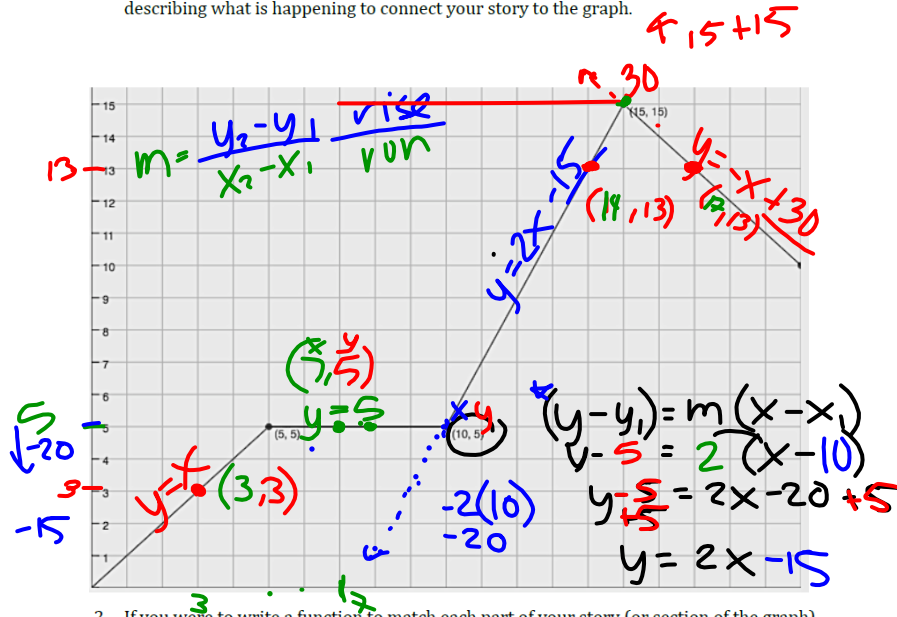


4.1 Some of This, Some of That  
A Develop Understanding Task



Part I: Connect context and graphical representations

1. Create a story that matches the graph below. Label axes and be as specific as possible in describing what is happening to connect your story to the graph.



2. If you were to write a function to match each part of your story (or section of the graph), how many would you write? Explain.

$$f(x) = \left\{ \begin{array}{ll} \text{function here} & , \text{interval domain here set} \\ y = x & , 0 \leq x \leq 5, [0, 5] \\ y = 5 & , 5 \leq x \leq 10, [5, 10] \\ y = 2x - 15 & , 10 \leq x \leq 15 \\ y = -x + 30 & , 15 \leq x \leq 20 \end{array} \right.$$

4. Make connections between the graph, functions, and context (story you created).

The function you created above is called a **piecewise function**. In mathematics, a piecewise-

**Part II: Connecting function notation to a piecewise defined function**

5. Find  $f(12)$ . Use the story you created to explain this meaning.
6. Which sub-function would you use to algebraically find the value of  $f(12)$ ?
7. Find the following:
  - a.  $f(7) = 5$
  - b.  $f(x) = 3$   $x = 3$
  - c.  $f(x) = 13$   $x = 14, 17$
  - d.  $f(15) = 15$

SECONDARY MATH II // MODULE 4  
 MORE FUNCTIONS, MORE FEATURES - 4.1

**4.1**

<b>READY, SET, GO!</b>	Name _____	Period _____	Date _____
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**READY**

Topic: Reading function values in a piece-wise defined graph.

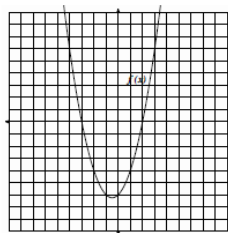
Use the graph to find the indicated function value.

