Name_____ Period _____

4.4- Notes- Constant of proportionality

### (Rates/Ratios from Tables, Graphs, and Ordered Pairs)

I CAN...

☐ **Find constant of proportionality from a table**

☐ **Find constant of proportionality from a graph**

☐ **Find constant of proportionality from ordered pairs**

☐ **Determine if two ratios (ordered pairs) create a proportional relationship from a table, graph, a given equation, and from real world scenarios.**

- -

Joe can do 10 multiplication problems in 5 seconds.

a) At this rate, how long should it take Joe to do 2 multiplication problems?

b) Create a table of values showing how long it should take him to do from 1 to 5
multiplication problems. Then graph the points on the table on the coordinate plane.

x (number of seconds)	y (number of problems)
0 seconds	
1 second	
2 seconds	
3 seconds	
4 seconds	
5 seconds	
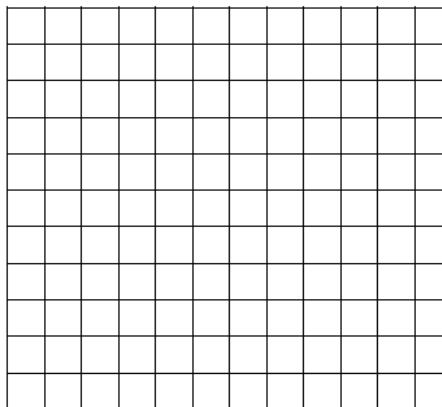
c) What is the unit rate? _____

Constant of Proportionality exists when the ratio of two quantities in a table, graph, or ordered pairs simplify to the same unit rate.

To check if there is a constant of proportionality:

From Ordered Pairs/Table: make a ratio of $\frac{y}{x}$ for all ordered pairs. Then find the unit rate (divide y by x). The unit rate must be the same for all pairs.

From a Graph: Create a table of ordered pairs, then check all ordered pairs by dividing y by x.

Examples: Find the constant of proportionality, if it exists.

(2, 53), (4, 108)   (15, 9), (78, 46.8)

Fill in the missing values: (2,5) and (,   )

(, 30) and (4,8)

(3, 100)   and (5,   )

Do the tables below have constant of proportionality?

Days	0	1	2	3
Hours of Homework	0	4	6	9

x	y
0	0
1	5
2	10
3	15
4	20

x	y
0	0
4	11.2
6	16.8
8	22.4
10	2.8

Fill in the tables based on their constant of proportionality:

Y = 3x   C.O.P = 3.4   C.O.P = _____

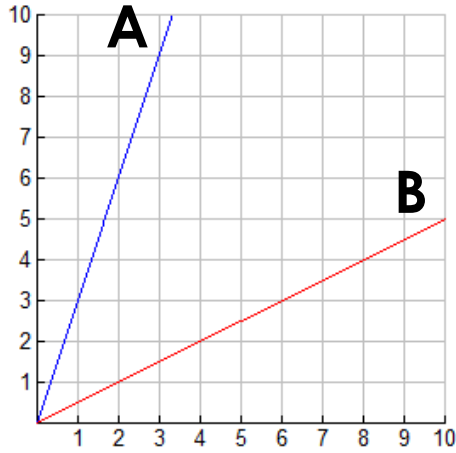| X	Y
0	
1	
2	
3	
4	

X	Y
0	
5	
8	
10	
11	

X	Y
0	
1	
4	12
6	
8	24

Make table for each line, then find the constant of proportionality. Which situation has a greater constant of proportionality?

Line A

X	Y
0	
2	
4	
6	

Line B

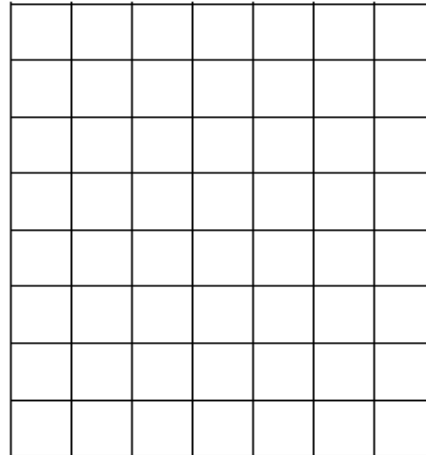| X	Y
0	
2	
4	
6	

You want to buy some candy for your birthday party. You go to two different grocery stores and see the following special offers:

Salt Water Taffy
3 lbs for $4.50

Salt Water Taffy
$1.75/lb

a) Complete the table for each offer. Graph each offer in a different color on the coordinate plane.

