Math 9 Tripp

Name: _____**KEY**_____

Chapter 5 – Graphing and Tables

Test Date: _____

To do:

5.1/5.2 – Graph Types/Graphs and Spreadsheets
- Complete Notes ◯

5.3 – Cartesian Coordinates
- Complete Notes ◯

5.4 – Data Trends
- Complete Notes ◯
- Quiz 1 ◯

5.5 – Equations, Tables and Graphs
- Complete Notes ◯

5.6 – Best Form

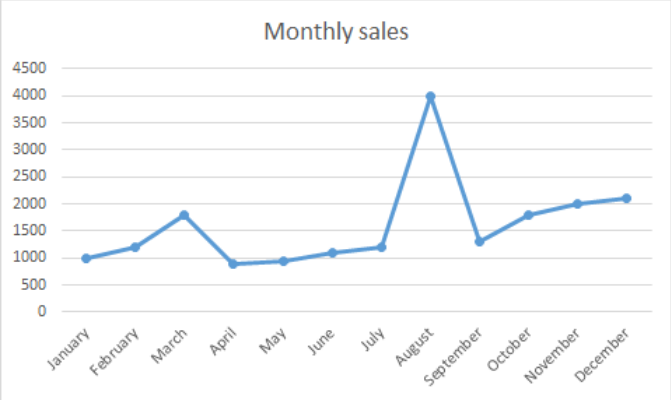
5.7 – $y = mx + b$
- Complete Notes ◯
- Quiz 2 ◯

