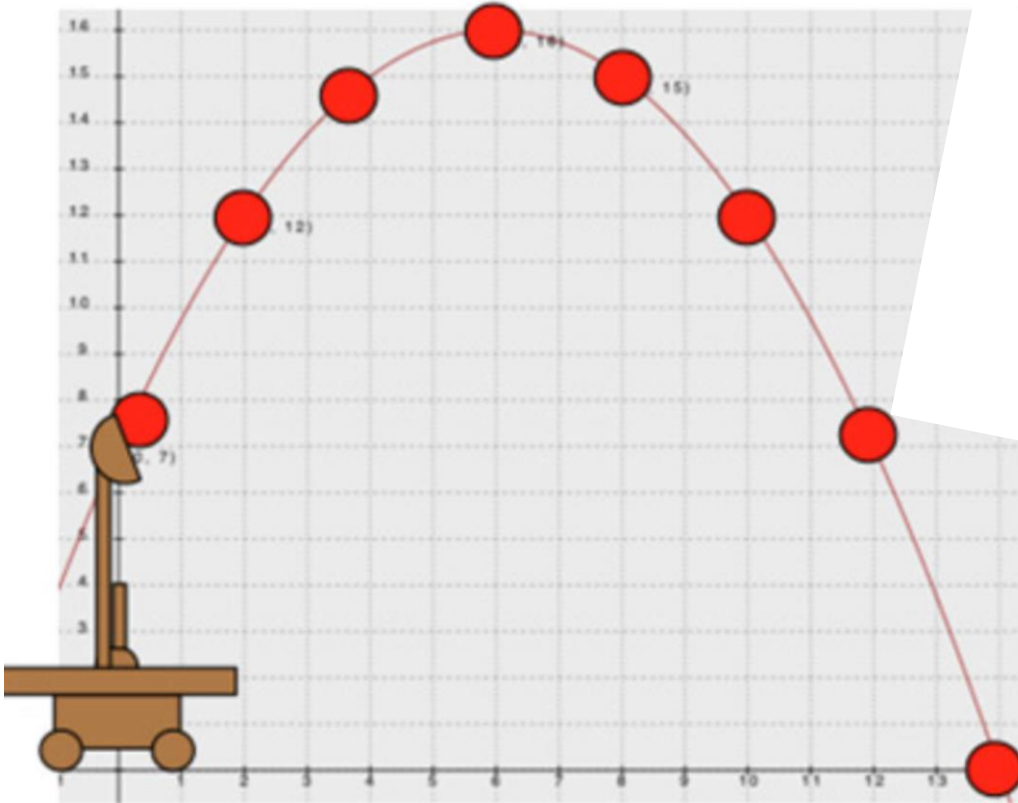
For each of the following quadratic functions: 1) graph, 2) give the domain and range, and 3) describe the transformations.

<p>1. $y = (x + 4)^2$</p>  <p>Domain/Range</p> <p>Transformations</p>	<p>2. $y = -(x - 2)^2 + 3$</p>  <p>1. Domain/Range</p> <p>2. Domain/Range</p> <p>3. Transformations</p>
<p>3. $f(x) = 3(x + 1)^2 - 6$</p>  <p>Domain/Range</p> <p>Transformations</p>	<p>4. $f(x) = -1/3(x - 3)^2 + 2$</p>  <p>Domain/Range</p> <p>Transformations</p>

Re-write the new equations for the quadratic functions after the given transformations

<p>5. Translate the graph of $f(x)=x^2$ four units to the right, two units up and reflect vertically. What is the new equation?</p>	<p>6. Translate the graph of $f(x)=(x + 3)^2 - 4$, seven units to the right, two units down and vertically compress by a factor of 1/4. What is the new equation?</p>
<p>7. Given the graph:</p>  <p>Translate to the left 2, up 4, and stretch vertically by a factor of 5. What is the new equation?</p>	<p>8. Given the graph:</p>  <p>Translate to the right 3, down 6, and reflect. What is the new equation?</p>

Given the graph of a ball being thrown from a catapult, answer the following questions. The vertical axis represents the height of the ball, the horizontal axis represents the distance from the catapult.



