

NAME:

### Notes 7-3

## Int 1

## Proportionality and Non-proportionality

## Unit 7

Ex 1: This one made the pictures look Good as we resized them.  
**Picture Fixers**

This one made the pictures look too skinny.  
**Amateur Photo**

Width (inches)	Height (inches)
2	3
4	6
5	7.5
6	9

Width (inches)	Height (inches)
1	3
3	6
4	7.5
5	9

**CROC** =  $\frac{3}{2}$  or  $\frac{1.5}{1}$   
 can be simplified to  $\uparrow$

\* Both places have the same CROC.

**CROC** =  $\frac{3}{2}$  OR  $\frac{1.5}{1}$   
 simplified!

C.O.P. =  $\frac{y}{x}$      $\frac{3}{2} = (1.5)$      $\frac{7.5}{5} = (1.5)$   
                    $\frac{6}{4} = (1.5)$      $\frac{9}{6} = (1.5)$

Try to find the C.O.P.

take  $\frac{y}{x}$      $\frac{3}{1} = 3$      $\frac{6}{3} = 2$

$\frac{7.5}{4} = 1.875$      $\frac{9}{5} = 1.8$

We DON'T get the same #.

So it's NOT proportional.

### Constant of Proportionality:

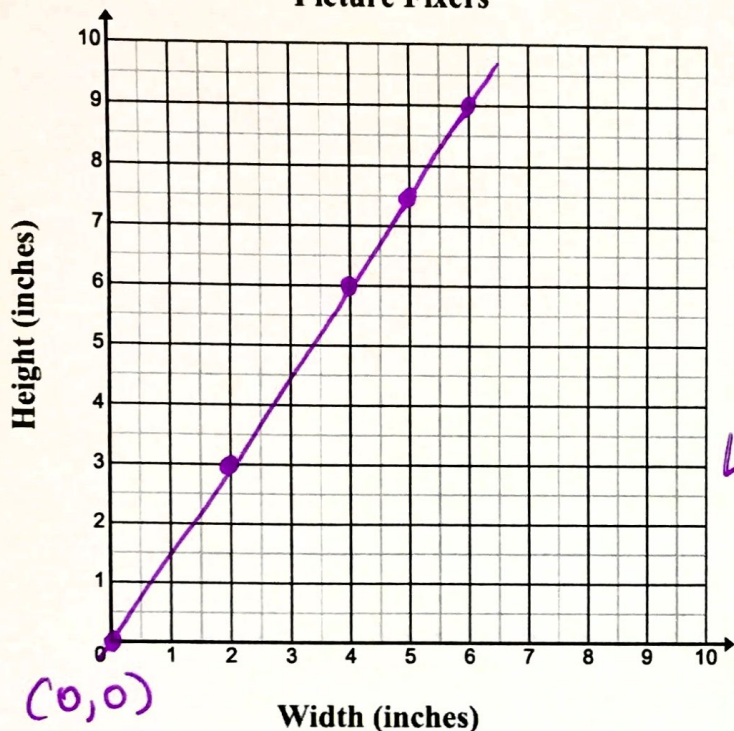
C.O.P. = m we call it m.

• It's the # we can multiply the x by to get the y     $x \cdot m = y$

• Also,  $\frac{y}{x} = (m)$  Everytime!

\* It's the 1.5 for the Picture Fixers!

