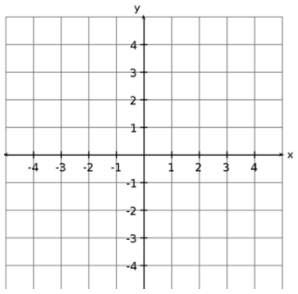
Unit 4 Learning Goals Check List:

section	Learning Goal	✓

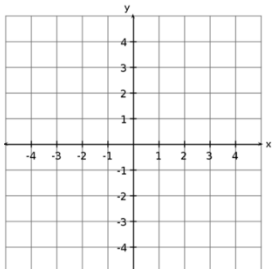
4.1 a) I can write and graph linear equations in slope intercept form.

Ex. Write an equation of the line in slope intercept form and then graph.

a) Slope = $\frac{3}{4}$; y intercept = -1

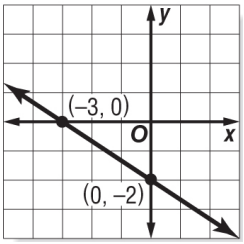


b) 6x + 4y = 16

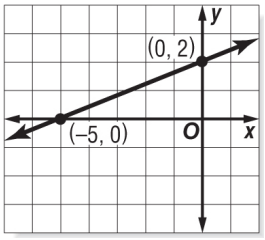


Ex. Write the equation of each graphed line in slope intercept form.

a)



b)



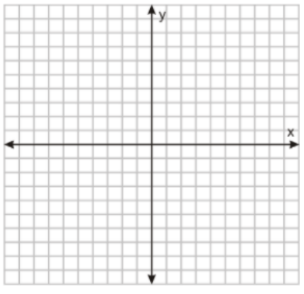
b) I can model real world data with equations in slope intercept form.

Ex. The cost to join Gold's Gym includes a start-up fee of $145, plus monthly dues of $45. Write an equation to model the cost of membership at Gold's Gym in any month after start up. How much would it cost to be a member for one year?

Ex. Houston toads are disappearing in Bastrop County. There are currently approximately 2000 toads, but the population is decreasing at a rate of 200 toads per year.

a) Write an equation to model the population in any year.

b) Sketch a graph (**Label your x & Y axis!)** and explain the meaning of the x & y intercepts.



4.2 **a) I can write the equation of a line in slope intercept form from a slope and a point on the line.**

Ex. Slope = 3 and passing through the point (-2,5)

Ex. slope = -1 and passing through the point (4, -7)

b) I can write the equation of a line in slope intercept form from 2 points on the line.

Ex. Write the equation of the line containing the points (-4, -2) and (-5, -6).

4.3 **a) I can write equations of lines using the point slope formula.**

Ex. line passing through point (5,1); with slope of $-\frac{2}{3}$

Ex. line passing through (-1,-3) and (5,6)

b) I can write the equation of a line in all 3 different formats.

Ex. Write the equation in point-slope form, slope-intercept form, and standard form for the line that contains the points (-5,7) and (3,1)

4.4 a) I can write the equation of parallel and perpendicular lines in slope intercept form.

Ex. Write the equation of the line passing through (-1,-4) and parallel to the line: $9x + 3y = 8$

Ex. Write the equation of the line passing through (4, -5) and perpendicular to $2x - 5y = -10$

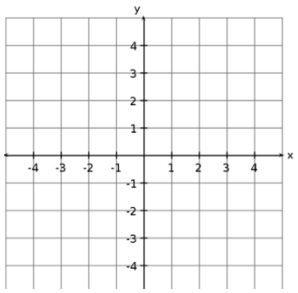
b) I can recognize parallel and perpendicular lines.

Identify each pair of lines as parallel, perpendicular, or neither. Show the algebra and justify your answer!

$-3x + 4y = 8$	$3x + 5y = 10$	$2x + 7y = -35$
$-4x + 3y = -6$	$5x - 3y = -6$	$4x + 14y = -42$

c) I can use parallel & perpendicular slopes to prove geometric shapes.

Ex. Triangle ABC has vertices $A(0, 4)$, $B(1, 2)$, and $C(4, 6)$. Determine whether triangle ABC is a right triangle. Explain.



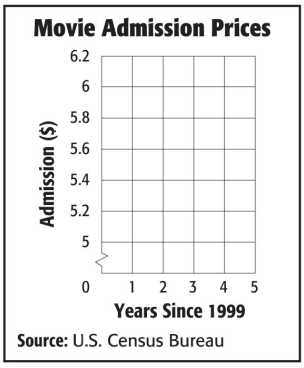
4.5 a) I can use a scatter plot to investigate relationships between two variables.

Ex.

Use the table to graph a scatter plot.

Next draw a line of best fit.

Write an equation for that line
In slope intercept form.



Years Since 1999	Admission (dollars)
0	$5.08
1	$5.39
2	$5.66
3	$5.81
4	$6.03

Based on the information and your equation, what would have been the price of a movie ticket in 2006?

4.6 I can write equations for best-fit lines using linear regression and a calculator.

Ex. Write an equation of the regression line for the data in each table below. Then find the correlation coefficient.

1) TURTLES The table shows the number of turtles hatched at a zoo each year since 2006.

Year	2006	2007	2008	2009	2010
Turtles Hatched	21	17	16	16	14

2) POPULATION Detroit, Michigan, like a number of large cities, is losing population every year. Below is a table showing the population of Detroit each decade.

Year	1960	1970	1980	1990	2000
Population (millions)	1.67	1.51	1.20	1.03	0.95

Source: U.S. Census Bureau

a. Find an equation for the regression line.

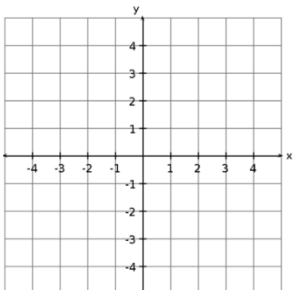
b. Find the correlation coefficient and explain the meaning of its sign.

c. Estimate the population of Detroit in 2008.

4.7 Pre-AP extension

a) I can find the inverse of a linear function and graph both the function and its inverse.

Ex. Find the inverse function of the linear equation: $y = 3x + 4$
Graph the original equation along with its inverse (label each)
Graph the line y = x



Linear transformations lab -

I can identify transformations of linear functions, including rotations (changes in slope) and vertical shifts (changes in the y intercepts)

ex. What transformations took place to change the graph of the parent function y = x, to y = 2x – 3.

Ex. What transformations took place to change the graph of the linear function, $y_1 = 3x - 4$ to $y_2 = -2x + 1$