9. How far away from the catapult does the ball land? What part of the graph tells you this?
10. What is the maximum height the ball goes? What part of the graph tells you this?
11. Is the value of “a” positive or negative? How do you know?
12. Is the value of “|a|” greater than 1 or less than 1? How do you know?
13. Determine an approximate equation for this quadratic function. How did you determine the a, h, and k values?

Homework Day 2

Vertex Form of Quadratic Equations

Name _____

Date _____ Per _____

Factor the following polynomials.

1. $3x^2 + 18x + 27$

2. $3x^3 - 75x$

3. $x^2 + 2x - 24$

4. $5x^2 + 20x + 10$

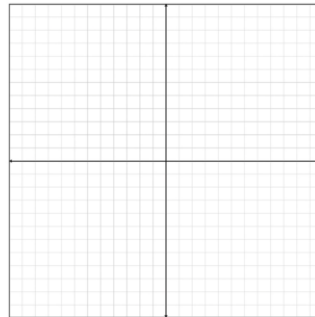
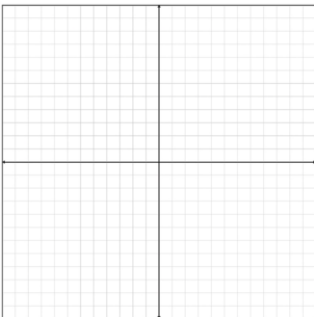
5. $6x^2 - x - 15$

6. $4x^2 - 10x - 24$

Predict the line of symmetry, vertex, and number of zeros. Graph to verify

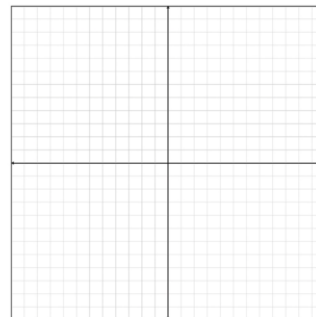
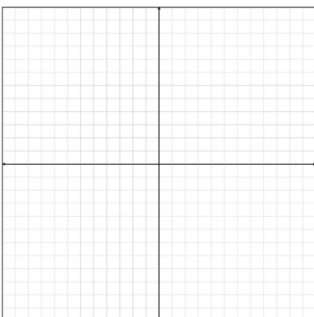
7. $f(x) = x^2 - 9$

