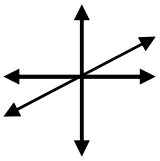
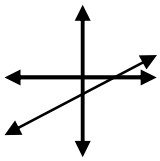
Unit: Linear Relationships
Student Handout 7

Name _____

Date _____Pd_____

PROPORTIONAL AND NON-PROPORTIONAL RELATIONSHIPS

Linear relationships can be proportional or non-proportional. A proportional relationship means that there is a constant _____ between the values of x and y. Complete the table below to review the differences in proportional and non-proportional representations.

	PROPORTIONAL	NON-PROPORTIONAL
EQUATION	• Can be written as _____ where k is the slope or rate of change. • Ex: _____	• Can be written as _____ where m is the slope and b does not equal 0 • Ex: _____
TABLE	• The ratio of _____ is constant • Ex:	• The ratio of _____ is not constant • Ex:
GRAPH	• Any graph that is both _____ and contains the _____ 	• Any graph that is not _____ or does not contain the _____ 

x	2	4	6	8
y	6	12	18	24

x	2	4	6	8
y	8	14	20	26

Complete each representation for the situation described below. Then, determine if the situation is proportional based on each representation.

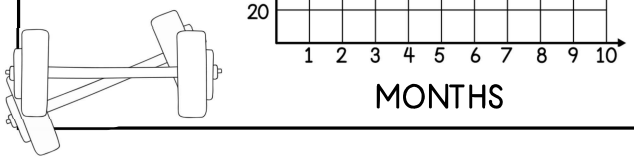
1. Hillary is looking for a gym to join. A local gym, Forever Fit, is offering a special deal where new members pay $30 per month with no sign-up fee.

A. EQUATION

B. TABLE

MONTHS (X)	0	1	2	3
COST (Y)				

C. GRAPH



D. PROPORTIONAL?

Explain based on each representation:

- equation:
- table:
- graph:

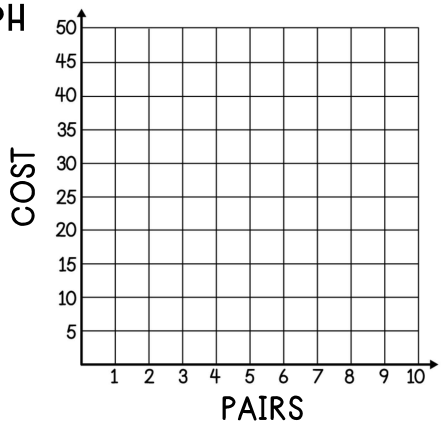
2. Javier is ordering custom sunglasses for an upcoming event. The website he is ordering from will charge $2.50 per pair of sunglasses and $5 for shipping.

A. EQUATION

B. TABLE

PAIRS (X)	0	1	2	3
COST (Y)				

C. GRAPH



D. PROPORTIONAL?

Explain based on each representation:

- equation:
- table:
- graph:

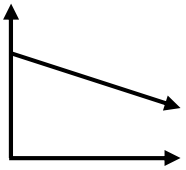
In 3-8, label the representation as "proportional" or "non-proportional." Justify your choice.

3. $y = \frac{8}{7}x$

4.

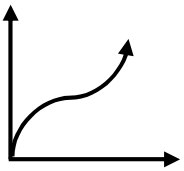
x	-9	-8	-7	-6
y	13.5	12	10.5	9

5.



6. Denzel has $13.50 and saves an additional $7.50 each week.

7.



8.

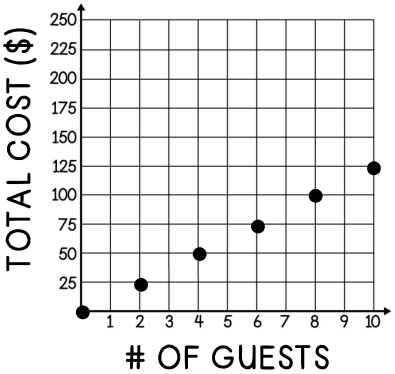
x	8	10	12	14
y	18	20	22	24

9. Kate is catering food for a luau-themed party and the representations below compare the cost of two catering companies. Let x represent the number of guests and y represent the total cost of the caterer.

a. Which company has the greater rate of change? Explain.

b. Which company represents a proportional relationship? Explain.

COMPANY A



COMPANY B

x	y
0	0
2	27
4	54
6	81
8	108

Unit: Linear Relationships
Homework 7

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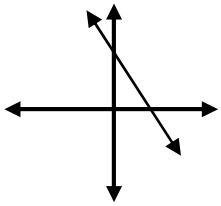
PROPORTIONAL AND NON-PROPORTIONAL RELATIONSHIPS

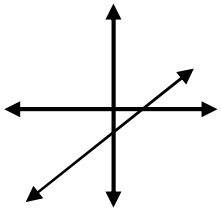
In A-D, mark each statement as true or false. If false, rewrite the statement correctly.

A Two students created the graphs shown below.

RAUL



BECKY



____ 1. Both graphs represent linear relationships.

____ 2. Both graphs have a positive slope.

____ 3. Both graphs represent proportional relationships between x and y.

B The table represents the amount of coffee in a coffee pot based on the number of minutes the coffee has been brewing.

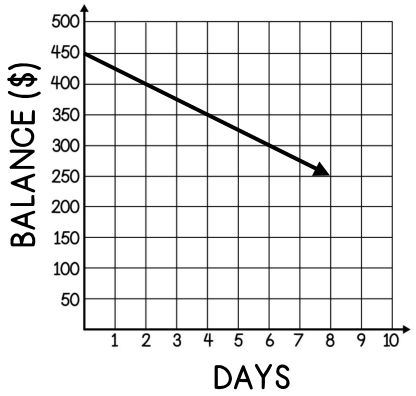
TIME (MIN)	COFFEE (OZ)
2	4.8
3	7.2
4	9.6
5	12

____ 4. The ratio of $\frac{y}{x}$ is not constant.

____ 5. The table represents a proportional relationship between x and y.

____ 6. The table can be represented by $y = x + 2.4$.

C The graph represents the balance in Jimena's checking account based on the number of days since her last paycheck.



____ 7. The relationship shown on the graph is non-proportional.

____ 8. The graph represents a linear relationship with a negative slope.

____ 9. The graph can be represented by $y = 450x - 25$.

D Two students wrote the equations shown below.

ERICA	ALIYAH
$y = -0.5x$	$y = 2.5x - 8$

____ 10. Graphs of both equations will pass through the origin.

____ 11. Only Erica's equation is proportional.

____ 12. Both equations have a negative slope.