Name ____ Date ____________________

More Examples of Functions

1. A linear function has the table of values below related to the cost of a certain tablet.

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

a. Write the linear function that represents the total cost, y, for x number of tablets.

b. Is the function discrete or continuous? Explain.

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

2. A function produces the following table of values.

Serious	Adjective
Student	Noun
Work	Verb
They	Pronoun
And	Conjunction
Accurately	Adverb

a. Describe the function.

b. What part of speech would the function assign to the word *continuous*?

1. A linear function has the table of values below related to the total cost for gallons of gas purchased.

Number of gallons (x)	5.4	6	15	17
Total cost (y)	$19.71	$21.90	$54.75	$62.05

a. Write the linear function that represents the total cost, y, for x gallons of gas.

b. Describe the limitations of x and y.

c. Is the function discrete or continuous?

d. What number does the function assign to 20? Explain what your answer means.

2. A function has the table of values below. Examine the information in the table to answer the questions below.

Input	**Output**
one	3
two	3
three	5
four	4
five	4
six	3
seven	5

a. Describe the function.

b. What number would the function assign to the word *eleven*?

3. A linear function has the table of values below related to the total number of miles driven in a given time interval in hours.

Number of hours driven (x)	3	4	5	6
Total miles driven (y)	141	188	235	282

a. Write the linear function that represents the total miles driven, y, for x number of hours.

b. Describe the limitations of x and y.

c. Is the function discrete or continuous?

d. What number does the function assign to 8? Explain what your answer means.

e. Use the function to determine how much time it would take to drive 500 miles.

4. A function has the table of values below that gives temperatures at specific times over a period of 8 hours.

12:00 p.m.	$92°F$
1:00 p.m.	$90.5°F$
2:00 p.m.	$89°F$
4:00 p.m.	$86°F$
8:00 p.m.	$80°F$

a. Is the function a linear function? Explain.

b. Describe the limitations of x and y.

c. Is the function discrete or continuous?

d. Let y represent the temperature and x represent the number of hours from 12:00 p.m. Write a rule that describes the function of time on temperature.

e. Check that the rule you wrote to describe the function works for each of the input and output values given in the table.

f. Use the function to determine the temperature at 5:30 p.m.

g. Is it reasonable to assume that this function could be used to predict the temperature for 10:00 a.m. the following day or a temperature at any time on a day next week? Give specific examples in your explanation.

1. **A linear function has the table of values below related to the cost of a certain tablet.**

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

a. **Write the linear function that represents the total cost, y, for x number of tablets.**

$$y = \frac{10,183}{17}x$$
$$y = 599x$$

b. **Is the function discrete or continuous? Explain.**

The function is discrete. You cannot have half of a tablet; therefore, it must be a whole number of tablets, which means it is discrete.

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

The function assigns $4,193$ to 7, which means that the cost of 7 tablets would be $\$4,193.00$.

2. **A function produces the following table of values.**

Serious	Adjective
Student	Noun
Work	Verb
They	Pronoun
And	Conjunction
Accurately	Adverb

a. **Describe the function.**

The function assigns to each input a word that is a part of speech.

b. **What part of speech would the function assign to the word *continuous*?**

The function would assign the word adjective to the word continuous.

1. **A linear function has the table of values below related to the total cost for gallons of gas purchased.**

Number of gallons (x)	5.4	6	15	17
Total cost (y)	$\$19.71$	$\$21.90$	$\$54.75$	$\$62.05$

a. **Write the linear function that represents the total cost, y, for x gallons of gas.**

$$y = 3.65x$$

b. **Describe the limitations of x and y.**

Both x and y must be positive rational numbers.

c. **Is the function discrete or continuous?**

The function is continuous.

d. **What number does the function assign to 20? Explain what your answer means.**

$$y = 3.65(20)$$
$$y = 73$$

The function assigns 73 to 20. It means that if 20 gallons of gas are purchased, it will cost $\$73.00$.

