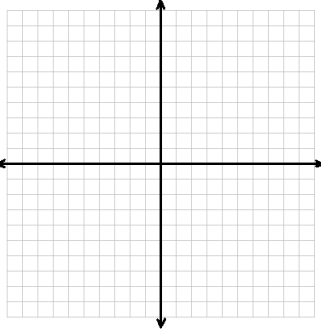
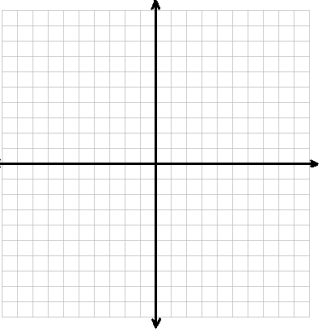
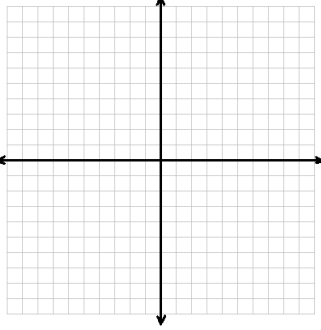
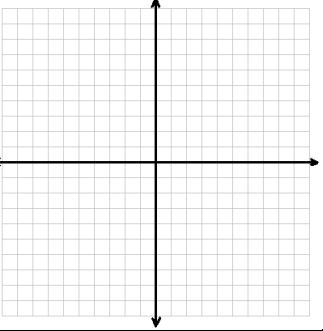
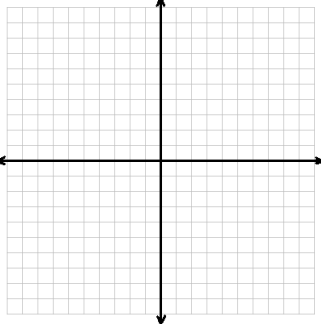
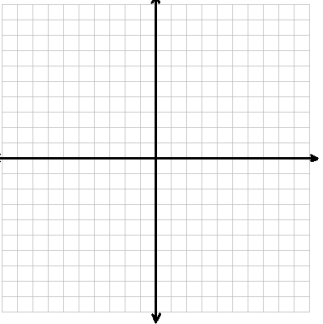


**Unit 3 (Functions, Equations, & Graphs) Test Review Stations**

**Station 1: Graphing and Functions:** 1. Graph each equation/inequality. State the domain & range for a, b, & d.

<p>a. <math>y &lt; -7</math></p> 	<p>b. <math>f(x) = - x - 4  - 5</math></p> 
<p>c. <math>8x - 2y \geq 32</math></p> 	<p>d. <math>\frac{3}{4}x - \frac{1}{2}y = -2</math></p> 
<p>e. <math>y \leq -3 x + 8 </math></p> 	<p>f. <math>x &gt; 9</math></p> 

2.

Create any graph, mapping, equation, or set of points that is a function, and explain how you know it is.

Create any graph, mapping, equation, or set of points that is not a function, and explain how you know it is not.

**Station 2:** *Modeling with Functions*

3. Two unmanned vehicles are in motion. Their speeds are  $s_1$  and  $s_2$  respectively. The vehicles began at the same starting point, and the first vehicle has been traveling for  $x$  minutes, while the second has been in motion for  $7 - x$  minutes. The distances traveled by the vehicles, however, are the same, meaning  $s_1t_1 = s_2t_2$ , where  $t$  is the time in minutes and  $s$  is the speed in meters per minute. If the second vehicle is traveling 20 mph, determine a function that could be used to determine the speed of the first vehicle. Use the information in the table as a reference.

$s_2$	$t_1$	$t_2$
20	$x$	$7 - x$

4. Paul is doing a cardio workout. He cycled for some amount of miles and is now running at a constant speed on the treadmill. Twenty minutes into his run, Paul has gone 2.75 miles and after 35 minutes of running, Paul has gone a total of  $4\frac{1}{4}$  miles.

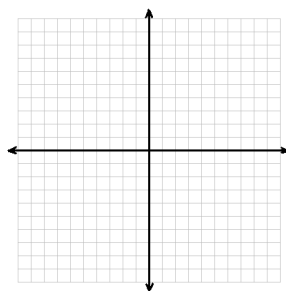
A. In this situation, what is the rate of change, and what does the rate of change represent?

B. Write an equation that can be used to determine the number of miles Paul has gone based on how long he has been working out, and explain how you came up with this equation.

C. How many miles will Paul have gone after running for an hour, assuming he stays on the treadmill? Explain.

D. Paul would like to go at least six miles. How long will he need to run for if he does exactly six miles?

E. Represent this situation graphically. What are the x and y-intercepts? In terms of the context of the problem, what do the x and y-intercepts represent?



