

Content Area & Materials	Learning Objectives	Tasks	Check-in Opportunities	Submission of Work for Grades	
<p>Digital</p> <p>(If you can work digitally, please do. It will help to keep us all safe 😊)</p> <ul style="list-style-type: none"> Khan Academy (KA) Access Code on Edmodo 	<p><u>Suggested Order / Pacing</u> Review</p> <ul style="list-style-type: none"> Graphing Quadratics: Vertex Form (Monday) Quadratic Word Problems (Tuesday) Quadratic Functions & Equations: Quiz ½ (Wednesday) Forms & Features of Quadratic Functions (Thursday) Finding Features of Quadratic Functions (Friday) 	<ul style="list-style-type: none"> Students are to complete the assigned Khan Academy assignments. After completing the Khan Academy assignments, please complete the summary assignment. 	<p>Mrs. Wong is available during office hours indicated below. You can reach Mrs. Wong during these office hours via:</p> <ul style="list-style-type: none"> Zoom link provided in Edmodo Email cwong@tUSD.net 	<ul style="list-style-type: none"> KA assignments will be recorded with the highest scores attained 	
<p>Hard Copy (Please only use this if you do not have technology available)</p> <ul style="list-style-type: none"> Notes + Examples Assignments <div style="border: 1px solid red; border-radius: 50%; padding: 10px; display: inline-block; margin-top: 20px;"> <p>Do these assignments ONLY if you do not have digital access. </p> </div>	<p><u>Suggested Order / Pacing</u> Review</p> <ul style="list-style-type: none"> Graphing Quadratics: Vertex Form (Monday) Quadratic Word Problems (Tuesday) Quadratic Functions & Equations: Quiz ½ (Wednesday) Forms & Features of Quadratic Functions (Thursday) Finding Features of Quadratic Functions (Friday) 	<ul style="list-style-type: none"> Students are to read the lesson and examples provided On a separate sheet of paper for each assignment, complete ALL problems showing your work. 	<p>Mrs. Wong is available during office hours indicated below. You can reach Mrs. Wong during these office hours via:</p> <ul style="list-style-type: none"> Zoom link provided in Edmodo Email cwong@tUSD.net 	<ul style="list-style-type: none"> Group your work together for your math class IN ORDER, and with the following labels clearly displayed: <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p>Student Name: Teacher Name: Class Name/Subject: Period: Assignment Week #</p> </div> <ul style="list-style-type: none"> Assignments will be scored on accuracy. 	
<p>Scheduled, if possible,</p> <ul style="list-style-type: none"> Discussion 	<p>Zoom classes will be held on Tuesdays and Thursdays for 30 minutes, followed by 30 minutes of office hours. Schedule meetings during office hours by emailing me. Discussions will revolve around discovery and application of concepts assigned for the week.</p>				
<p>Scaffolds & Supports</p>	<p>KA assignments can often be re-tried to improve learning. Videos are utilized to demonstrate not only key concepts, but also frequent points of errors, helping students avoid pitfalls.</p>				
<p>Teacher Office Hours 2 hours daily (all classes):</p> <ul style="list-style-type: none"> Contact Platform 	<p>Monday</p> <p>10:00 am-12:00 pm</p>	<p>Tuesday</p> <p>10:00 am-12:00 pm</p>	<p>Wednesday</p> <p>10:00 am-12:00 pm</p>	<p>Thursday</p> <p>10:00 am-12:00 pm</p>	<p>Friday</p> <p>10:00 am-12:00 pm</p>

Student Name:
 Teacher Name: **Wong**
 Class Name/Subject:
Algebra 1
 Period:
 Assignment Week #: **3**

NOTES: Complete all work on a separate sheet of paper. Include the heading provided on each worksheet you turn in. Show all work.

Monday

The strategy

The equation is in vertex form $y = a(x - h)^2 + k$.

To graph the parabola, we need its vertex and another point on the parabola.

- In vertex form, the vertex coordinates are simply (h, k) .
- The other point can be a point next to the vertex (where $x = h \pm 1$).

Finding the vertex

The coordinates of the vertex of a parabola in the form $y = a(x - h)^2 + k$ are (h, k) .

Note that h is found when it is *subtracted* from x . For this reason, let's rewrite the given equation as follows:

$$y = 4(x - 2)^2 - 6$$

Therefore, the vertex is at $(2, -6)$.

