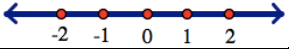
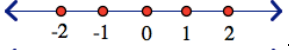
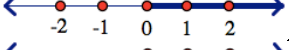
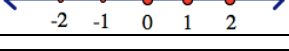
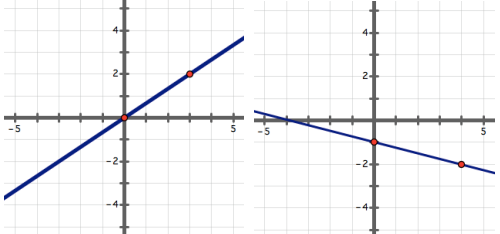


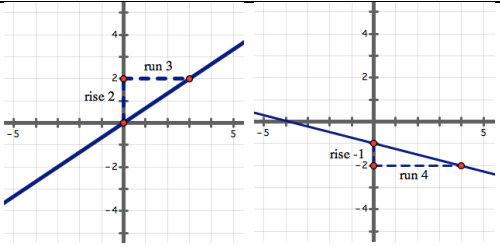
# Algebra 1 Chapter 3 & 4 Reference Sheet

Domain: The inputs allowed, these are x-values      Range: The outputs possible, these are y-values

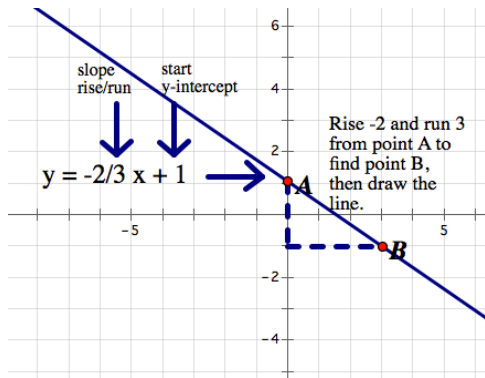
Common Domain/Range:	Description:	Examples:	Picture:
• All Reals	All negatives, all decimals/fractions	Temperature	
• All Integers	All negatives, No decimals/fractions	Points ahead in a game	
• Positive Reals	No negatives, all decimals/fractions	Hours until tomorrow	
• Positive Integers	No negatives, No decimals/fractions	Number of Siblings	

	Form: Graph	Form: Table	Form: Equation/Function												
Examples:		<table border="1" style="margin: auto;"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr><td>-1</td><td>4</td></tr> <tr><td>0</td><td>2</td></tr> <tr><td>1</td><td>0</td></tr> <tr><td>2</td><td>-2</td></tr> <tr><td>3</td><td>-4</td></tr> </tbody> </table>	x	y	-1	4	0	2	1	0	2	-2	3	-4	$y = 2x$ $y = -\frac{1}{2}x + 2$ $12x + 4y = 8$
x	y														
-1	4														
0	2														
1	0														
2	-2														
3	-4														

Linear if:	The line is straight	The rate of change is consistent, this is the slope	The equation can be written in the form $y = mx$ OR $y = mx + b$
Function if:	Passes the vertical line test. No point(s) on top of any other point(s).	Each input (x) maps to a single output (y). No x-value is repeated.	The equation is in a common form in this class: linear, exponential, or quadratic.

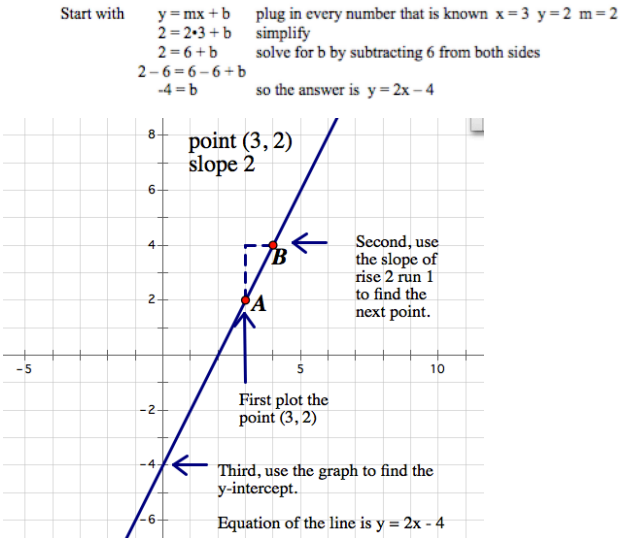
Slope:	 <p style="text-align: center;"> <math>\frac{\text{rise}}{\text{run}} = \frac{2}{3}</math>      <math>\frac{\text{rise}}{\text{run}} = \frac{-1}{4}</math> </p>	<p>In the table, the change is x-values is +1, so <math>\Delta x = 1</math></p> <p>In the table, the change is y-values is -2, so <math>\Delta y = -2</math></p> <p style="text-align: center;"> <math>\text{slope} = \frac{\Delta y}{\Delta x} = \frac{-2}{1}</math> </p> <p><b>**wise to get over your ex**</b></p>	<p>Slope is multiplied by x:</p> <p>In <math>y = 2x</math>, the slope is 2</p> <p>In <math>y = -\frac{1}{2}x + 2</math>, the slope is <math>-\frac{1}{2}</math></p> <p>In <math>12x + 4y = 8</math>, first solve for y  <math>4y = -12x + 8</math>  <math>y = -3x + 2</math>, so the slope is -3</p>
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Intercepts:	<p>For the y-intercept, look where the graph crosses the y-axis.</p> <p>Example 1: y-int = 0, Example 2: y-int = -1</p> <p>For the x-intercept, look where the graph crosses the x-axis.</p> <p>Example 1: x-int = 0, Example 2: x-int = -4</p>	<p>For the y-intercept, look where the x-value is 0</p> <p>Example: (0,2) so y-int = 2</p> <p>For the x-intercept, look where the y-value is 0</p> <p>Example: (1,0) so x-int = 1</p>	<p>For the y-intercept, plug in 0 for x and solve for y</p> <p>Examples: <math>y = 2(0)</math>, so y-int = 0  <math>y = -\frac{1}{2}(0) + 2</math>, so y-int = 2  <math>12(0) + 4y = 8</math> and solve for y, so y-int = 2</p> <p>For the x-intercept, plug in 0 for y and solve for x</p> <p>Examples: <math>0 = 2x</math>, so x-int = 0  <math>0 = -\frac{1}{2}x + 2</math>, and solve for x, so x-int = 4  <math>12x + 4(0) = 8</math> and solve for y, so y-int = <math>\frac{8}{12}</math> which is <math>\frac{2}{3}</math></p> <p><b>**write it twice and scribble**</b></p>
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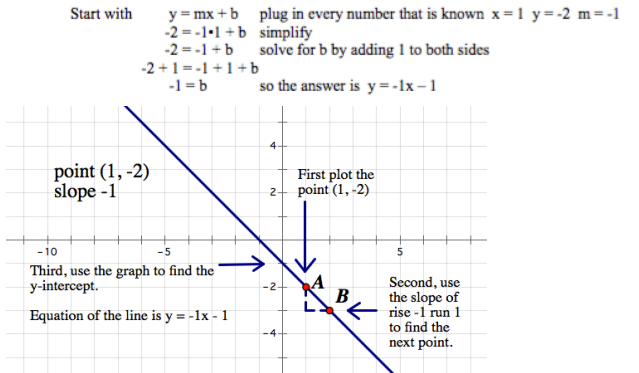


