

LESSON 2.1 Assignment

Name _____ Date _____

The Plane!
Modeling Linear Situations

The E & W Light Company charges their customers \$0.14 per kilowatt-hour used. The E & W Company sends the customers their bills monthly.

1. Use the scenario to complete the following questions.
 - a. Identify the independent and dependent quantities and their units for this problem situation. Explain your reasoning.

I: electricity (kilowatt-hours)
D: monthly bill (\$)
 - b. Write the independent and dependent quantities and their units in the table. Then calculate the total cost for each of the given kilowatt-hours used. In the last row of the table, write an expression to represent the dependent quantity.

	Independent Quantity	Dependent Quantity
Quantity	<i>electricity</i>	<i>monthly bill</i>
Units	<i>kilowatt-hour</i>	<i>\$</i>
	0	0
	1000	140
	1200	168
	1400	196
	1600	224
	1800	252
	2000	280
Expression	<i>x</i>	<i>.14x</i>

(0, 0)
(1000, 140)

change y / change x

2

c. Calculate the unit rate of change between three different pairs of points. What do you notice about the rates?

per one
 $(0,0)$ $(1000,140)$
 x y
 x y

$$\frac{0-140}{0-1000} = \frac{-140}{-1000} = \frac{.14}{1}$$

$$\frac{168-196}{1200-1400} = \frac{-28}{-200} = \frac{.14}{1}$$

They are all the same.

$$\frac{252-140}{1800-1000} = \frac{112}{800} = \frac{.14}{1}$$

2. Consider the function in the form $c(x)$ to describe the cost after using x kilowatt-hours of electricity.
 a. Write the function. What function family does this represent?

$$c(x) = .14x$$

- b. Use the function to create a graph representing the change in the cost as a function of electricity usage. Be sure to label your axes with the correct units and write the function.