8. $f(x) = x^2 - 5$



9. $f(x) = (x + 1)^2 - 4$

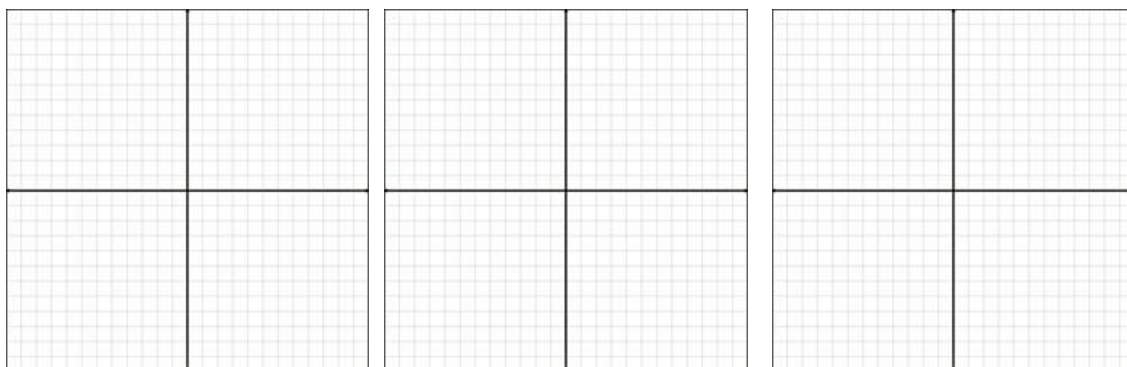
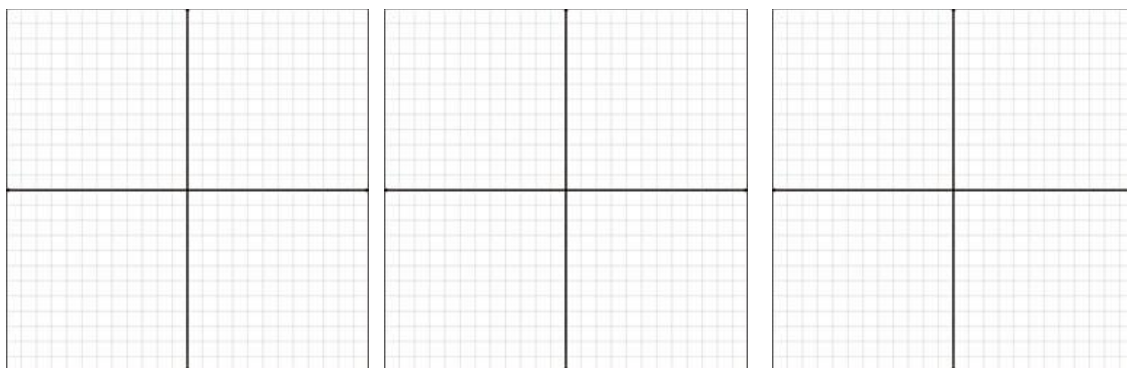
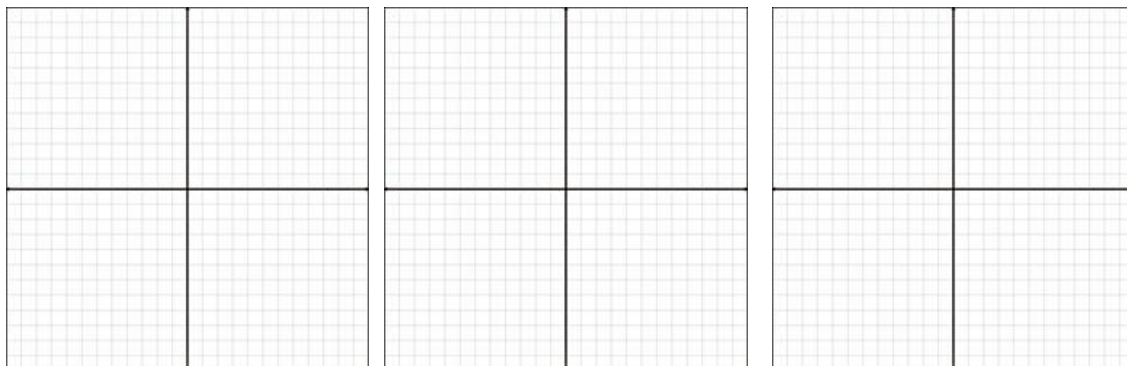
10. $f(x) = (x - 1)^2 + 2$



Part 1: Determine the number of solutions – think graphs and transformations!

		No Real Solutions	Exactly 1 Real Solution	Exactly 2 Real Solutions
a.	$(a + 5)^2 = 25$			
b.	$(n - 5)^2 = 25$			
c.	$(z + 5)^2 = -25$			
d.	$(x - 5)^2 = 0$			
e.	$16 - (l + 5)^2 = 25$			
f.	$(f + 1)^2 = (f + 2)^2$			
g.	$5b^2 = 5b^2 + 1$			

Use these graphs if you need them ☺



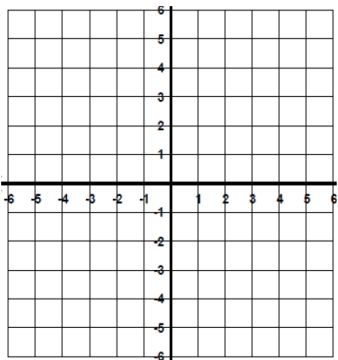
Part 2: Solving Quadratic Equations graphically

