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Warmup 9/ $|-778 + 763|$

- Ke$ha was looking to rent a car. There were two possible companies she could rent from.

Cars R Us

# of days	Total cost
2	$120
3	$180
4	$240
5	$300

Very Nice Vehicles

# of days	Total cost
2	$160
3	$200
4	$240
5	$280

1) What is the cost per day at Cars R Us? How did you figure this out?
2) What is the cost per day at Very Nice Vehicles? How did you figure this out?

City Saver…

TVs Problem

- Larry bought 6 TVs for $1650. Assume there is no tax and that all TVs cost the same. Create an equation, table, and graph where "x" is the number of TVs and "y" is the total cost.

- Each TV: $275
- **EQUATION:** y = 275x
- **TABLE:**

x (# of TVs)	0	1	2	3	4	5	6	7
y (Total cost)	0	275	550	825	1100	1375	1650	1925

- **GRAPH: y-axis should be scaled by 100s or 200s**
  - **Should pass through the origin**
  - **Should be linear**

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Proportional Relationships

Objectives:

-Determine if a relationship is proportional or not

-Identify features of equations, tables, graphs, and situations that are proportional

-Determine if a situation has a constant rate of change

Proportional Relationships

- $Input \cdot (number) = Output$
- **Ratio between x and y is ALWAYS the same**

Is it proportional?

# of CDs bought (x)	Price (y)
1	$15
2	$30
3	$45
4	$60
5	$75

YES

Equation: y = 15x

Is it proportional?

# of shirts bought	Price
1	$20
2	$32
3	$44
4	$56
5	$68

NO

Equation: y = 12x + 8

Is it proportional?

Minutes (x)	Situps (y)
3	60
5	100
7	140
9	180
11	220

YES

Equation: y = 20x

Is it proportional?

Years (x)	Height of Person (y)
2	30
3	33
4	36
5	39
6	42

NO

Equation: y = 24 + 3x

Is it proportional?

Minutes since Joe started reading today (x)	Page of book Joe is on (y)
10	50
20	60
30	70
40	80
50	90

NO

Equation: y = 40 + 1x

Is it proportional?

Minutes spent writing a paper(x)	Pages written(y)
20	4
40	8
60	12
80	16
100	20

YES

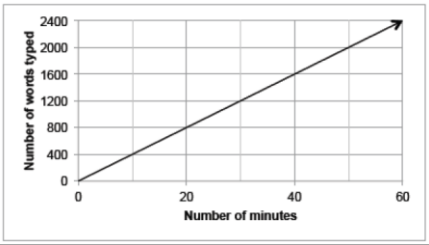
Equation: $y = \frac{1}{5}x$

Proportional Relationship Equation

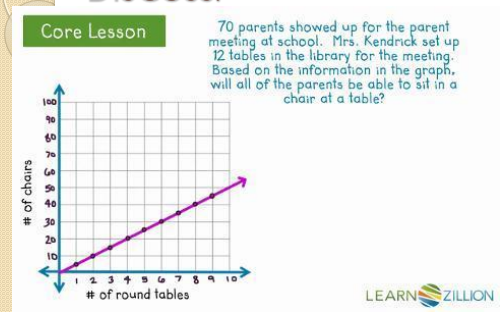
- $y = mx$
  - **"m" is the constant rate of change**
- **The graph will go through (0, 0)**

Example

1. Find the equation that leads to this graph.
2. Describe what the equation means in terms of the situation.



DISCUSS:



- **Also, can you come up with an equation?**

TASK:

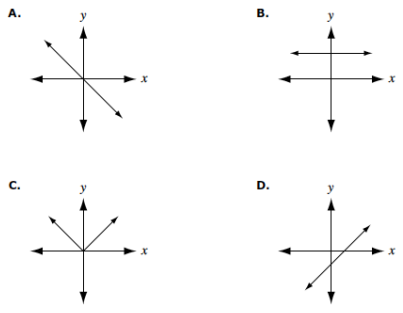
- Come up with your **own** situation that would be proportional:

1. Describe it in words.
2. Create an equation in the form **y = mx**.
3. Explain what "x" and "y" stand for in your equation.
4. Create an x/y table with at least 5 rows.

CHALLENGE:

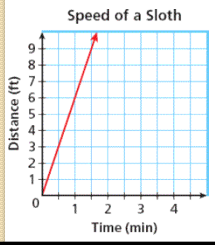
- **Come up with a situation that would have a constant rate of change, but would NOT be proportional.**

5. Which represents a proportional relationship?



Which animal is faster?

Turtle:
y = 3x
(x is # of minutes and y is # of feet it travels)



Who is traveling fastest? Slowest?

Family A

Family B
y = 55x

(x is the number of hours, y is the number of miles driven)

Family C

Hours	Miles driven
3	150
6	300
9	450
12	600
15	750

Homework

- Textbook p. 175 (7, 8, 9, 12, 13)