

The different forms of an equation of a line.

1, 2 #s 37, 33, 16, 13  
 → See Notes

$$S_n = \frac{n}{2} (a_1 + a_n)$$

$$\frac{2S_n}{2} = \frac{n(a_1 + a_n)}{2}$$

$$2S_n = na_1 + na_n$$

$$na_1 + na_n = 2S_n$$

$$na_1 = 2S_n - na_n$$

$$a_1 = \frac{2S_n - na_n}{n}$$

$$LCD = R_1 R_2 R_3$$

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$R_1 R_2 R_3 = R R_2 R_3 + R R_1 R_3 + R R_1 R_2$$

$$R_1 R_2 R_3 - R R_1 R_3 - R R_1 R_2 = R R_2 R_3$$

$$R_1 (R_2 R_3 - R R_3 - R R_2) = R R_2 R_3$$

$$R_1 = \frac{R R_2 R_3}{R_2 R_3 - R R_3 - R R_2}$$

37.  $x$  = how much she won on the game show (in \$)

$\frac{1}{3}x$  went to Jeff @ 14%

$\frac{1}{6}x$  .. .. Kaiser's @ 12%

Total earned was \$4000

How much was earned from Jeff?  $(.14)(\frac{1}{3}x)$

Ahh I see, now

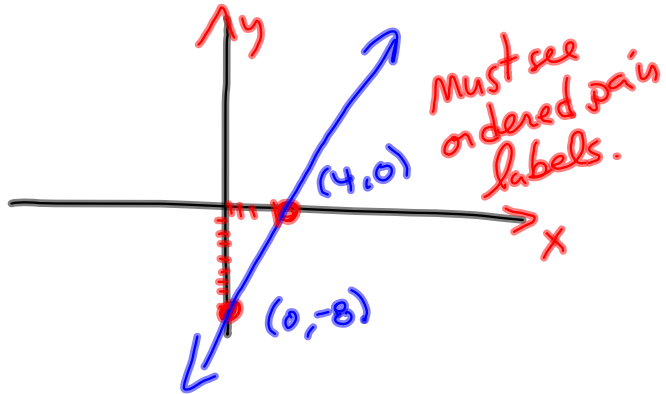
$$\left(\frac{1}{3}\right)(.14)x + \left(\frac{1}{6}\right)(.12)x = 4000$$

Graphing Lines with intercept method.

$$2x - 8 = y$$

x	y
0	-8
4	0

$$\begin{aligned} 2x - 8 &= 0 \\ 2x &= 8 \\ x &= 4 \end{aligned}$$



Sketch the graph of the following linear equation. Be sure to find and show the x- and y-intercepts.

$$0.03x + 0.06y = 150$$

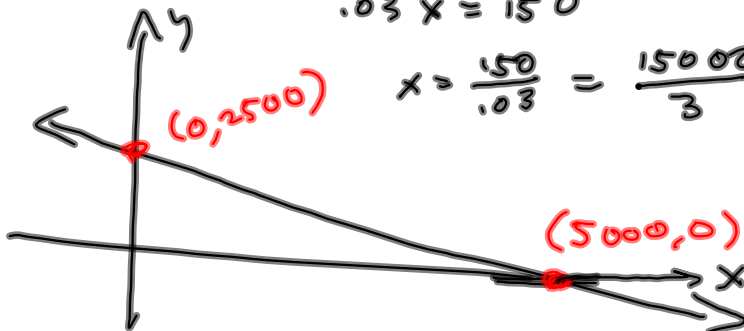
x	y
0	2500
5000	0

$$.06y = 150$$

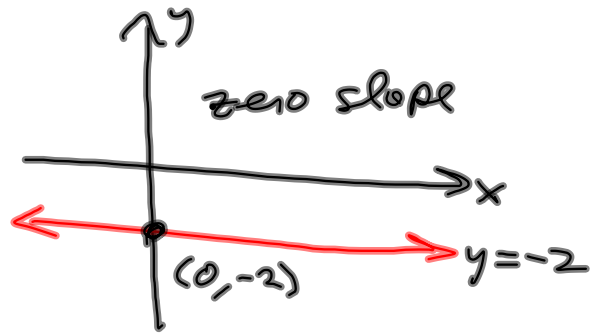
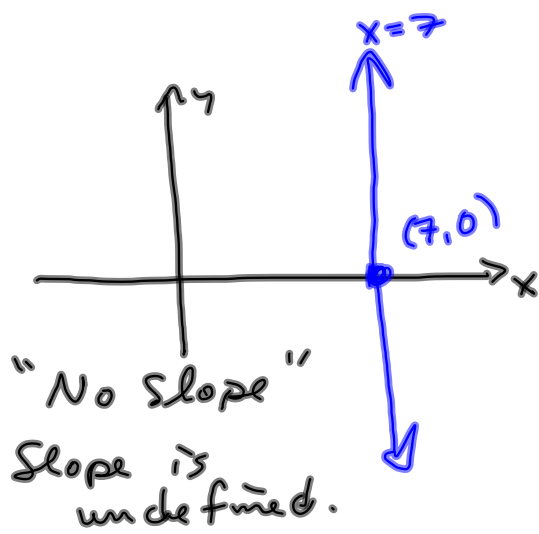
$$y = \frac{150}{.06} = \frac{15000}{6} = \frac{5000}{2} = 2500$$