Assignment # 3 (Units 5 & 6) ◯

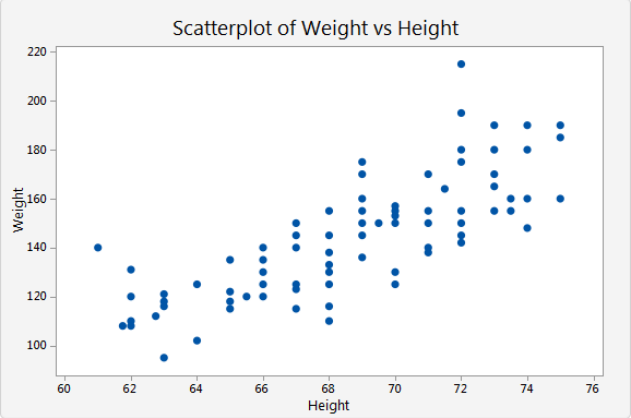
Write Unit Test ◯

Math 9 **Lesson 5.1/5.2 – Graph Types/Graphs and Spreadsheets** Tripp

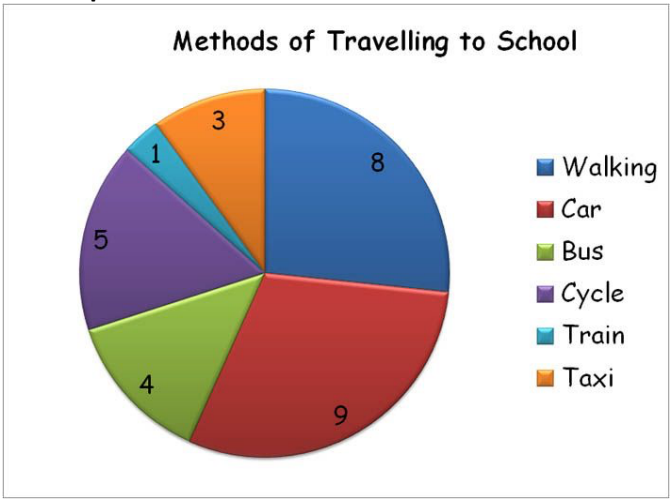
Line Graphs



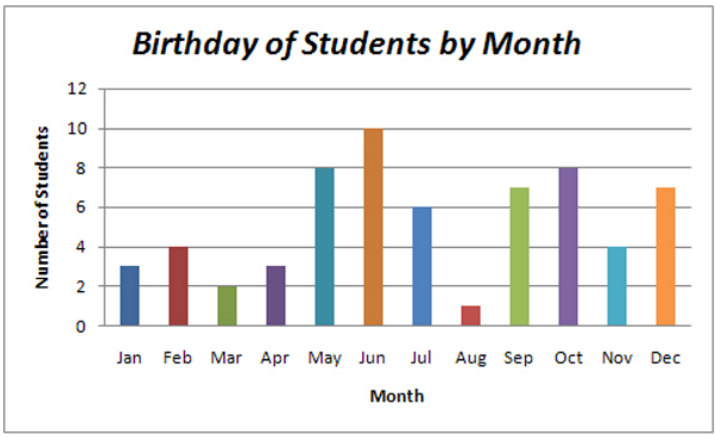
Scatterplots



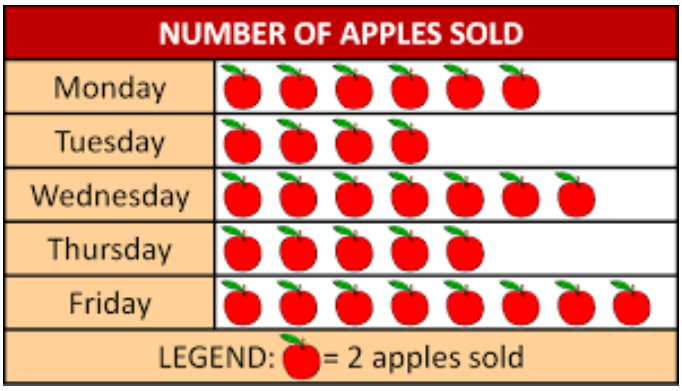
Pie Graphs



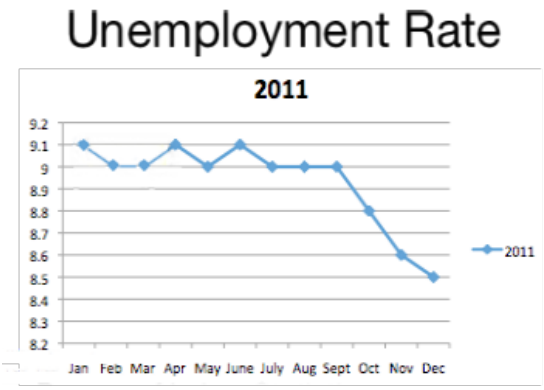
Bar Graphs

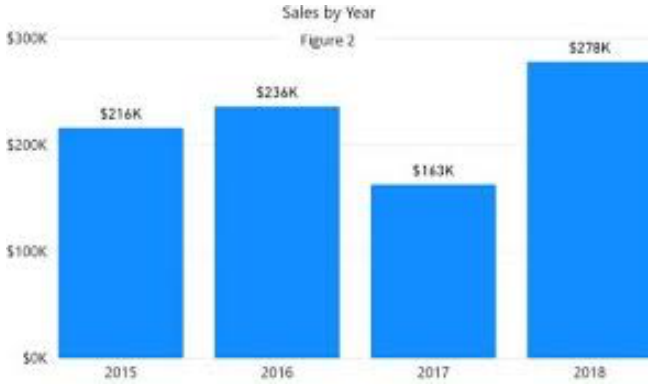


Pictographs



Misleading Graphs

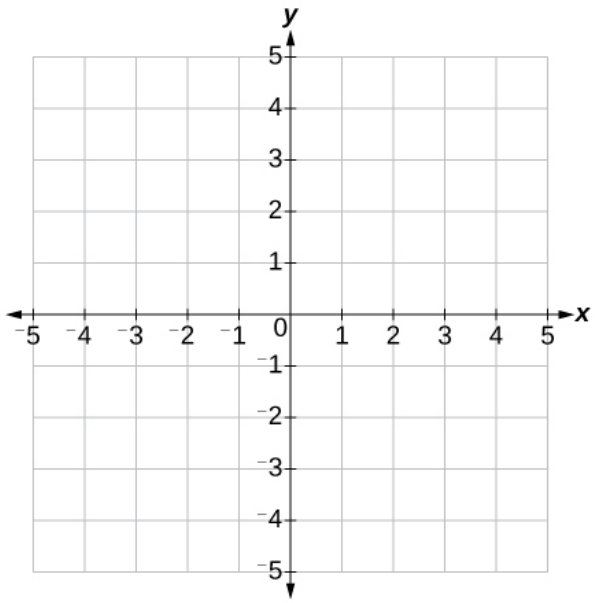




Math 9 **Lesson 5.3 – Cartesian Coordinates** Tripp

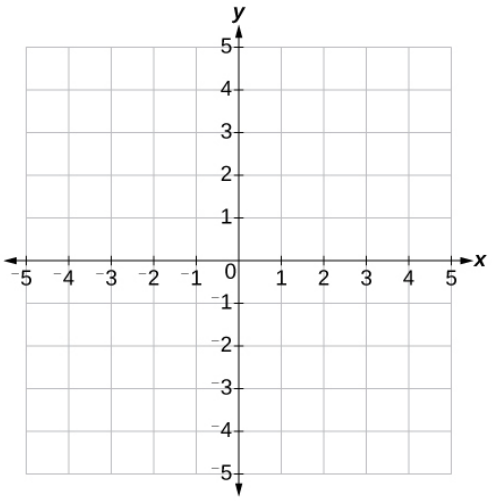
Steps for building a Coordinate Plane:

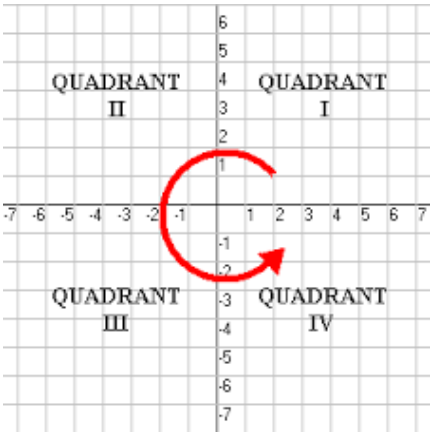
1. Start by thinking about the horizon, then draw our **horizontal axis**.
2. Mark an X on our horizontal axis so we know that it's our **X-axis**.
3. Draw our **vertical axis**, perpendicular to the X-axis.
4. Mark a Y on the vertical axis so we know that it's our **Y-axis**.
5. Confirm Y has a little V in it. Use this to ensure you have the X and Y correct.
6. The **origin** is the intersection point in the middle (where both axes are at zero).
7. Add a scale to the X-axis. Positive to the right, Negative to the left.
8. Add a scale to the Y-axis. Positive going up, Negative going down.
9. You're ready to graph!