Solve the following absolute value equations graphically

1. $(x - 2)^2 + 3 = 4$

$f(x) =$

$g(x) =$

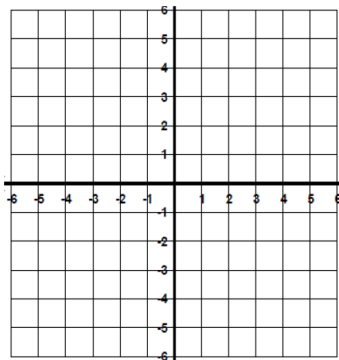


The solution(s):

2. $(x + 1)^2 - 2 = 2$

$f(x) =$

$g(x) =$

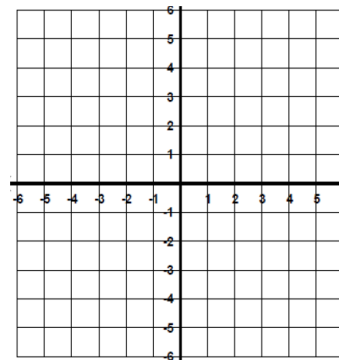


The solution(s):

3. $-(x - 3)^2 + 6 = 2$

$f(x) =$

$g(x) =$

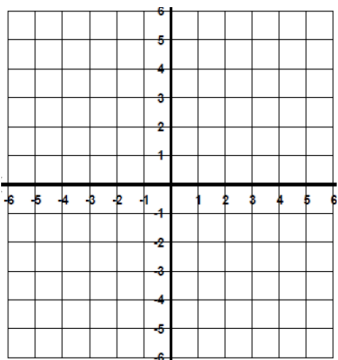


The solution(s):

4. $x^2 - 2 = x$

$f(x) =$

$g(x) =$

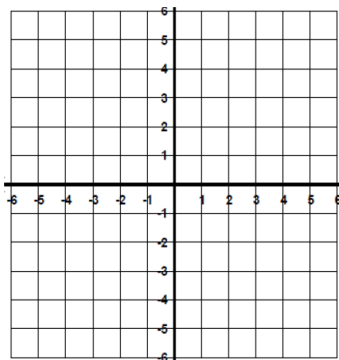


The solution(s):

5. $(x - 1)^2 + 4 = -x - 3$

$f(x) =$

$g(x) =$

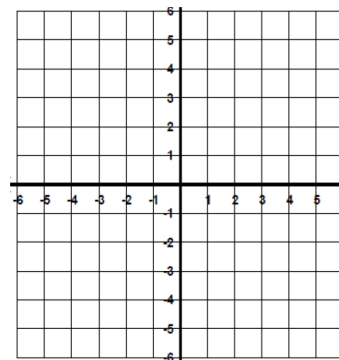


The solution(s):

6. $(x + 2)^2 - 3 = (x + 4)^2 - 3$

$f(x) =$

$g(x) =$



The solution(s):

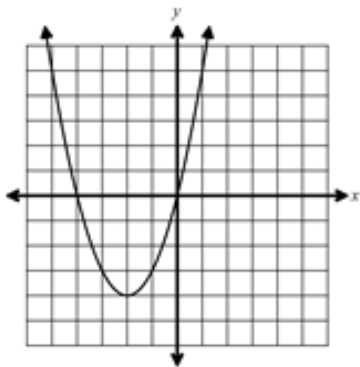
Moving Words

Solve each equation in the top block and find the solution set in the bottom block. (One equation has no solution.)
Transfer the word from the top box to the corresponding bottom box.