2. **A function has the table of values below. Examine the information in the table to answer the questions below.**

Input	Output
one	3
two	3
three	5
four	4
five	4
six	3
seven	5

a. **Describe the function.**

The function assigns to each input, a word, the number of letters in the word.

b. **What number would the function assign to the word *eleven*?**

The function would assign the number 6 to the word eleven.

3. **A linear function has the table of values below related to the total number of miles driven in a given time interval in hours.**

Number of hours driven (x)	3	4	5	6
Total miles driven (y)	141	188	235	282

a. **Write the linear function that represents the total miles driven, y, for x number of hours.**

$$y = \frac{141}{3}x$$
$$y = 47x$$

b. **Describe the limitations of x and y.**

Both x and y must be positive rational numbers.

c. **Is the function discrete or continuous?**

The function is continuous.

d. **What number does the function assign to 8? Explain what your answer means.**

$$y = 47(8)$$
$$y = 376$$

The function assigns 376 to 8. The answer means that 376 miles are driven in 8 hours.

e. **Use the function to determine how much time it would take to drive 500 miles.**

$$500 = 47x$$
$$\frac{500}{47} = x$$
$$10.63829\ldots = x$$
$$10.6 \approx x$$

It would take about 10.6 hours to drive 500 miles.

4. **A function has the table of values below that gives temperatures at specific times over a period of 8 hours.**

12:00 p.m.	$92°F$
1:00 p.m.	$90.5°F$
2:00 p.m.	$89°F$
4:00 p.m.	$86°F$
8:00 p.m.	$80°F$

a. **Is the function a linear function? Explain.**

Yes, it is a linear function. The change in temperature is the same over each time interval. For example, the temperature drops $1.5°F$ from 12:00 to 1:00 and 1:00 to 2:00. The temperature drops $3°F$ from 2:00 to 4:00, which is the same as $1.5°F$ each hour and $6°F$ over a 4-hour period of time, which is also $1.5°F$ per hour.

b. **Describe the limitations of x and y.**

The input is a particular time of the day, and y is the temperature. The input cannot be negative but could be intervals that are fractions of an hour. The output could potentially be negative because it can get that cold.

c. **Is the function discrete or continuous?**

The function is continuous. The input can be any interval of time, including fractional amounts.

d. **Let y represent the temperature and x represent the number of hours from 12:00 p.m. Write a rule that describes the function of time on temperature.**

$$y = 92 - 1.5x$$

e. **Check that the rule you wrote to describe the function works for each of the input and output values given in the table.**

At 12:00, 0 hours have passed since 12:00; then, $y = 92 - 1.5(0) = 92$.

At 1:00, 1 hour has passed since 12:00; then, $y = 92 - 1.5(1) = 90.5$.

At 2:00, 2 hours have passed since 12:00; then, $y = 92 - 1.5(2) = 89$.

At 4:00, 4 hours have passed since 12:00; then, $y = 92 - 1.5(4) = 86$.

At 8:00, 8 hours have passed since 12:00; then, $y = 92 - 1.5(8) = 80$.

f. **Use the function to determine the temperature at 5:30 p.m.**

At 5:30, 5.5 hours have passed since 12:00; then $y = 92 - 1.5(5.5) = 83.75$.

The temperature at 5:30 will be $83.75°F$.

g. **Is it reasonable to assume that this function could be used to predict the temperature for 10:00 a.m. the following day or a temperature at any time on a day next week? Give specific examples in your explanation.**

No. The function can only predict the temperature for as long as the temperature is decreasing. At some point, the temperature will rise. For example, if we tried to predict the temperature for a week from 12:00 p.m. when the data was first collected, we would have to use the function to determine what number it assigns to 168 because 168 would be the number of hours that pass in the week. Then we would have

$$y = 92 - 1.5(168)$$
$$y = -160,$$

which is an unreasonable prediction for the temperature.