First Offer	
Pounds	Price
1	
2	
3	

Second Offer	
Pounds	Price
1	
2	
3	

b) First offer unit rate:_____

Second offer unit rate:_____
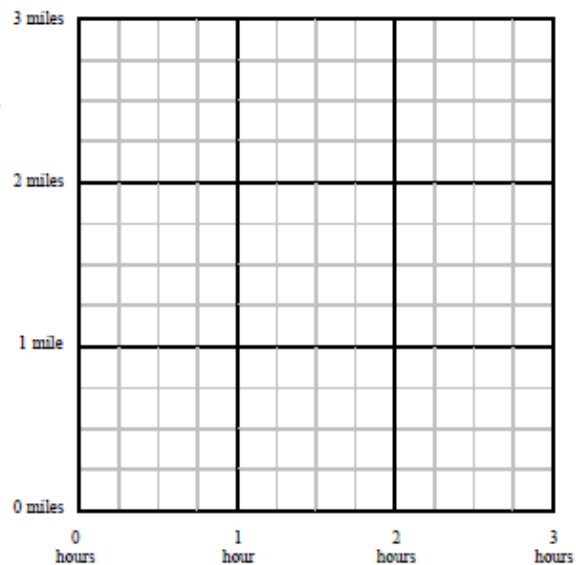
c) Which is the better deal for Salt Water Taffy?

How do you know?_____

7. The tortoise can walk ½ a mile in ¼ of an hour.
The hare can run 1½ miles in ½ of an hour.

a) Complete the table for each animal.
Graph each animal's rate in a different color.

Tortoise		Hare	
Hours	Miles	Hours	Miles

b) Tortoise's unit rate:_____

   Hare's Unit Rate:_____

c) Which animal is faster? _____ How do you know? _____

_____

- -

Bob's Burger Barn has a special deal of 4 hamburgers for $6.

a) At this rate, how much should it cost to buy 3 hamburgers?

b) Fill in the table to show the price for 0 to 5
hamburgers. Then graph the information.

x (number of hamburgers)	y (price)
0	
1	
2	
3	
4	
5	
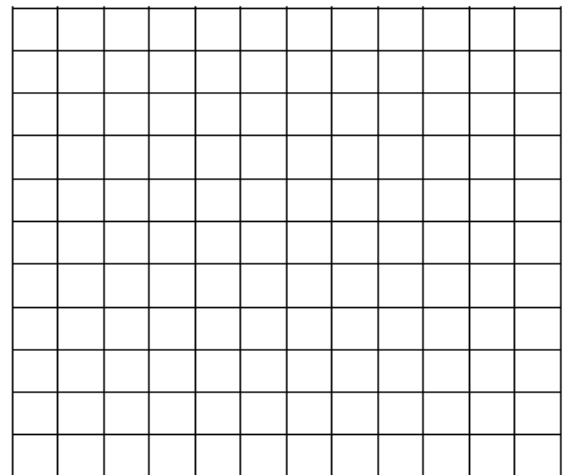
c) What is the unit rate? _____

HW: 4.4

Determine if the table has a constant of proportionality, if so determine the value.

X	Y
0	0
1	3
2	6
3	9

X	Y
1	2
2	4
3	8
4	16

X	Y
1	5
2	10
3	15
4	20

Determine the missing value with the given tables that have a constant of proportionality.

X	Y
0	
1	13
2	
3	39

X	Y
1	26
2	
3	
4	

X	Y
4	
8	120
10	
12	

Use the equation to determine the table values, then identify the constant of proportionality.