$$.03x = 150$$

$$x = \frac{150}{.03} = \frac{15000}{3} = 5000$$



Horizontal and Vertical Lines - Show me the one intercept they have.



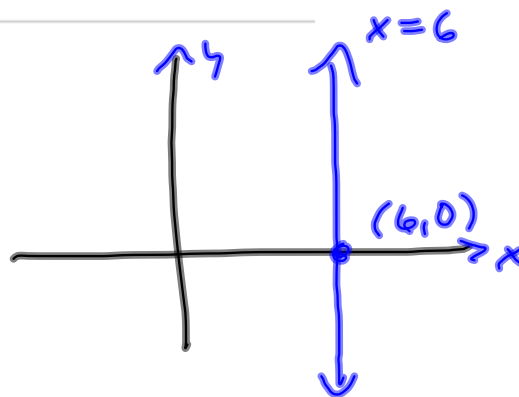
I hate these "Graph by plotting points." That's only a last resort, if you have zero insight on what the darn thing looks like. Otherwise, always look to the essence.

Graph the equation by plotting points.

$$4 - x = -2$$

$$-x = -6$$

$$x = 6$$



A person got \$171,580 for his house after paying a sales commission that was 8% of the selling price.

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What was the selling price?

will come back, if need be.

$x = \text{selling price}$

$$x - .08x = 171580$$

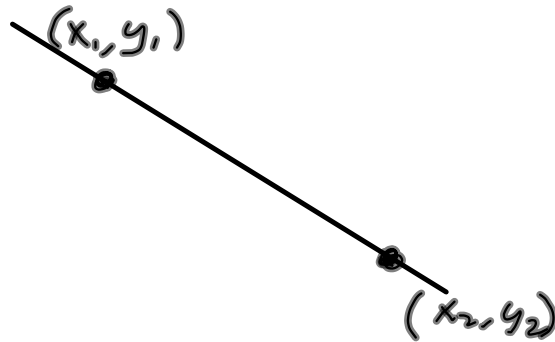
Guess 200000

$$200000 - .08(200000) = 171580?$$

$$x - .08x = 171580$$

## § 1.4 Lines

$$\begin{aligned} \text{Slope} &= \frac{\text{Rise}}{\text{Run}} \\ &= \frac{\Delta y}{\Delta x} \\ &= \frac{y_2 - y_1}{x_2 - x_1} = \frac{y_1 - y_2}{x_1 - x_2} \end{aligned}$$



Slope between  $(3, -5)$  &  $(4, 2)$  ?  
 $(x_1, y_1)$        $(x_2, y_2)$

Jesse

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - (-5)}{4 - 3} = \frac{2 + 5}{1} = \frac{7}{1} = 7$$

An eq'n of the line thru these two.

$$y = m(x - x_1) + y_1 \quad \text{point-slope}$$

$$y - y_1 = m(x - x_1)$$

$y = 7(x - 3) + (-5)$  Done if I ask for  
 Book wants: "an" equation

$$y = 7x - 21 - 5$$

$$y = 7x - 26$$

Simplifying an  
 expression

Junior High / High School

$$y = mx + b$$

$$-5 = 7(3) + b$$

$$-5 = 21 + b$$

$$-26 = b$$

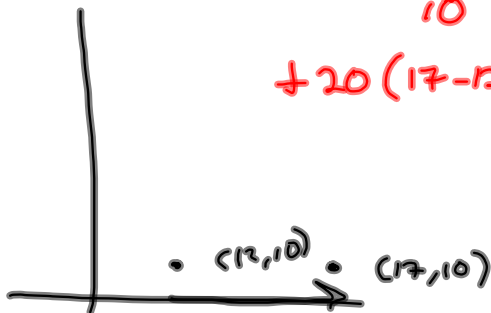
$$y = 7x - 26$$

Solving  
 an  
 equation.

20 feet per mile.

Started at (12, 10) and went 5 miles.  
What's the new elevation?

New elevation is  
10 old elevation +  
+ 20 (17-12) steepness times horizontal  
distance.



$$\left(\frac{20 \text{ ft}}{\text{mi}}\right) (5 \text{ mi}) = 100 \text{ ft}$$