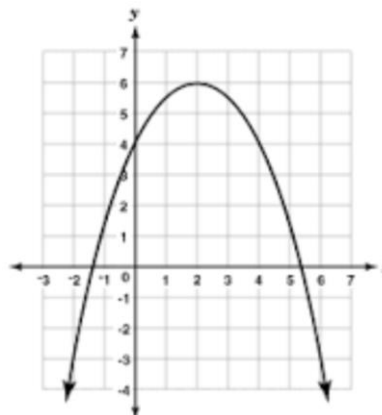
① $x^2 = 81$ TO	⑥ $y^2 - 49 = 0$ MAKE	⑪ $4x^2 - 200 = -20$ THE	⑫ $3(x - 2)^2 = 28$ STUDENTS
② $a^2 = 20$ WAS	⑦ $x^2 - 16 = 8$ ONCE	⑬ $7y^2 + 18 = 4$ THERE	⑬ $3(x - 5)^2 = 12$ TEACHER
③ $3n^2 = 45$ IN	⑧ $b^2 + 11 = 86$ TEN	⑭ $(x - 1)^2 = 9$ LAUGH	⑭ $5(n + 1)^2 = 40$ TEN
④ $7x^2 = 84$ WHO	⑨ $2x^2 - 3 = 15$ NO	⑮ $(a + 3)^2 = 25$ TOLD	⑮ $(2x - 3)^2 = 81$ JOKES
⑤ $2v^2 = 180$ BUT	⑩ $5w^2 + 8 = 58$ A	⑯ $(t - 4)^2 = 7$ DID	⑯ $(4t + 1)^2 = 49$ PUN
no solution	{ $\pm 2\sqrt{6}$ }	{ $\pm 2\sqrt{5}$ }	{ $\pm \sqrt{10}$ }
{ $\pm 2\sqrt{3}$ }	{2, -8}	{ $\pm 5\sqrt{3}$ }	{6, -3}
{ ± 7 }	{ $\pm 2\sqrt{3}$ }	{2 \pm 2 $\sqrt{7}$ }	{4, -2}
{ ± 3 }	{ $\frac{3}{2}$, -2}	{ $\pm \sqrt{15}$ }	{-1 \pm 2 $\sqrt{2}$ }
			{ $\pm 3\sqrt{10}$ }
			{4 \pm $\sqrt{7}$ }

Write the equation of the quadratic functions : $y = a(x-h)^2 + k$

1.

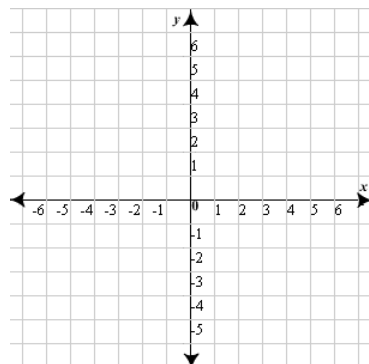


2.



Graph the following quadratic functions, give the domain and range, and identify the vertex, zeros, axis of symmetry, and y-intercept.