NOTE: Parallel Lines have the same slope.  
So  $y=2x+3$  and  $y=2x-5$  are parallel.

Example 1: Given the point (3, 2) and the slope 2 by method 2 – algebraically.



Example 2: Given the point (1, -2) and the slope -1 by method 2 – algebraically.

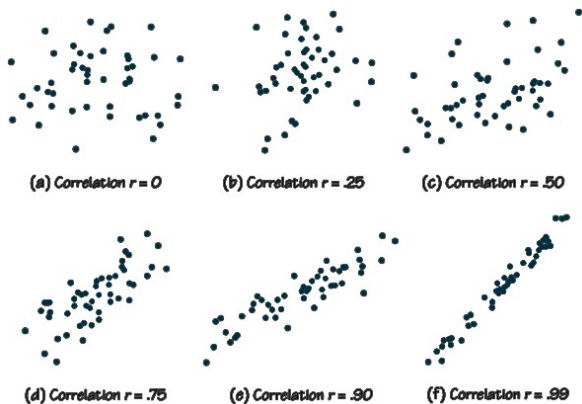


NOTE: Perpendicular Lines have the slopes that are opposite reciprocals (2 flips)  
So  $y=2x+3$  and  $y= -\frac{1}{2} + 1$  are perpendicular.

### Correlation:

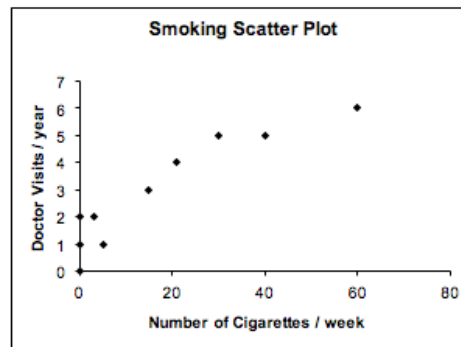
- describes the strength of a relationship on a scale from -1 to 1
- positive means that as x goes up, y goes up
- negative means that as x goes up, y goes down

value	strength	what it looks like
-1	perfect negative	the points are exactly on the line
-.8	strong negative	the points are very close to the line
0	no relationship	the line does not fit the points
.8	strong positive	the points are very close to the line
1	perfect positive	the points are exactly on the line



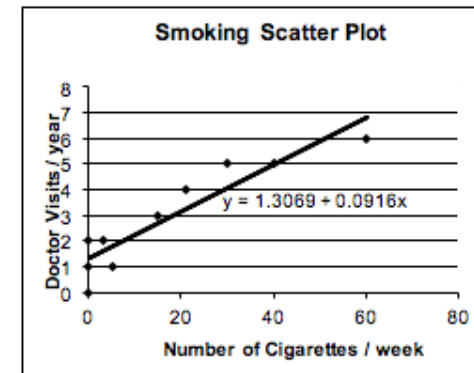
### Scatterplots

A scatterplot shows the relationship between two quantitative variables measured on the same individuals. The values of one variable appear on the horizontal axis, and the values of the other variable appear on the vertical axis. Each individual in the data appears as a point in the plot fixed by the values of both variables for that individual.



### Regression line/equation

- also called the line of best fit
- the line that best fits a series of data points
- used to make predictions



### To calculate a regression equation

1. press STAT and select EDIT
2. clear any data in L1 and L2 and enter your data
3. press STAT, press the right arrow to select CALC, and choose press 4. LinReg(ax+b)
4. press ENTER to run the regression program