5. On which interval is the rate of change the highest? The lowest? (Choices: -1.5 to -1; -1 to 0; 0 to 1; 1 to 1.5)



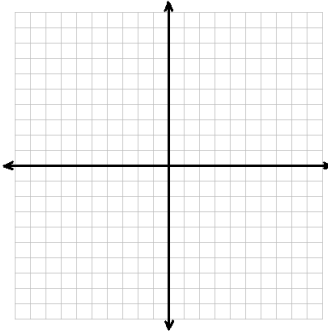
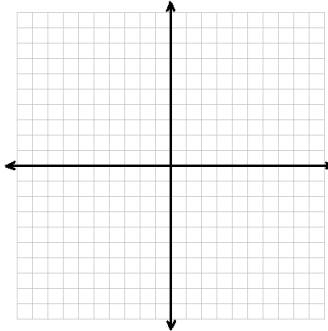
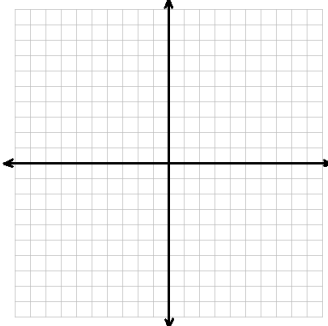
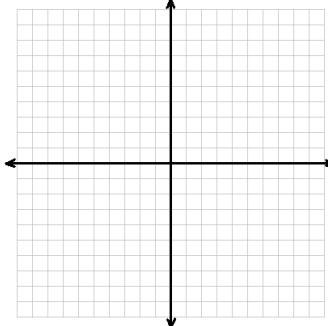
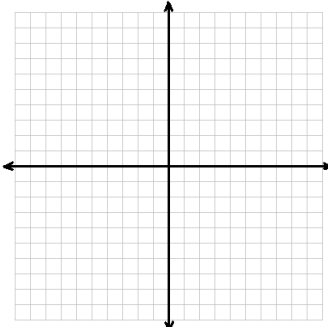
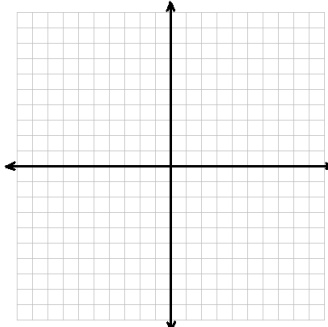
**Station 3:** *Parallels, Perpendiculars, & Parents*

6. Line X is perpendicular to the line given by the equation  $14x - 70y = 98$  and passes through the points  $(0.6, 0)$  and  $(x, x+9)$ .

a. Determine the value of  $x$ .

b. Line B is parallel to line X and passes through the point  $(3, -4)$ , and line C is perpendicular to line X and passes through the point  $(15, -12)$ . Determine the equations for lines B and C.

7. Sketch a graph of each function, and state its domain and range.

<p>a. <math>y = x</math></p> 	<p>b. Quadratic Parent Function</p> 
<p>c. Absolute Value Parent Function</p> 	<p>d. <math>y = -x^2 + 5</math></p> 
<p>e. <math>y = \sqrt{x}</math></p> 	<p>e. <math>y = -\sqrt{x-3} + 2</math></p> 

**Station 4: Transformations**

8. Consider the moveable picture on the board and the function  $h(x) = 3x^2 - 4x$ .

Evaluate the function h.	Sketch a picture to represent the transformation movement from the board.	Sketch a graph of the function h.	Description of transformation
$h(x - 3)$			
$-h(x)$			
$h(x) + 2$			

9. State the parent graph and describe the transformation that occurs.

a.  $f(x) = -2|x - 3|$

b.  $f(x) = -(x - 3)^2 + 9$

Parent: \_\_\_\_\_

Parent: \_\_\_\_\_

Transformation:

Transformation:

c.  $f(x) = -\sqrt{-x+5} - 1$

d.  $f(x) = \frac{1}{2}\sqrt{-x - 10}$

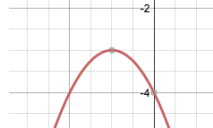
Parent: \_\_\_\_\_

Parent: \_\_\_\_\_

Transformation:

Transformation:

9. Write an equation for each situation.

<p>Absolute value function stretched by a factor of three, shifted 2 units right and reflected over the x-axis</p>		<p>Square root function reflected over both axis and shifted up 2 and left 5 units</p>
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Name: \_\_\_\_\_ Date: \_\_\_\_\_ **Unit 3 Assessments**