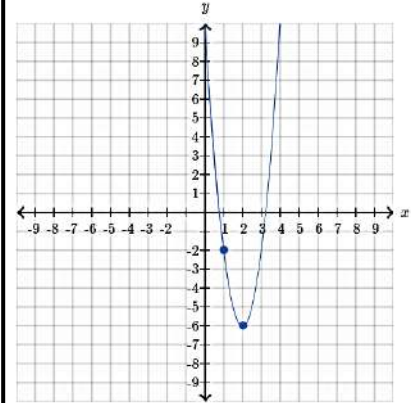
Finding another point

When the equation is given in vertex form, it's usually best to look for another point that is near the vertex. Since the vertex is at $x = 2$, let's plug $x = 1$ into the equation.

$$\begin{aligned} y &= 4(1 - 2)^2 - 6 \\ &= 4(-1)^2 - 6 \\ &= 4 - 6 \\ &= -2 \end{aligned}$$

The vertex of the parabola is at $(2, -6)$ and another point on the parabola is at $(1, -2)$.

Therefore, this is the parabola:



Tuesday

A soccer ball is kicked from the ground with an initial upward velocity of 90 feet per second. The equation $h = -16t^2 + 90t$ gives the height h of the ball after t seconds.

a. Find the ^(vertex) maximum height of the ball.

$$t = \frac{-90}{2(-16)} = \frac{-90}{-32} \approx 2.81$$

$$h = -16(2.81)^2 + 90(2.81) \approx \boxed{126.56}$$

b. How many seconds will it take for the ball to reach the ground?

$$\begin{aligned} -16t^2 + 90t &= 0 & h=0 \\ -2t(8t - 45) &= 0 \\ t \neq 0 & \quad \boxed{t = 5.625} \end{aligned}$$

A rocket is launched from a platform.

Its height (in meters), x seconds after the launch, is modeled by

$$h(x) = -4(x + 2)(x - 18)$$

Handwritten notes: $x = -2$, $x = 18$, $x = 0$, $-8 \cdot -9 \cdot 2 = -8$

What is the height of the rocket at the time of launch? $h(0) = -4 \cdot 2 \cdot (-18)$

144 m

How many seconds after launch will the rocket hit the ground? $\boxed{x + 2 = 0}$ $x - 18 = 0$

$$0 = -4(x + 2)(x - 18) \quad \text{18 seconds} \quad \cancel{x = -2} \quad x = 18$$

How many seconds after being launched will the rocket reach its maximum height?

$$\frac{-2 + 18}{2} = \frac{16}{2} = \boxed{8}$$

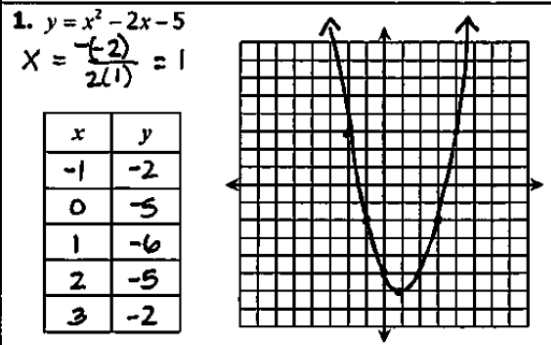
What is the maximum height that the rocket will reach?

$$h(8) = -4(8 + 2)(8 - 18) = \bullet$$

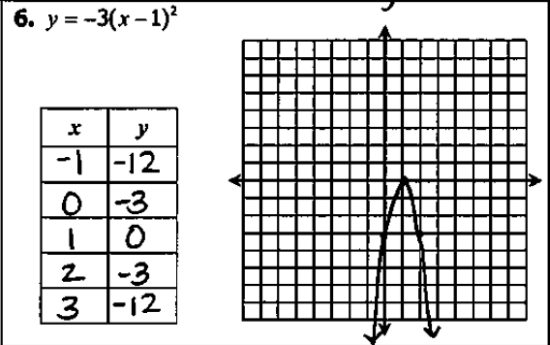
Student Name:
 Teacher Name: Wong
 Class Name/Subject:
 Algebra 1
 Period:
 Assignment Week #: 3

NOTES: Complete all work on a separate sheet of paper.
 Include the heading provided on each worksheet you
 turn in. Show all work.

