**Teacher** De La Mora **Subject** __Algebra 1__ **Dates**__5/11-5/15 (Week 4) **7-12 Weekly Planner** *Welcome to our Distance Learning Classroom!*

**Student Time Expectation per day: 30 minutes**

| **Content Area & Materials** | **Learning Objectives** | **Tasks** | **Check-in Opportunities** | **Submission of Work for Grades** |
|---|---|---|---|---|
| **Digital**<br>(If you can work digitally, please do. It will help to keep us all safe ☺)<br>• Khan Academy (KA) Access Code<br>Period 4: **ZW3XF7WD**<br>Period 5: **5SPC2CFN**<br>• Summary Assignment Posted on Classroom Website and sent via Remind App. | Suggested Order / Pacing<br>Review<br>• Graphing Quadratics: Vertex Form (Monday)<br>• Quadratic Word Problems (Tuesday)<br>• Quadratic Functions & Equations: Quiz ½ (Wednesday)<br>• Forms & Features of Quadratic Functions (Thursday)<br>• Finding Features of Quadratic Functions (Friday) | • Students are to complete the assigned **Khan Academy assignments**.<br>• After completing the Khan Academy assignments, please complete the **summary assignment.** | Mrs. De La Mora is available during the office hours at the times indicated below.<br>• 10:00 am-12:00 pm Monday-Friday<br>• Remind App CODE: **dk4g79**<br>• adelamora@tusd.net | • KA assignments will be recorded with the highest scores attained<br>• Submit the summary assignment through a picture via Remind App. (Scored on Accuracy) |
| **Hard Copy** (Please only use this if you do not have technology available)<br>• Notes + Examples<br>• Assignments | Suggested Order / Pacing<br>Review<br>• Graphing Quadratics: Vertex Form (Monday)<br>• Quadratic Word Problems (Tuesday)<br>• Quadratic Functions & Equations: Quiz ½ (Wednesday)<br>• Forms & Features of Quadratic Functions (Thursday)<br>• Finding Features of Quadratic Functions (Friday) | • Students are to **read** the lesson and examples provided<br>• On a separate sheet of paper for each assignment, **complete** ALL problems showing your work. | Mrs. De La Mora is available during the office hours at the times indicated below.<br>• 10:00 am-12:00 pm Monday-Friday<br>• Remind App CODE: **dk4g79**<br>• adelamora@tusd.net | • Group your work together for your math class IN ORDER, and with the following labels clearly displayed:<br>Student Name:<br>Teacher Name:<br>Class Name/Subject:<br>Period:<br>Assignment Week #<br>• Assignments will be scored on accuracy. |
| **Scheduled**, *if possible,*<br>• Discussion | Zoom classes can be held during tutoring hours. Schedule your meetings by visiting the class website: **kimballmath.wordpress.com**<br>Discussions will revolve around discovery and application of concepts assigned for the week. | | | |
| **Scaffolds & Supports** | KA assignments can often be re-tried to improve learning.<br>Videos are utilized to demonstrate not only key concepts, but also frequent points of errors, helping students avoid pitfalls. | | | |

| **Teacher Office Hours** *2 hours daily (all classes):*<br>• Contact<br>• Platform | **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
|---|---|---|---|---|---|
| | **10:00 am-12:00 pm** | **10:00 am-12:00 pm** | **10:00 am-12:00 pm** | **10:00 am-12:00 pm** | **10:00 am-12:00 pm** |

Student Name:
Teacher Name: De La Mora
Class Name/Subject:
Algebra 1
Period:
Assignment Week #: 4

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

# Monday

| Parent Function | $y = x^2$ | Transformation Function | $y = x^2+2$ |
|---|---|---|---|
| Table<br><br>What do you notice about the table? | x: -2, -1, 0, 1, 2<br>y: 4, 1, 0, 1, 4 | Table<br><br>How is the transformed table different from the parent table? | x: -2, -1, 0, 1, 2<br>y: 6, 3, 2, 3, 6 |

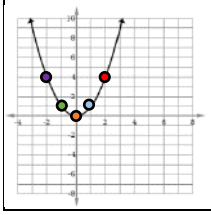
| Transformation Function | $y = (x-5)^2$ | Transformation Function | $y = (x+3)^2$ |
|---|---|---|---|
| Table<br><br>How is the transformed table different from the parent table? | x: 3, 4, 5, 6, 7<br>y: 4, 1, 0, 1, 4 | Table<br><br>How is the transformed table different from the parent table? | x: -5, -4, -3, -2, -1<br>y: 4, 1, 0, 1, 4 |

| Transformation Function | $y = 4(x)^2$ | Transformation Function | $y = 1/2(x)^2$ |
|---|---|---|---|
| Table<br><br>How is the transformed table different from the parent table? | x: -2, -1, 0, 1, 2<br>y: 16, 4, 0, 4, 16 | Table<br><br>How is the transformed table different from the parent table? | x: -2, -1, -0, 1, 2<br>y: 2, ½, 0, ½, 2 |

**Transformation Function** $y = 2(x-3)^2 - 6$

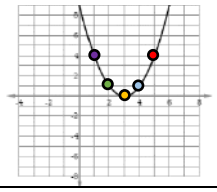
| x | y |
|---|---|
| -2 | 4 |
| -1 | 1 |
| 0 | 0 |
| 1 | 1 |
| 2 | 4 |

Parent Function



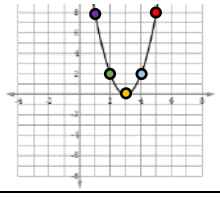
| x | y |
|---|---|
| 1 | 4 |
| 2 | 1 |
| 3 | 0 |
| 4 | 1 |
| 5 | 4 |