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



Domain: _____

Range: _____

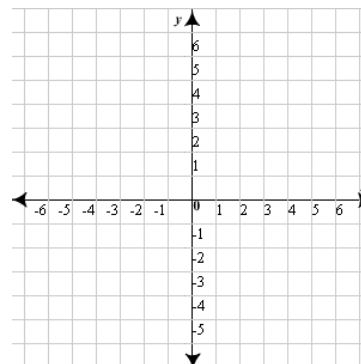
Vertex: _____

Axis of Symmetry: _____

Real Zeros: _____

y-intercept: _____

4. $y = 3(x + 4)^2 - 5$



Domain: _____

Range: _____

Vertex: _____

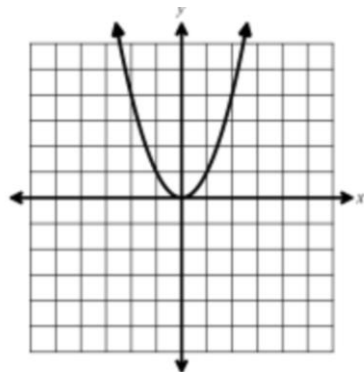
Axis of Symmetry: _____

Real Zeros: _____

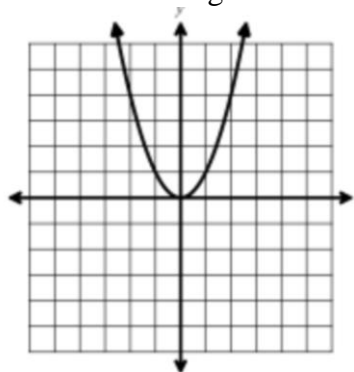
y-intercept: _____

Write new quadratic functions after the given transformations

5. Given the graph of $y=x^2$, what is the new vertex of the function after the transformation down 5 units and to the left three units?

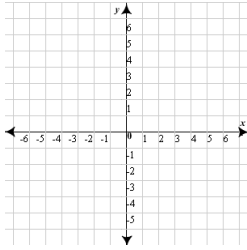


6. Given the graph of $y=x^2$, what are the new zeros of the function after the transformation down one unit and to the right one unit?

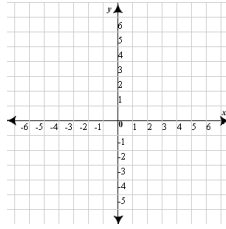


Solve the following quadratic equations using graphs

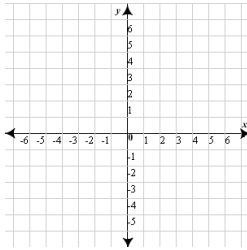
7. $(x - 2)^2 + 3 = 4$



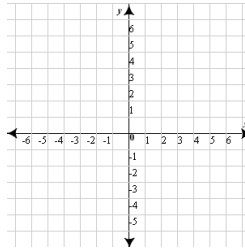
8. $x^2 - 3 = 2x$



7. $(x + 1)^2 - 3 = 1$



8. $(x - 1)^2 = (x - 3)^2$



Use the graph below to answer the following questions

Mr. Rhodes' class is holding an egg launching contest on the football field. Teams of students have built catapults that will hurl an egg down the field. Below is the graph and equation for one team's egg launch. Use the information given to answer the following questions.

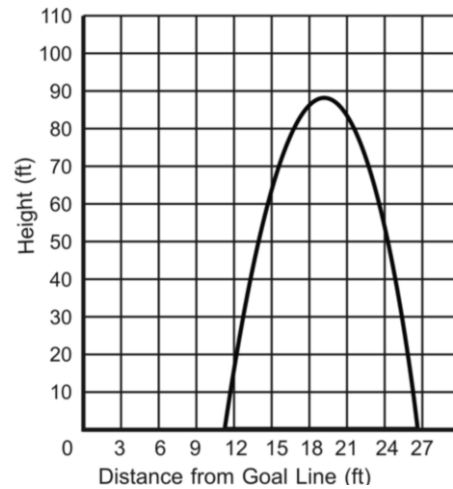
11. What is the vertex? Explain how you know this.

$$h(x) = -1.348(x - 19.042)^2 + 86.654$$

12. How high did their egg go? Explain how you know this.

13. How far did their egg travel? Explain how you know this.

14. How far away from the goal line did they set up their catapult? Explain how you know this.



Solve:

15. $4x^2 = 100$

16. $3x^2 - 5 = 16$

17. $(x + 3)^2 = 49$

18. $\frac{1}{2}(x + 2)^2 - 3 = 17$

19. $(x + 1)^2 - 3 = -8$

20. $(x + 1)^2 - 11 = -8$

DAY 7 HW #43

9-1

Think About a Plan

Quadratic Graphs and Their Properties

Physics In a physics class demonstration, a ball is dropped from the roof of a building, 72 feet above the ground. The height h (in feet) of the ball above the ground is given by the function $h = -16t^2 + 72$, where t is the time in seconds.