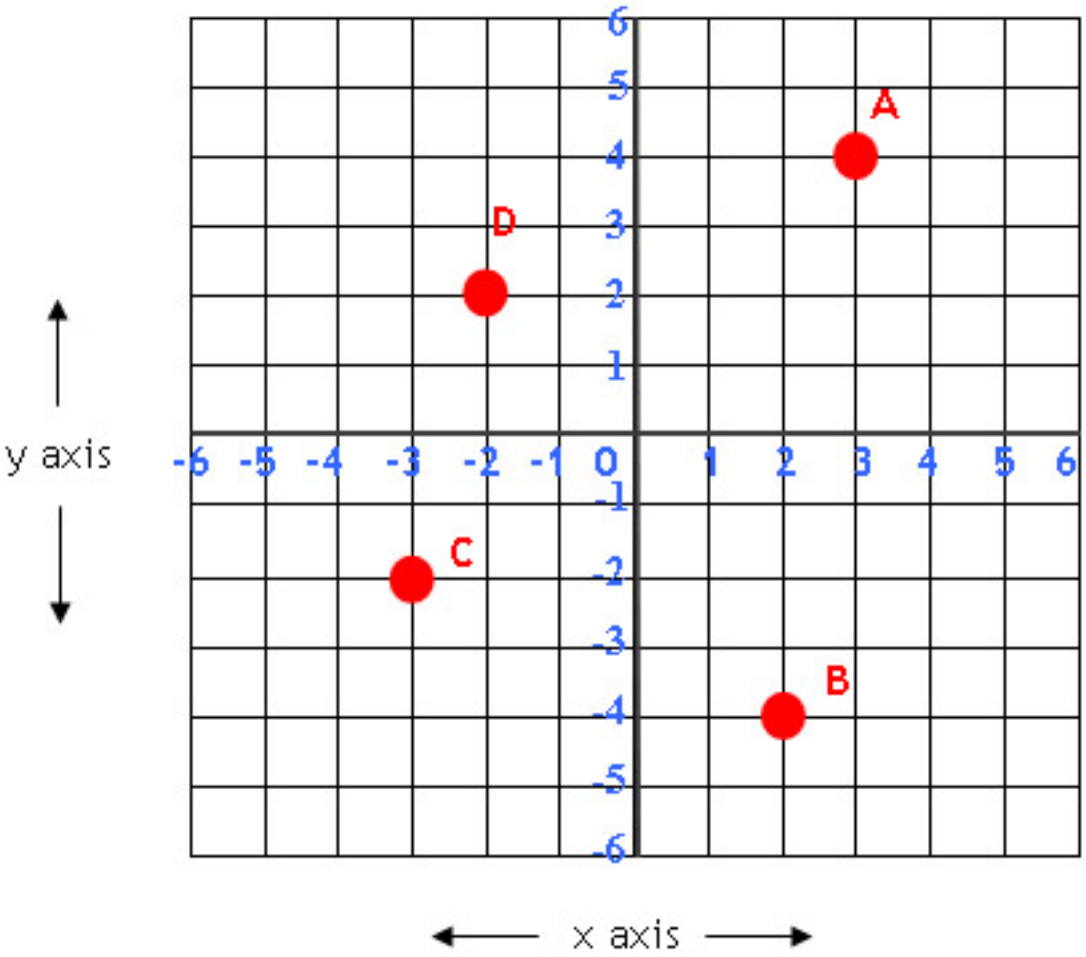


Plotting points:

- The location of a point is determined by its coordinates.
- We need an x-coordinate and a y-coordinate.
- The coordinates are often presented like this (1, -2).
- The set of coordinates can also be called an ordered pair.
- The first number is the X-value (left or right).
- The second number is the Y-value (up or down).





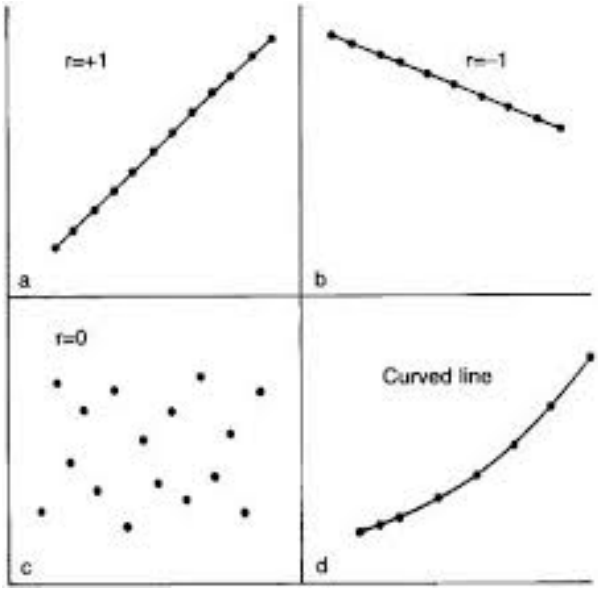

y axis
x axis
A
B
C
D
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6
6 5 4 3 2 1 -1 -2 -3 -4 -5 -6

Math 9 **Lesson 5.4 – Data Trends** Tripp

Types of trends:

- Linear = best represented by a straight line.
- Nonlinear = best represented by some nonlinear curve.

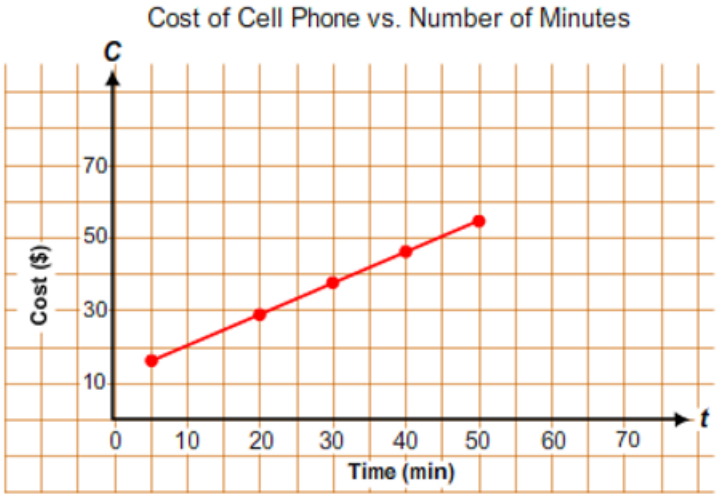
How good is a trend line? Some data follows a trend closely, while other data is not that close. How do we describe the difference?