Wednesday

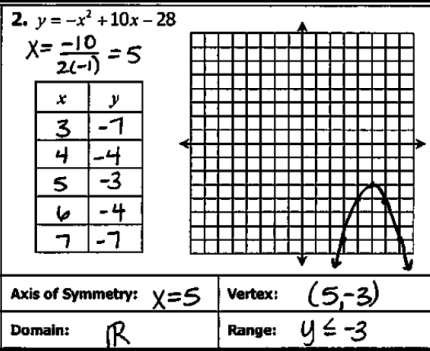


Axis of Symmetry: $x=1$ Vertex: $(1, -6)$
 Domain: \mathbb{R} Range: $y \geq -6$

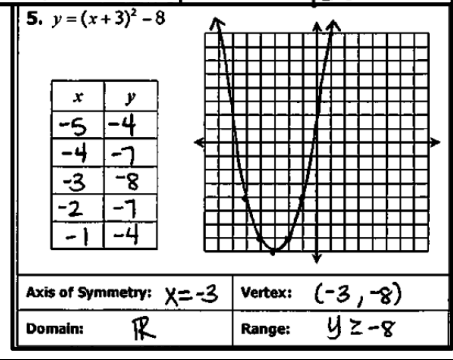


Axis of Symmetry: $x=1$ Vertex: $(1, 0)$
 Domain: \mathbb{R} Range: $y \leq 0$

Thursday



Axis of Symmetry: $x=5$ Vertex: $(5, -3)$
 Domain: \mathbb{R} Range: $y \leq -3$



Axis of Symmetry: $x=-3$ Vertex: $(-3, -8)$
 Domain: \mathbb{R} Range: $y \geq -8$

Friday

To find the zeros of the function, we need to solve the equation $g(r) = 0$. We can do that by factoring $g(r)$.

$$r^2 - 6r - 55 = 0$$

$$(r - 11)(r + 5) = 0$$

$$r - 11 = 0 \text{ or } r + 5 = 0$$

$$r = 11 \text{ or } r = -5$$

There are many ways to find the vertex. We will do it by using the fact that the r -coordinate of the vertex is exactly between the two zeros.

$$\text{vertex's } r\text{-coordinate} = \frac{(11) + (-5)}{2}$$

$$= 3$$

Now we can find the vertex's y -coordinate by evaluating $g(3)$:

$$g(3) = (3)^2 - 6(3) - 55$$

$$= 9 - 18 - 55$$

$$= -64$$

In conclusion,
 smaller $r = -5$
 larger $r = 11$

The vertex of the parabolas is at
 $(3, -64)$

Quadratic Functions

Standard Form
 $y = ax^2 + bx + c$
 Example 1: $f(x) = -x^2 + 2x + 3$
 $a = -1$, $b = 2$, $c = 3$
 • Axis of Symmetry: $x=1$
 • Use the Formula
 • Write $(1, 4)$
 • If you know the axis of symmetry, just plug it back into the function to find y .
 • Y-intercept: $(0, 3)$
 • The y-intercept is where $x=0$.

Vertex Form
 $y = a(x-h)^2 + k$
 Example 2: $f(x) = 2(x+3)^2 - 1$
 • Axis of Symmetry: $x=-3$
 • If you know the vertex, you also know the axis of symmetry.
 • Vertex: $(-3, -1)$
 • Since vertex form $a < 0$, make sure to flip the sign for the x -coordinate.

Factored Form
 $y = a(x-p)(x-q)$
 Example 3: $f(x) = (x-3)(x-2)$
 • Zeros: $(2, 0)$ & $(3, 0)$
 • Axis of Symmetry: $x=2.5$
 • Plug in x to find the y .
 • Write $(2.5, -1)$
 • If you know the A.O.S., you already know the x -coordinate.

EASY TO FIND THE AXIS OF SYMMETRY
 $x = \frac{-b}{2a}$

EASY TO FIND THE VERTEX AT
 (h, k)

EASY TO FIND THE ZEROS AT
 $x = p$ $x = q$

Student Name:
 Teacher Name: **Wong**
 Class Name/Subject: **Algebra 1**
 Period:
 Assignment Week #: **4**

Do these assignments ONLY if you do not have digital access!

Complete all work on a separate sheet of paper. **Show all work.** Include the heading provided on each worksheet you turn in.

Monday

Tuesday

1.) Graph the equation.

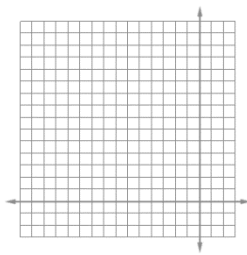
$$y = -2(x + 5)^2 + 4$$

Parent Function **Transformation Function**

x	y

x	y
-5	4

Graph



1.) An object is launched from a platform.

Its height (in meters), x seconds after the launch, is modeled by:

$$h(x) = -5(x - 4)^2 + 180$$

What is the height of the object at the time of launch? How do you know?

2.) A hovercraft takes off from a platform.

Its height (in meters), x seconds after the launch, is modeled by:

$$h(x) = -3(x - 3)^2 + 180$$

What is the height of the hovercraft at the time of takeoff? How do you know?

3.) (x) Graph the equation.

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

3.) Amir stands on a balcony and throws a ball to his dog, who is at ground level.

The ball's height (in meters above the ground), x seconds after Amir threw it, is modeled by:

$$h(x) = -(x - 2)^2 + 16$$

What is the height of the ball at the time it is thrown? How do you know?

