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Name KEY _____ raw _____ scaled _____ percent

Math 7 Trimester 3 Quiz 3 (4 Points)

Equation of Line

■ **Full credit is given for correct *solutions*. Unsupported answers rarely receive full credit. Reduce all fractions, but do not rewrite improper fractions as mixed numbers.**

■ **A. Answer the following. (5 points each)**

[1] A teacher begins to make a table on the board that will illustrate either direct or inverse variation. As soon as the teacher has this much done:

x	0					
y	0					

a student calls out "It's direct!" How did the student know that?

Soln 1 Indirect variation has the form $y = \frac{a}{x}$. But, this is undefined when $x = 0$. So, cannot be inverse variation. ∴ Direct variation.

Soln 2 Indirect variation has the form $y = \frac{a}{x}$, as x gets large, $\frac{a}{x}$ gets small, but never exactly zero.

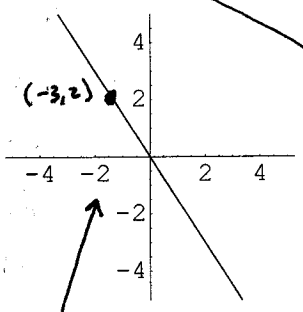
[2] The following graph shows a line through the origin and the point (−3, 2). Express y as a function of x.

EQN of line is $y = mx + b$

$b = 0$

$m = \frac{2}{-3}$

$y = -\frac{2}{3}x$



graph axis is messed up. Go by what you are told

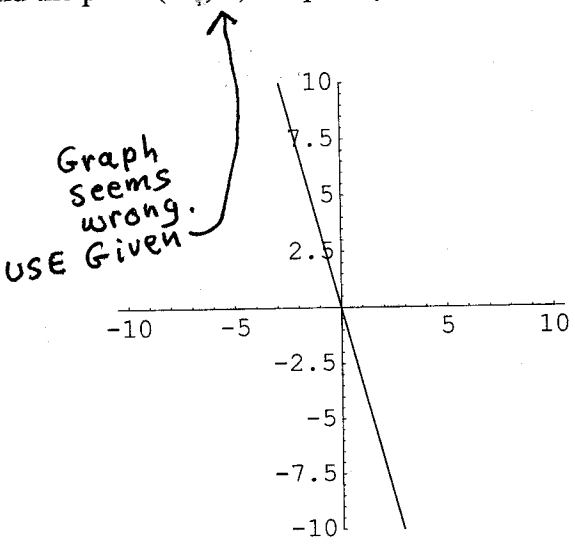
[3] The following graph shows a line through the origin and the point $(-7, 2)$. Express y as a function of x.

$y = mx + b$

$b = 0$

$m = \frac{2}{-7}$

$y = -\frac{2}{7}x$



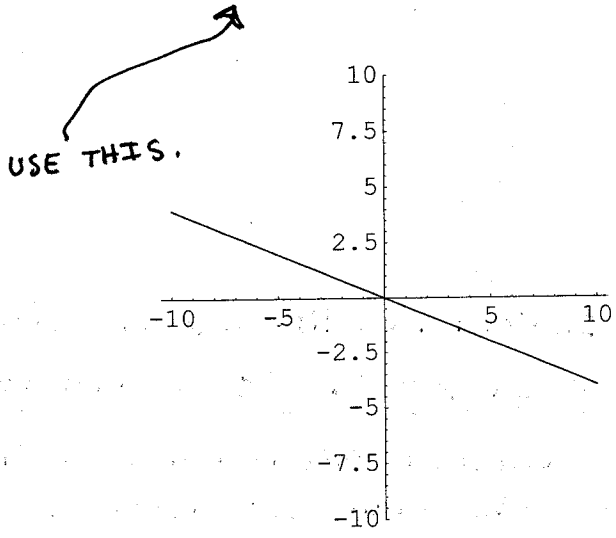
[4] The following graph shows a line through the origin and the point $(-2, 5)$. Express y as a function of x.

$y = mx + b$

$b = 0$

$m = \frac{5}{-2}$

$y = -\frac{5}{2}x$



NOTE: Since the graphs are very poorly drawn, use the actual Point given in the Statement of the problem. In fact, the information in the Statement of a problem – the GIVEN – should always take priority over any drawing or graph.

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Name KEY _____ raw _____ scaled _____ percent

Math 7 Trimester 3 Quiz 4 (6 Points)

Proportion

■ **Full credit is given for correct *solutions*. Unsupported answers rarely receive full credit. Reduce all fractions, but do not rewrite improper fractions as mixed numbers.**

■ **A. Answer the following. (1 point each)**

[1] A pump delivers $1\frac{1}{2}$ gallons of water in $\frac{1}{2}$ minute. Let y equal the amount of water in gallons and t equal the time in minutes. Write an equation that tells y as a function of t.

time t	$\frac{1}{2}$	1
volume V	$\frac{3}{2}$	3
$\frac{V}{t}$	$\frac{3}{1}$	$\frac{3}{1}$

"Double t causes double V, ∴ Direct"

} since direct, $\frac{V}{t}$ is constant.

$\therefore V = 3t$

[2] A certain quantity of food will feed 8 people for 4 days. Let t equal the time in days and x equal the number of people. Write an equation that tells t as a function of x.

People x	8	16
time t	4	2
xt	32	32

"Double x causes $\frac{1}{2}$ of V, ∴ Inverse Variation"

} since inverse proportion, xt is constant.

$\therefore t = \frac{32}{x}$

■ **B. Answer the following. (1 point per blank box)**

[1] The table below shows inverse variation. Complete the following table by writing the correct numbers in the empty boxes.

x	2	4	9
y	$\frac{1}{6}$	$\frac{1}{12}$	$\frac{1}{27}$

Inverse Variation

So, xy is constant

$xy = 2 \cdot \frac{1}{6} = \frac{1}{3}$

So,

$y = \frac{\frac{1}{3}}{x} = \frac{1}{3x}$ . . . . . See why?

$\frac{\frac{1}{3}}{x} = \frac{1}{3} \div x = \frac{1}{3} \cdot \frac{1}{x} = \frac{1}{3x}$.

so

$x = 4 \Rightarrow y = \frac{1}{3 \cdot 4} = \frac{1}{12}$

$x = 9 \Rightarrow y = \frac{1}{3 \cdot 9} = \frac{1}{27}$

[2] The table below shows direct variation. Complete the following table by writing the correct numbers in the empty boxes.

x	3	4	9
y	1	$\frac{4}{3}$	3

Direct variation

So, $\frac{y}{x}$ is constant

and $\frac{y}{x} = \frac{1}{3}$.

So,

$y = \frac{1}{3}x$.

Then,

$x = 3 \Rightarrow y = \frac{1}{3} \cdot 3 = 1$

$x = 4 \Rightarrow y = \frac{1}{3} \cdot 4 = \frac{4}{3}$

$x = 9 \Rightarrow y = \frac{1}{3} \cdot 9 = 3$