Picture Fixers

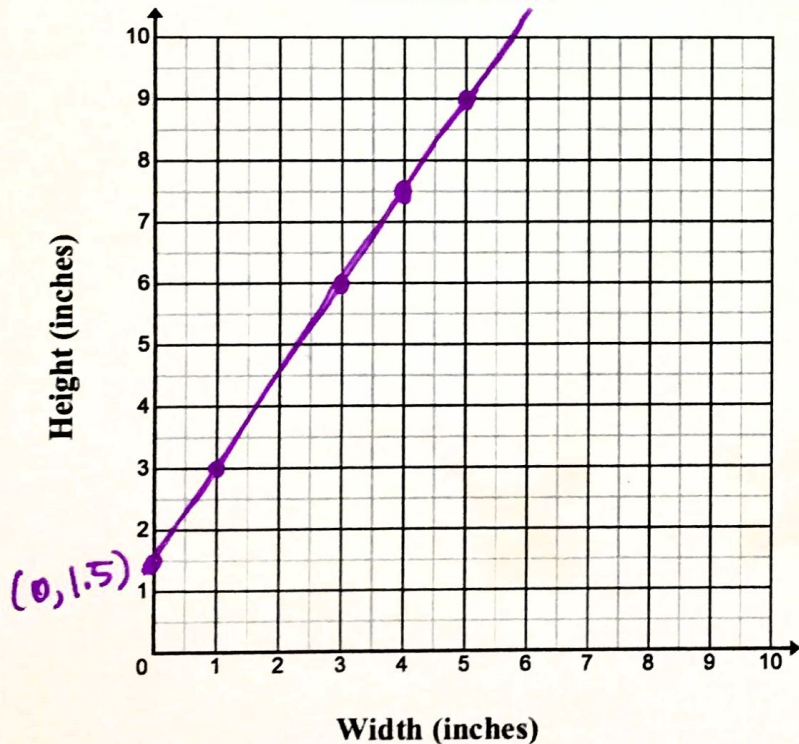


\* Plot the points from the tables to look @ the graphs. Then, connect back to cross the y-axis.

Line extends back & crosses through (0,0).

PROPORTIONAL!

Amateur Photo



Line DOES NOT go through (0,0).

NON-PROPORTIONAL.

# Proportional Relationships

1. Must have a Constant Rate of Change (CROC) <sup>But that's NOT ENOUGH!</sup>

## 2. Tables

a. For all points in the table  $\frac{y}{x} = \frac{y}{x} = \frac{y}{x}$  Proportional!

b. If  $\frac{y}{x} \neq$  the same # each time THEN it's NOT Proportional.

## 3. Graphs

a. Must be a straight line that goes through the <sup>(0,0)</sup> origin

Ex 2: Jonny has a business taking care of people's yards for the summer. He charges people a starting fee of \$10 and then charges and additional \$5 per hour he spends working on their yard. Fill in the table and determine if this is a proportional relationship.

doesn't say (0,0) → NOT Proportional.

Hours Worked	0	1	2	3	4
Money Earned (\$)	\$10	\$15	\$20	\$25	\$30

↑  
+5      ↑  
+5      ↑  
+5      ↑  
+5

Is it proportional? check each  $\frac{y}{x}$

$\frac{10}{0} =$  Doesn't work...  
so we ignore this one.

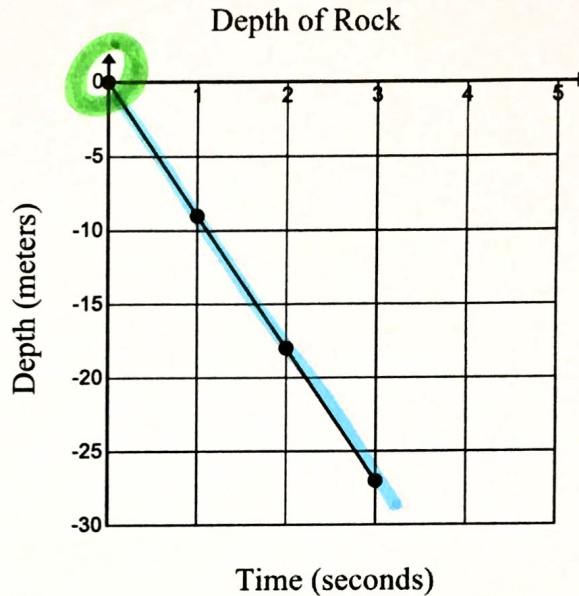
$\frac{15}{1} = 15$        $\frac{20}{2} = 10$

NOT the same!

NOT Proportional

Ex 3: Denice threw a rock into a lake. The following table represents the depth of the rock in the lake for every second that it is sinking. Is this a proportional relationship? Explain.

Time (seconds)	Depth (meters)
0	0
1	-9
2	-18
3	-27



Straight line!

through origin (0,0)

↳ Proportional!

Also: You could use the table to prove as well.

take each  $\frac{y}{x}$        $\frac{-9}{1} = (-9)$        $\frac{-18}{2} = (-9)$        $\frac{-27}{3} = (-9)$

COP = -9