Horizontal Shift 3 Units to the Right



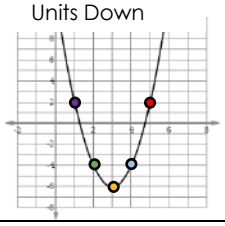
| x | y |
|---|---|
| 1 | 8 |
| 2 | 2 |
| 3 | 0 |
| 4 | 2 |
| 5 | 8 |

Vertical Stretch by a Factor of 2



| x | y |
|---|---|
| 1 | 2 |
| 2 | -4 |
| 3 | -6 |
| 4 | -4 |
| 5 | 2 |

Vertical Shift 6 Units Down

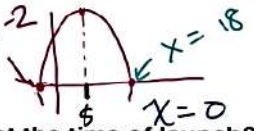


# Tuesday

A rocket is launched from a platform.

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

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




-8 · -9 · 2

**What is the height of the rocket at the time of launch?** $h(0) = -4 \cdot 2 \cdot (-18)$ = -8 = 144 m

**How many seconds after launch will the rocket hit the ground?** $x+2=0$ $x-18=0$

$0 = -4(x+2)(x-18)$ 18 seconds $x=-2$ $x=18$

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

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

**What is the maximum height that the rocket will reach?**

$h(8) = -4(8+2)(8-18) =$ ●

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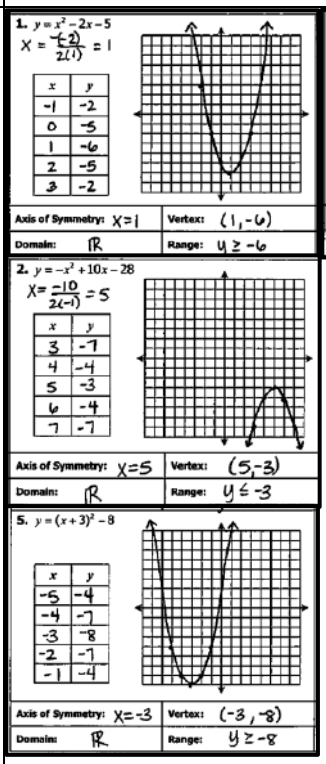
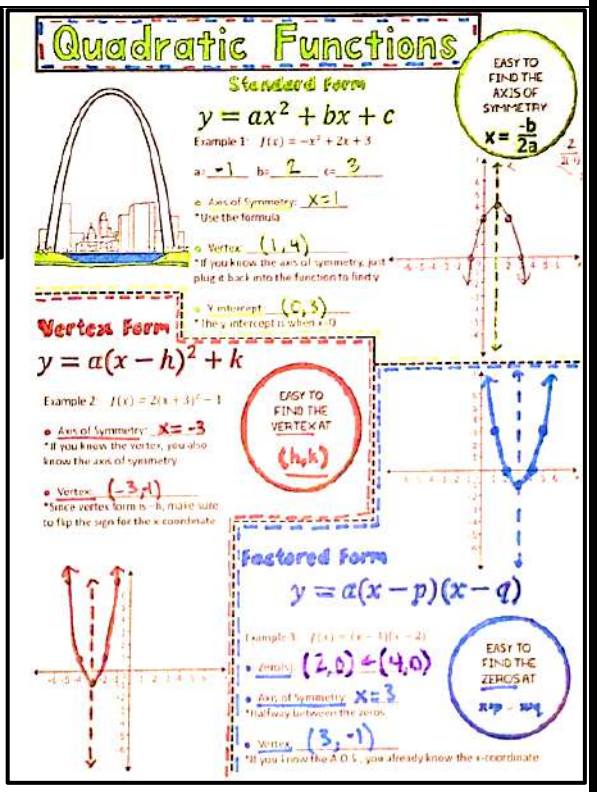
## Wednesday

## Thursday




Quadratic Functions can be written in three different forms.

Each form provides useful information about the quadratic function.




## 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,

$$\text{smaller } r = -5$$

$$\text{larger } r = 11$$

The vertex of the parabolas is at

$$(3, -64)$$

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# Monday

1.) Graph the equation.

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

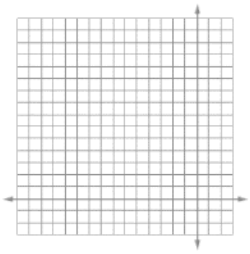
**Parent Function**

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |

**Transformation Function**

| x | y |
|---|---|
| | |
| | |
| **-5** | **4** |
| | |
| | |

**Graph**



3.) (x)Graph the equation.

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

4.) Graph the equation.

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

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.

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

8.) Graph the equation.

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

# Tuesday

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

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

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

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# Wednesday/Thursday

**Quiz #1**

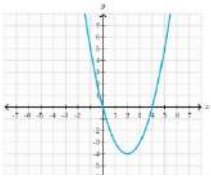
1.) A certain company's main source of income is a mobile app. The company's annual profit) in millions of dollars) as a function of the app's price (in dollars) in modeled by:

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

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

2.) Graph the function. $h(x) = -4(x-3)(x-1)$

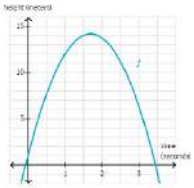
3.) Identify the vertex and the axis of symmetry.



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?

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

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

Step 2

$x - 3 = \pm 2$ Step 3

$x = 1$ or $x = 5$ Step 4

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

# Friday

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?