Name:_____Date:_____

1. The following rules define two functions. The inputs for the functions are the set of positive integers.

   Rule 1: The output is the square of the input.
   Rule 2: The output is 90 greater than the input.

   (a) What is a positive integer input that gives the same output for both functions?

   (b) Do Rule 1 and Rule 2 define the same function? Explain your reasoning.

2. The graph below shows Jonas' commute to school this morning.

   Based on the graph, describe what is happening as carefully as you can. You do not need to measure anything accurately.
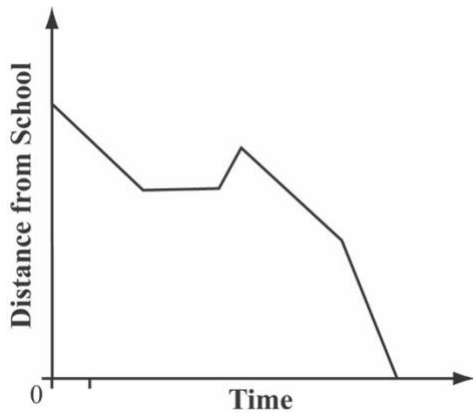
3. A machine produces granola bars from long strips of granola. The function below shows that L meters of granola produces B granola bars.

$$B = 25(\frac{L}{10} + \frac{3}{4})$$

How many granola bars are produced from 2.5 meters of granola?

4. Mrs. Garner opens a factory that produces cans of soda 24 hours a day. There are three work shifts. Each shift produces cans of soda at different rates.

Shift	Rate of Soda Production
8am – 4pm	Normal production rate
4pm – 12am	$\frac{1}{2}$ of normal production rate
12am – 8am	$\frac{1}{4}$ of normal production rate

She needs to determine what the normal production rate must be to produce 200,000 cans of soda each day.

How many cans of soda must the factory produce from 8am to 9am to produce 200,000 cans each day? Explain your answer using numbers, words, and/or pictures.

5. Maureen and Shannon decide to rent paddleboards while on vacation. Shop A rents paddleboards for $7.75 per hour. Shop B's prices are shown on the poster to the right.

Which shop offers a cheaper hourly rental rate? Explain your answer using numbers, words and/or pictures.

Shop B

Rental Rates

Hours	Price
0.5	$3.80
4	$30.40
7	$53.20
8	$60.80

6. The graph of a linear function includes the points (6, 3.5) and (1, −2.5).
   a. The *x*-coordinate is the input and the *y*-coordinate is the output. Write an equation that gives *y* in terms of *x*.

   b. Find another point on the graph with an *x*-coordinate that has a negative value.