



JEFFERSON COUNTY
PUBLIC SCHOOLS
DIGITAL: NTI

Supplemental Practice
for
ALGEBRA 1
Packet #1

The material in this packet is to be used as extra practice for students who would like to extend their learning once they have completed the Choice Boards for their grade level.

The expected time frame for this practice is approximately 2 weeks.

Functions Practice

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.

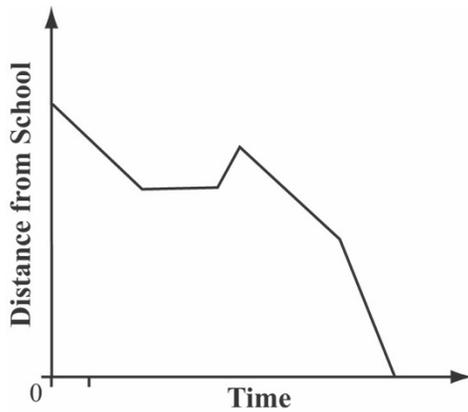
Rule 2: The output is 90 greater than the input.

(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.



Functions Practice

3. A machine produces granola bars from long strips of granola. The function below shows that L meters of granola produces B granola bars.

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

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.

Functions Practice

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.



The poster for Shop B features a blue oval at the top containing a black silhouette of a paddle. Below the oval, the text 'Shop B' is written in white, and 'Rental Rates' is written in black. Underneath, there is a table with two columns: 'Hours' and 'Price'. The 'Hours' column has values 0.5, 4, 7, and 8. The 'Price' column has values \$3.80, \$30.40, \$53.20, and \$60.80.

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

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

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

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

Equations Practice

Name: _____ Date: _____

- 1) Complete the equation so that it is true for no values of x .

$$7x - 3x + 2 - x = \underline{\hspace{2cm}}x + \underline{\hspace{2cm}}$$

- 2) Decide whether the solution to each equation is positive, negative, zero, or there are no solutions. Check the correct box for each row.

	solution is positive	solution is negative	solution is zero	there are no solutions
$3x = 5$				
$5z + 7 = 3$				
$7 - 5w = 3$				
$4a = 9a$				
$y = y + 1$				

Solve each equation or write that there are no solutions or infinitely many solutions. Show your work.

<p>3.</p> $\frac{x + 3}{2} = 5$	<p>4.</p> $17 + 5(2x - 9) = (-6x + 10) + 4$
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Equations Practice

5.

$$8(2x + 9) = 56$$

6.

$$37x + \frac{1}{2} - \left(x + \frac{1}{4}\right) = 9(4x - 7) + 5$$

7.

$$4 - \frac{x - 5}{2} = -\frac{1}{2}(x - 5) + 4$$

8.

$$\frac{2}{3}(2x + 12) = 16$$

9.

$$(-x + 7) + \frac{5}{3} = \frac{1}{2}x + 9$$

10.

$$-4x - 2(8x + 1) = -(-2x - 10)$$