4.) Graph the equation.

$$y = 3x^2 + 1$$

4.) The population in a certain part of the ocean (in thousands of fish) as a function of the water's temperature (in degrees Celsius) is modeled by:

$$P(x) = -2(x - 9)^2 + 200$$

What is the maximum number of fish? How do you know?

5.) Graph the equation.

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

6.) Graph the equation.

$$f(x) = -3(x - 1)^2 + 1$$

7.) Graph the equation.

$$y = -1/2(x + 2)^2 - 4$$

5.) The number of mosquitoes in Minneapolis, Minnesota (in millions of mosquitoes) as a function of rainfall (in centimeters) is modeled by:

$$m(x) = -(x - 5)^2 + 25$$

8.) Graph the equation.

$$g(x) = \frac{1}{3}(x - 6)^2 + 1$$

How many centimeters of rainfall will produce the maximum number of mosquitoes? How do you know?

Student Name:

Teacher Name: Wong

Class Name/Subject: Algebra 1

Period:

Assignment Week #: 4

Do these assignments ONLY if you do not have digital access!

Complete all work on a separate sheet of paper. Show all work. Include the heading provided on each worksheet you turn in.

Wednesday/Thursday

Friday

Quiz #1

- 1.) A certain company's main source of income is a mobile app. The company's annual profit (in millions of dollars) as a function of the app's price (in dollars) is modeled by:

$$P(x) = -2(x - 3)(x - 11)$$

What would be the company's profit if the app price is 0 dollars?

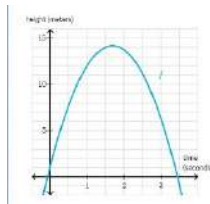
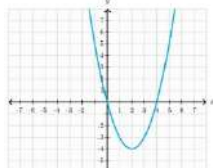
- 2.) Graph the function. $h(x) = -4(x - 3)(x - 1)$
 3.) Identify the vertex and the axis of symmetry.
 4.) Solve for x.

$$(x - 7)(-4x - 2) = 0$$

- 5.) Sarah kicked a ball in the air.

The function f models the height of the ball (in meters) as a function of time (in seconds) after Sarah kicked it. **Which of these statements are true?**

- a. The ball moved upwards for about 3.5 sec.
 b. The ball started moving upwards after about 1.75 sec.
 c. The ball hit the ground after about 3.5 sec.
 d. The ball hit the ground after about 1.75 sec.



Quiz #2

- 1.) Find the zeros of the function.
 $f(x) = (x + 6)^2 - 49$
 2.) Find the zeros of the function.
 $g(x) = -10x^2 + 490$
 3.) The fish population in a certain part of the ocean (in thousands of fish) as a function of the water's temperature (in degrees Celsius) is modeled by:

$$P(x) = -2(x - 9)^2 + 400$$

What is the maximum number of fish?

- 4.) Tara solved a quadratic equation. Her work is shown below, with Step 2 missing. What could Tara have written as the result from STEP 2?

$$2(x - 3)^2 + 6 = 14$$

$$2(x - 3)^2 = 8 \quad \text{Step 1}$$

Step 2

$$x - 3 = \pm 2 \quad \text{Step 3}$$

$$x = 1 \text{ or } x = 5 \quad \text{Step 4}$$

- 5.) Graph the function. $g(x) = 2(x - 2)^2 + 2$

- 1.) The function f is given in three equivalent forms.

Which form most quickly reveals the y-intercept? How do you know?

a.) $f(x) = -3(x - 2)^2 + 27$

b.) $f(x) = -3x^2 + 12x + 15$

c.) $f(x) = -3(x + 1)(x - 5)$

What is the y-intercept?

- 2.) The function m is given in three equivalent forms. Which form most quickly reveals the vertex?

a.) $m(x) = 2(x + 4)^2 - 8$

b.) $m(x) = 2(x + 6)(x + 2)$

c.) $m(x) = 2x^2 + 16x + 24$

What is the vertex?

- 3.) The function m is given in three equivalent forms. Which form most quickly reveals the zeros (or roots) of the function?

a.) $m(x) = 2(x + 6)(x + 2)$

b.) $m(x) = 2x^2 + 16x + 24$

c.) $m(x) = 2(x + 4)^2 - 8$

Identify the zeros.

- 4.) The function f is given in three equivalent forms. Which form most quickly reveals the y-intercept?

a.) $f(x) = \frac{1}{2}(x - 3)(x - 7)$

b.) $f(x) = \frac{1}{2}(x - 5)^2 - 2$

c.) $f(x) = \frac{1}{2}x^2 - 5x + \frac{21}{2}$

What is the y-intercept?