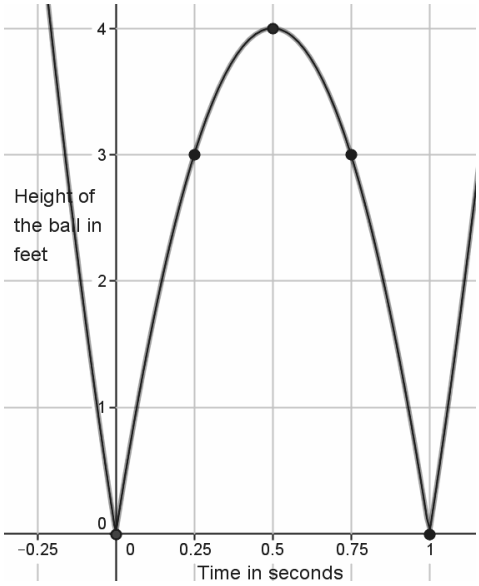
Name _____ Date _____

Lesson 1: The Concept of a Function

Exit Ticket

A ball is bouncing across the school yard. It hits the ground at $(0,0)$ and bounces up and lands at $(1,0)$ and bounces again. The graph shows only one bounce.



a. Identify the height of the ball at the following values of t: $0, 0.25, 0.5, 0.75, 1$.

b. What is the average speed of the ball over the first 0.25 seconds? What is the average speed of the ball over the next 0.25 seconds (from 0.25 to 0.5 seconds)?

c. Is the height of the ball changing at a constant rate?

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Lesson 2: Formal Definition of a Function

Exit Ticket

1. Can the table shown below represent values of a function? Explain.

Input (x)	10	20	30	40	50
Output (y)	32	64	96	64	32

2. Kelly can tune 4 cars in 3 hours. If we assume he works at a constant rate, we can describe the situation using a function.
   a. Write the function that represents Kelly's constant rate of work.

   b. Use the function you wrote in part (a) as the formula for the function to complete the table below. Round your answers to the hundredths place.

Time spent tuning cars (x)	2	3	4	6	7
Number of cars tuned up (y)					

c. Kelly works 8 hours per day. According to this work, how many cars will he finish tuning at the end of a shift?

d. For this problem, we assumed that Kelly worked at a constant rate. Do you think that is a reasonable assumption for this situation? Explain.

Name _____ Date _____

Lesson 3: Linear Functions and Proportionality

Exit Ticket

The information in the table shows the number of pages a student can read in a certain book as a function of time in minutes spent reading. Assume a constant rate of reading.

Time in minutes (x)	2	6	11	20
Total number of pages read in a certain book (y)	7	21	38.5	70

a. Write the equation that describes the total number of pages read, y, as a linear function of the number of minutes, x, spent reading.

b. How many pages can be read in 45 minutes?

c. A certain book has 396 pages. The student has already read $\frac{3}{8}$ of the pages and now picks up the book again at time $x = 0$ minutes. Write the equation that describes the total number of pages of the book read as a function of the number of minutes of further reading.

d. Approximately how much time, in minutes, will it take to finish reading the book?

Name _____ Date _____

Lesson 4: More Examples of Functions

Exit Ticket

1. The table below shows the costs of purchasing certain numbers of tablets. We can assume that the total cost is a linear function of the number of tablets purchased.

Number of tablets (x)	17	22	25
Total cost in dollars (y)	10,183.00	13,178.00	14,975.00

   a. Write an equation that describes the total cost, y, as a linear function of the number, x, of tablets purchased.

   b. Is the function discrete? Explain.

   c. What number does the function assign to 7? Explain.

2. A function C assigns to each word in the English language the number of letters in that word. For example, C assigns the number 6 to the word *action.*

   a. Give an example of an input to which C would assign the value 3.

   b. Is C a discrete function? Explain.