Y= 2x

X	Y
0	
1	
2	
3	

y= 6x

X	Y
0	
1	
2	
3	

y = 15x

X	Y
5	
8	
10	
12	

Constant Proportionality=   **Constant Proportionality=**   **Constant Proportionality=**

Determine if the given ordered pairs create proportionality.
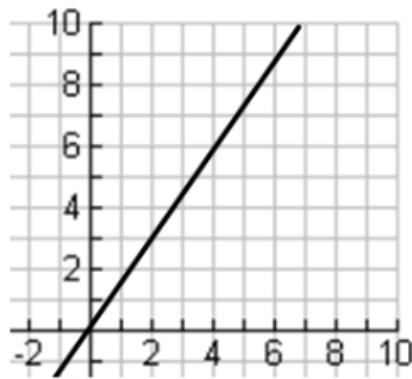
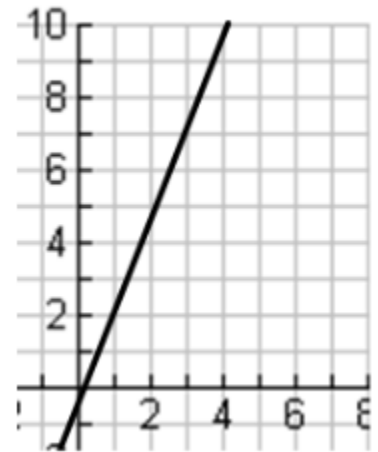(2,8) and (4,60)   (1.5,6) and (3.5,21)   (7,16.8) and (10,20)

Use the graph to determine table values. Then determine the constant of proportionality.

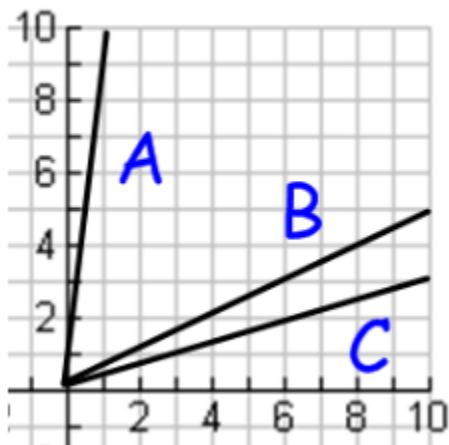| X	Y
0	
2	
4	
6	

X	Y

Constant Proportionality=   Constant Proportionality=

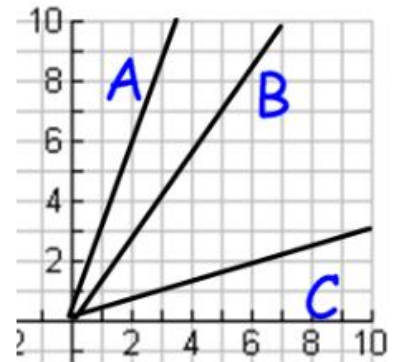**Determine from least to greatest the constant of proportionality, given the graph.**

Determine the graph lines of constant of proportionality and match them with the table.

X	Y
0	0
3	1
6	2
9	3

X	Y
0	0
2	3
4	6
8	12

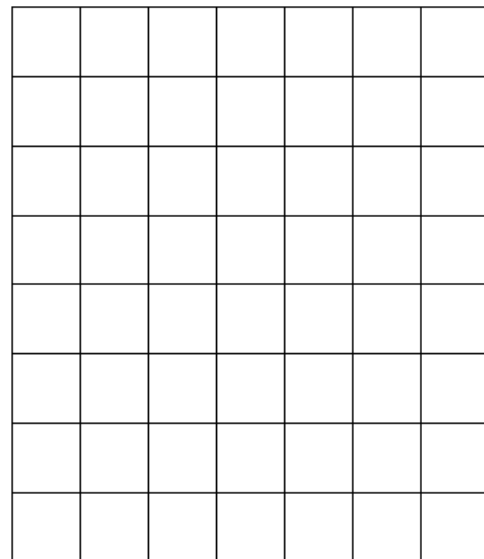| X	Y
0	0
1	3
2	6
3	9

_____   _____   _____

The Jones family drives 200 miles in 5 hours.
The Grant family drives 360 miles in 6 hours.

a) Complete the table for each family.
   Graph each family's rate in a different color.

Jones Family	
Hours	Miles

Grant Family	
Hours	Miles

b) Jones Family unit rate:_____

   Grant Family unit rate:_____

c) Which family is driving faster? _____ How do you know? _____

_____