- Graph the function.
 - How far has the ball fallen from time $t = 0$ to $t = 1$?
 - Reasoning** Does the ball fall the same distance from time $t = 1$ to time $t = 2$ as it does from $t = 0$ to $t = 1$? Explain?
1. Complete the following table of values.

t	$h = -16t^2 + 72$	(t, h)
0		
1		
2		
3		

- Use the completed table to graph the function $h = -16t^2 + 72$.
- What was the height of the ball at $t = 0$? _____
 What was the height of the ball at $t = 1$? _____
 How far has the ball fallen from time $t = 0$ to $t = 1$? _____
- What is the height of the ball at $t = 2$? _____
 How far has the ball fallen from time $t = 1$ to $t = 2$? _____
- Does the ball fall the same distance from time $t = 1$ to $t = 2$ as it does from $t = 0$ to $t = 1$? Explain.

Solving Using Vertex Form Day 8

Name _____
Date _____ Period: _____

On the grid are eight points from two different functions.

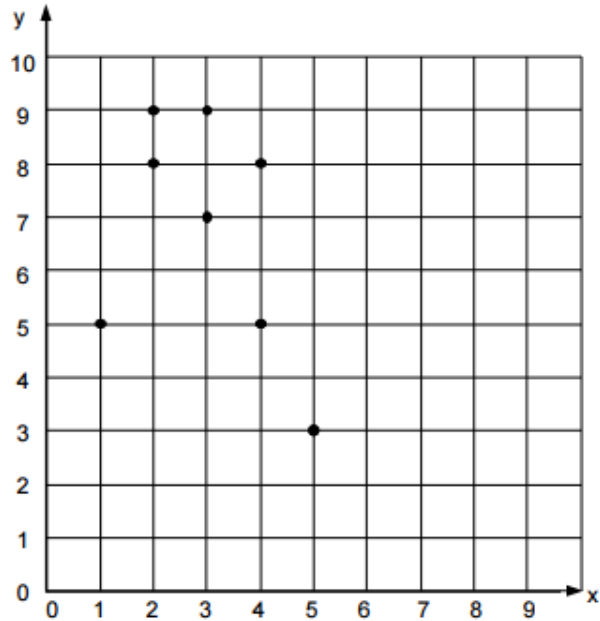
A certain linear function passes through exactly four of the points shown.

A certain quadratic function passes through the remaining four points.

For the **linear** function:

1. Write the coordinate pairs of its four points.

Draw the line on the grid.



2. Write an equation for the function.

Show your work.

For the **quadratic** function:

3. Write the coordinate pairs of its four points.

Draw the graph of the function on the grid.

4. Write an equation that fits the quadratic function.

Show your work.

1) Solve the quadratic equations. Leave your answers in simplified radical form.

a. $3d^2 - 150 = 282$

b. $\frac{2}{3}w^2 - 4 = 12$

c. $(x - 2)^2 + 3 = 10$

d. $3(x - 2)^2 = 75$

2) Find the vertex, y-intercept and x-intercepts (zeros) of functions.

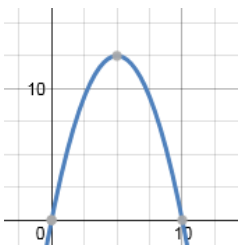
a. $f(x) = (x + 1)^2 - 4$

b. $f(x) = x^2 - 25$

c. $f(x) = 2(x - 2)^2 - 18$

d. $f(x) = .5(x - 3)^2 - 2$

3) Before a truck can drive through a tunnel, it must be determined if the load can fit safely through the tunnel. The parabola models $h(t) = -.5(t - 5) + 12.5$ the maximum space that a vehicle has to fit through the tunnel. If a truckload is 9 feet high what is the maximum width it could be?



4) Sarah is a cliff diver standing on the top of a cliff with a height of 50 feet. When she dives off, she is at a height of 30 feet after 2 seconds. Determine the quadratic function, $f(x) = a(x - h)^2 - k$, that would model Sarah's height t seconds after she jumps off the diving board. (*hint: The vertex is where she is diving off the cliff and you need to determine the value of "a" using the other information in the problem*)