Name _____ Date _____

Lesson 5: Graphs of Functions and Equations

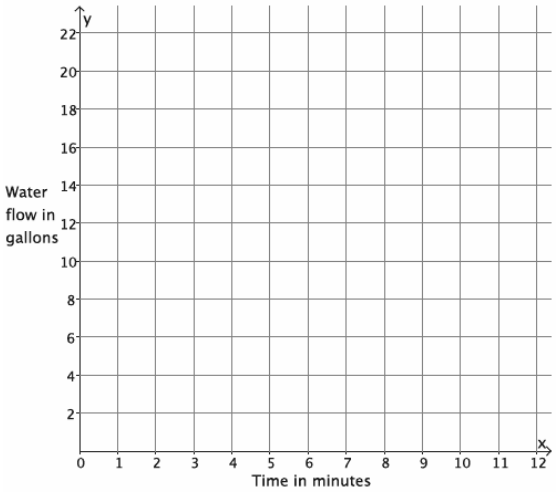
Exit Ticket

Water flows from a hose at a constant rate of 11 gallons every 4 minutes. The total amount of water that flows from the hose is a function of the number of minutes you are observing the hose.

a. Write an equation in two variables that describes the amount of water, y, in gallons, that flows from the hose as a function of the number of minutes, x, you observe it.

b. Use the equation you wrote in part (a) to determine the amount of water that flows from the hose during an 8-minute period, a 4-minute period, and a 2-minute period.

c. An input of the function, x, is time in minutes, and the output of the function, y, is the amount of water that flows out of the hose in gallons. Write the inputs and outputs from part (b) as ordered pairs, and plot them as points on the coordinate plane.



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Lesson 6: Graphs of Linear Functions and Rate of Change

Exit Ticket

1. Sylvie claims that a function with the table of inputs and outputs below is a linear function. Is she correct? Explain.

Input	Output
-3	-25
2	10
5	31
8	54

2. A function assigns the inputs and corresponding outputs shown in the table to the right.

   a. Does the function appear to be linear? Check at least three pairs of inputs and their corresponding outputs.

Input	Output
-2	3
8	-2
10	-3
20	-8

b. Can you write a linear equation that describes the function?

c. What will the graph of the function look like? Explain.

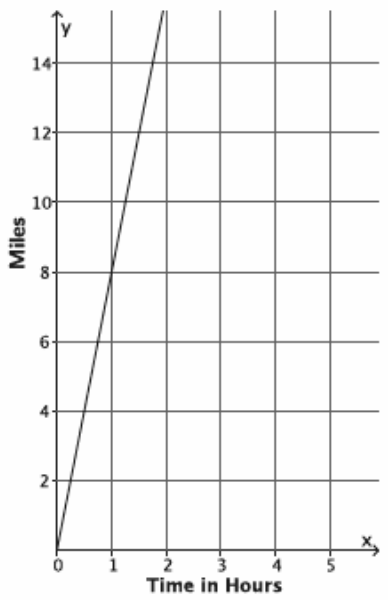
Name _____ Date _____

Lesson 7: Comparing Linear Functions and Graphs

Exit Ticket

Brothers Paul and Pete walk 2 miles to school from home. Paul can walk to school in 24 minutes. Pete has slept in again and needs to run to school. Paul walks at a constant rate, and Pete runs at a constant rate. The graph of the function that represents Pete's run is shown below.

a. Which brother is moving at a greater rate? Explain how you know.



b. If Pete leaves 5 minutes after Paul, will he catch up to Paul before they get to school?

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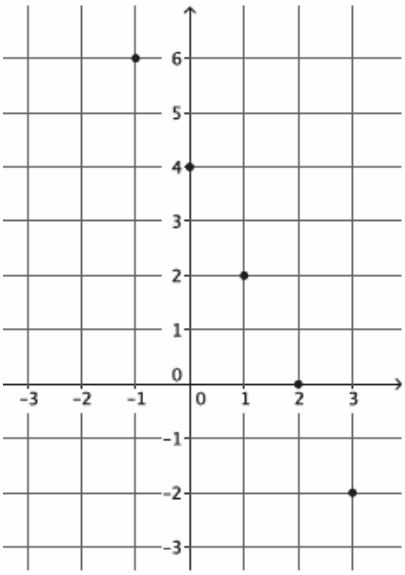
Lesson 8: Graphs of Simple Nonlinear Functions

Exit Ticket

1. The graph below is the graph of a function. Do you think the function is linear or nonlinear? Briefly justify your answer.



2. Consider the function that assigns to each number x the value $\frac{1}{2}x^2$. Do you expect the graph of this function to be a straight line? Briefly justify your answer.