1a.  $f(-3) =$

b.  $f(-2) =$

c.  $f(0) =$

d.  $f(2) =$

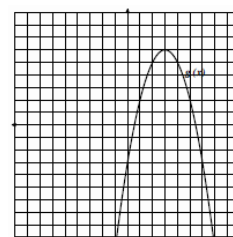


2a.  $g(0) =$

b.  $g(2) =$

c.  $g(3) =$

d.  $g(5) =$

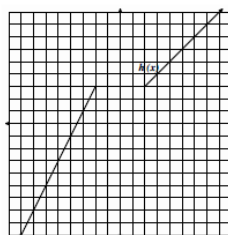


3a.  $h(-4) =$

b.  $h(0) =$

c.  $h(2) =$

d.  $h(4) =$

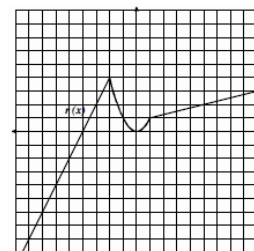


4a.  $r(-3) =$

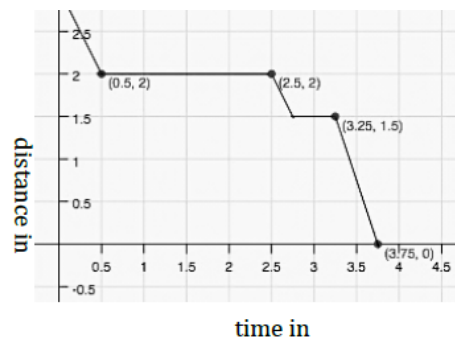
b.  $r(-1) =$

c.  $r(0) =$

d.  $r(5) =$



- How much time passed between school ending and Isaac's arrival home?
- How long did Isaac stay at Tate's house?
- How far is the library from Isaac's house?
- Where was Isaac, 3 hours after school ended?
- Use function notation to write a mathematical expression that says the same thing as question d.
- When was Isaac walking the fastest? How fast was he walking?



Need help? Visit [www.rsgsupport.org](http://www.rsgsupport.org)

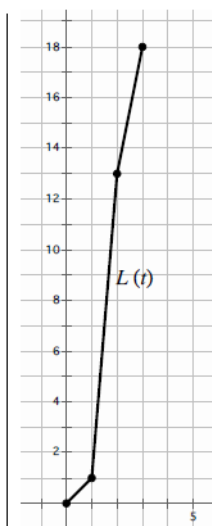
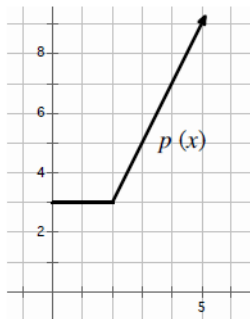
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**SET**

**Topic:** Writing piece-wise defined functions

6. A parking garage charges \$3 for the first two hours that a car is parked in the garage. After that, the hourly fee is \$2 per hour. Write a piece-wise function  $p(x)$  for the cost of parking a car in the garage for  $x$  hours. (The graph of  $p(x)$  is shown.)



7. Lexie completed an 18 mile triathlon. She swam 1 mile in 1 hour, bicycled 12 miles in 1 hour, and then ran 5 miles in 1 hour. The graph of Lexie's distance versus time is shown. Write a piecewise function  $L(t)$  for the graph.

$$(y - y_1) = m(x - x_1)$$

GO

Topic: Using the point-slope formula to write the equations of lines.

Write the equation of the line (in point-slope form) that contains the given slope and point.

8.  $p: (1, 2); m = 3$   
 $(y - 2) = 3(x - 1)$

9.  $p: (1, -2); m = -1$

10.  $p: (5, -1); m = 2$

Write the equation of the line (in point-slope form) that contains the given points.

11.  $K(0, 0); L(-4, 5)$

12.  $X(-1, 7); Y(3, -1)$

13.  $T(-1, -9); V(5, 18)$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 0}{-4 - 0} = m$$

$$\frac{-5}{-4} = m$$

$$(y - 0) = \frac{5}{4}(x - 0)$$

$$y = \frac{5}{4}x$$