P.S. #4.8 – Lines and Linear Equations

Name _____ Class _____

1.) Andrew filled a swimming pool with water. When he started, the pool already contained 1,700 gallons of water in it. The table below shows the number of gallons, *g*, in the pool after filling it for *h* hours. Which equation can be used to determine the number of gallons, *g*, of water in the pool after *h* hours?

Number of hours (*h*)	Gallons of water (*g*)
0	1700
2	2300
5	3200
6	3500

(A) $g = 300h$

(B) $g = 300h + 1700$

(C) $g = 1700h$

(D) $g = 1700h + 300$

2.) Island decided to open up her own boutique. She needs to rent a place for her shop. The one-time security deposit is $600 and rent is $800 a month. Write an equation that represents the cost of rent, y, in terms of the number of months, x.

3.) Ryan and Jake both joined the video game of the month club. There is a joining fee, plus an additional fee every time you played a new game. After Jake rents 7 games, the price is $55. After Ryan rents 17 games, the price is $105.

a.) Find a linear equation that shows the relationship between the total cost, y, and the number of video games, x.

b.) What is the slope of the equation you wrote in part a? _____
Explain what this represents in the context of this problem.

c.) What is the y-intercept of the equation you wrote in part b? _____
Explain what this represents in the context of this problem.

4.) Brandon is going to join a golf club. He must pay a $50 entrance fee to join the course and it costs $5 per course.

a.) Write an equation for the total cost, *y*, of golfing for *x* hours, including the initial fee.

b.) What is the *y*-intercept in your equation? _____

Explain what information the *y*-intercept tells you about this situation.

c.) What is the slope of the line in your equation? _____

Explain what information the slope tells you about this situation.

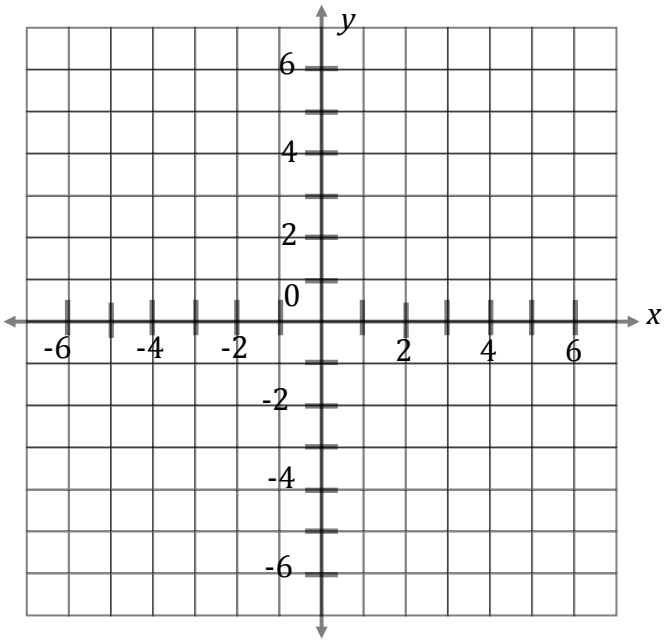
d.) What will be the total cost if Brandon played 9 courses? Show work.

e.) If Brandon's budget allowed him $130, how many courses can he play?

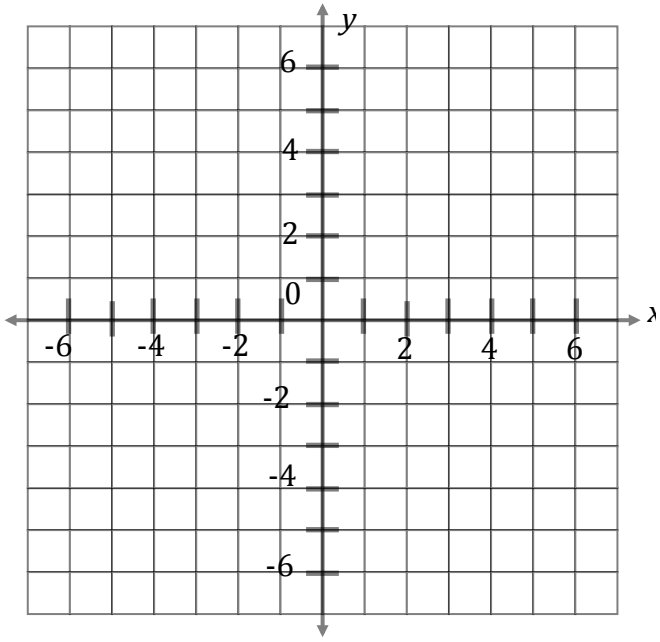
5.) Isolate y in the equations below to put it in slope-intercept form. Then, graph the line on the set of axes provided.

a.) $2x + 5y = 20$

b.) $5x - 3y = 15$



6.) Find the equation of a line that has a slope of 3 and a y-intercept of -2. Graph the line.



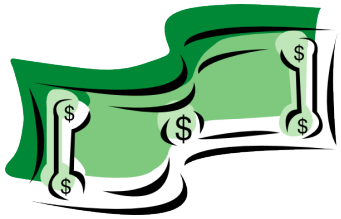
7.) Find the equation of a line that has a slope of ¼ and passes through (-4,4). Graph the line.

8.) The table below shows Payton's bank account balance for the past six weeks.

Week (w)	*Balance (b)*
1	$77
2	$112
3	$147
4	$182
5	$217
6	$252

a.) Using the information from the table, write an equation that represents the balance in Payton's bank account, *b*, as a function of the number of weeks, *w*.

b.) What is the slope of the equation you wrote? _____
Explain what it represents in this situation.



c.) What is the *y*-intercept of the equation you wrote? _____
Explain what it represents in this situation.

9.) The table below shows the number of chaperones, *y*, needed for a certain number of students, *x*, on a field trip.

Number of Students (x)	14	35	42	84
Number of Chaperones (y)	2	5	6	12

a.) Write an equation that represents the relationship between the number of chaperones needed and the number of students attending the field trip.

b.) What is the slope of the equation you wrote? _____

Explain what the slope represents in this situation.

c.) How many chaperones will be needed for a field trip that has 91 students?

10.) Solve the equation. $8x - 1 = 4(6 - x) - 1$

Selected Answers:

5.) a.) $y = -\frac{2}{5}x + 4$ b.) $y = \frac{5}{3}x - 5$ 6.) $y = 3x - 2$ 7.) $y = \frac{1}{4}x + 5$

8.) a.) $b = 35w + 42$ 9.) a.) $y = \frac{1}{7}x$

10.) x = 2