Unit: Ratios and Proportions | Name: Key

Lesson 4: Direct Variation from a Table | Hour: _____

Direct Variation

Direction Variation: A relationship between 2 variables in which one is a constant multiple of the other.

$$y = kx$$

$k \neq 0$ must be < 0 or > 0

X Input: Independent variable / cause / as ___ occurs

Y Output: dependent variable / effect / ___ happens

Constant of Proportionality ("k"): When the ratio increases by the same value all the time. Also called unit rate / rate of change

1. Every Sunday, Brenda and her cousin get together for brunch. This week, Brenda is in charge of making fresh-squeezed orange juice. There is a proportional relationship between the number of oranges Brenda squeezes, and the amount of juice (in ounces) she makes. After squeezing 3 oranges, Brenda has 9 ounces of juice.

oranges x	juice y
0	0
1	3
2	6
3	9
4	12

×1 ×3 ×1 ×3 ×1 ×3

What is the relationship between x and y?

for every one x, you have 3 y's

Write an equation for the relationship.

$y = 3x$

How many oranges does Brenda need is she wants to make 54 ounces of juice?

$54 = 3x$ $x = 18$ oranges

How many ounces of juice will Brenda make if she has 30 oranges?

$y = 3(30)$ $y = 90$ ounces of juice

2. Carrie wants to save up some money to buy a new smartphone, so she babysits on the weekends. There is a proportional relationship between the time Carrie spends babysitting (in hours) and the amount of money she earns babysitting (in dollars). For 1 hour of babysitting, Carrie earns $5.

hours $

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

What is the relationship between x and y?

for every 1 hour she babysits, she earns $5

Write an equation for the relationship.

$y = 5x$

How long does Carrie need to babysit to earn $15?

$15 = 5x$ $x = 3$ hours

How much does Carrie earn for babysitting 4 hours?

$y = 5(4)$ $y = \$20$

Direct Variation from a Table

Tell if the following tables represent a direct variation relationship.

x	y
1	-2
2	0
3	2
4	4
5	6

NO

constant *1

x	y
0	0
2	2
4	4
6	6
8	8

Yes

*4

x	y
0	0
1	4
2	8
3	12
4	16
5	20

Yes

x	y
-2	4
-1	2
0	0
1	2
2	4

NO

*Must have (0,0) and increase by the same amount consistently.