Correlation Coefficient:

- r = correlation coefficient = how well the curve fits the data
- r = 1: perfect positive correlation
- r = 0: no correlation
- r = -1: perfect negative correlation

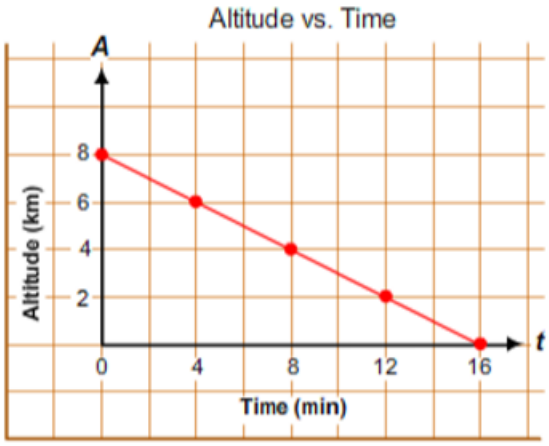
Sometimes we want to estimate a value that goes beyond the values that we already know from the pattern. This process of going beyond is called **extrapolation**.



What is the approximate value of the C-coordinate when $t = 55$?

Approx. $60

Sometimes we want to find a value by calculating or estimating between two already known values; this process is called **interpolation**.



What is the approximate value of the t-coordinate when $A = 3$?

Approx. 10 km

Math 9 **Lesson 5.5 – Equations, Tables, and Graphs** Tripp

When data from two variables are collected it is usually put into a table of values and/or a graph, so a relationship between the variables can be more easily recognized.

We will be looking at linear relationships, which means the relationship between the two variables will be **one-to-one/linear**.

Equations to tables:

1. make table
2. sample set of data for independent variable in left column
3. evaluate for each set of data in right column
4. done!

Tables to graphs:

1. make grid
2. independent variable on horizontal axis
3. dependent variable on vertical axis
4. plot each "data set" or "ordered pair"
5. done!

To create an equation from a table of values, you need to determine:

- the pattern (When *x* increases by 1, *y* increases/decreases by ___)
- the value of *y* when *x* = 0.

Next, input this information into your linear equation as follows:

- the pattern becomes the coefficient for *x* (the number by which *x* will be multiplied) *Ex.*

  $y = \mathbf{3}x + 2$

- the value of *y* when *x* = 0 becomes the constant (the number added at the end) *Ex. y*

  $= 3x + \mathbf{2}$

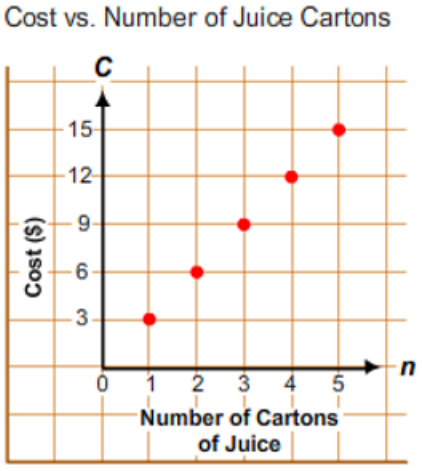
Examples:

1. Write a linear equation that represents the pattern found in the given table of values and then verify the equation:

x	y
0	9
1	13
2	17
3	21

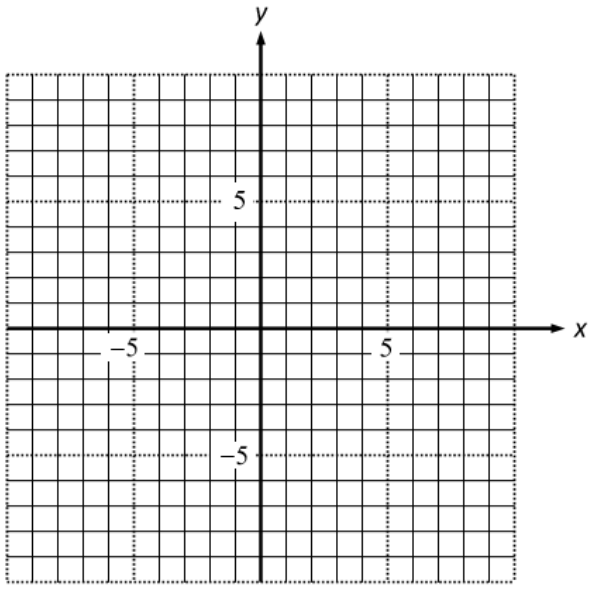
y = 4x + 9

2. Complete the table of values for the following graph:



n	C
4	12

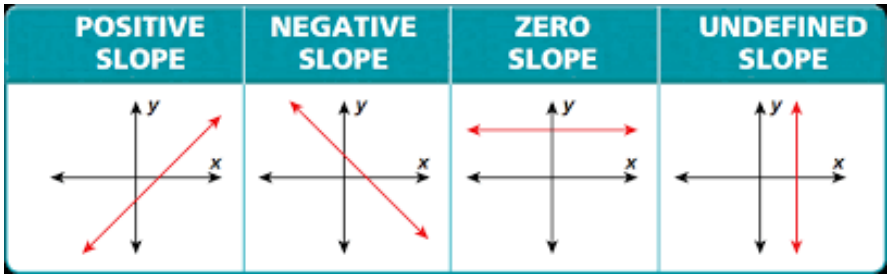
3. Graph the following linear equation: $y = 2x + 1$



The slope of a line describes both the direction and steepness of the line. It is calculated by finding the ratio of the **rise (difference in *y*-values)** to the **run (difference in *x*-values)** between any two distinct points on a line.

$$slope = m = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{Slope} = \frac{\text{Vertical Change}}{\text{Horizontal Change}} = \frac{\text{Rise}}{\text{Run}}$$



The slope-intercept form of an equation:

$$y = mx + b$$

can save us a lot of time in our graphing!

Examples:

1. Use the equation for slope to determine the slope of a line that passes through the given points:

   $(-1, 4)$ and $(6, 2)$

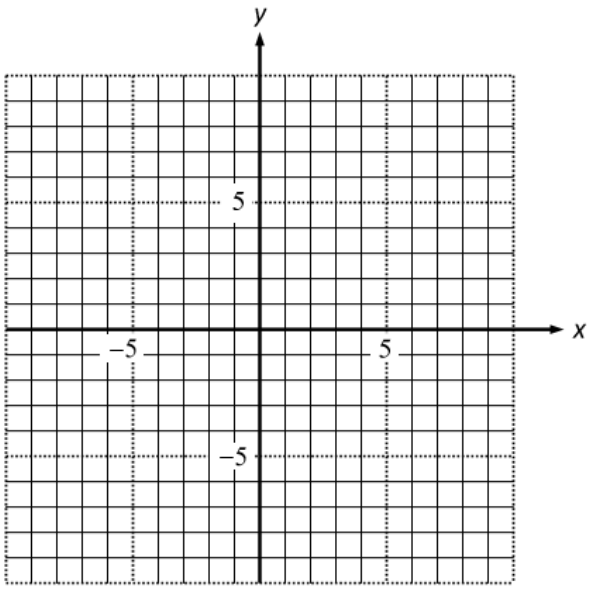
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 4}{6 + 1} = -\frac{2}{7}$

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

Using the second point (6, 2): $y = = -\frac{2}{7}x + b \rightarrow 2 = -\frac{2}{7}(6) + b \rightarrow 2 + \frac{12}{7} = b \rightarrow \frac{26}{7} = b$

2. Graph the line using only the slope-intercept equation:

$$y = -2x + 5$$



3. Match the following equations to the appropriate graph:

$y = 2 - x, \quad y = 3x - 3, \quad y = x - 2$