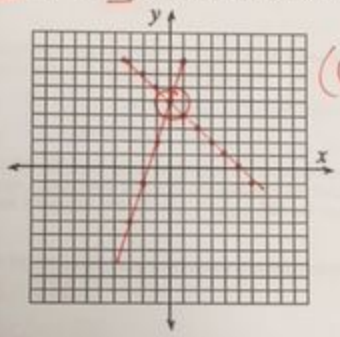
Study Guide

Name:_____ Date:_____

1.) Graph $y = -x + 5$ and $y = 3x + 5$. What is the point of intersection?



(0,5)

2.) Change the equation $6x + 2y = 8$ to $y = mx + b$ form. Then, graph the equation and name the x and y intercepts of the graph.

$6x + 2y = 8$

$-6x \quad -6x$

$\frac{2y = -6x + 8}{2}$

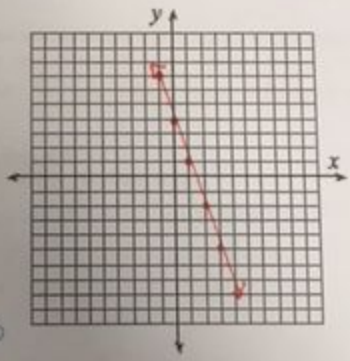
$y = -3x + 4$

y-intercept: (0,4) ← $x = 0$

x-intercept: $0 = -3x + 4$ ← $y = 0$

$\frac{-4 = -3x}{-3}$ $4/3 = x$

(4/3, 0)



3.) Solve for x. Show all steps. Check your solution, if possible.

a. $3 + 3(x + 1) = 2x - 4$

$3 + 3x + 3 = 2x - 4$

$3x + 6 = 2x - 4$

$x + 6 = -4$

$-6 \quad -6$

$x = -10$

b. $-(3 - 2x) = 4(2x - 5)$

$-3 + 2x = 8x - 20$

$+20 \quad -2x \quad -2x \quad +20$

$\frac{17 = 6x}{6}$

$x = 17/6$ or $2\ 5/6$

c. $3x + 5 = -3x + 5$

$+3x \quad +3x$

$\frac{6x = 0}{6}$ $x = 0$

d. When Sophie solved her equation for x, she got 0 = 0. If she did everything correctly, what does this solution tell her? Be clear and complete.

This means the two sides are always equal, no matter the value of x, so there are infinitely many solutions.

4.) Two companies offer different rental packages for boat rentals. The first company, Betty's Boats, requires a deposit of $80 and charges $25 per hour. The second company, Sam's Ships, requires a deposit of $100 and charges $20 per day.

a. Write an equation for each company that represents the charges to rent each jet ski.

B: $y = 25x + 80$

S: $y = 20x + 100$

b. Use any method to find the point of intersection and explain what it means.

(4, 180)

$25x + 80 = 20x + 100$ $x = 4$

$-20x \quad -80 \quad -20x \quad -80$

$5x = 20$

$y = 25(4) + 80$

$100 + 80$

$y = 180$

c. Which company should you choose if you wanted to rent it for 2 hours? 10 hrs? Why?

Betty's is cheaper for less than 4 hrs, while Sam's is cheaper for more than 4 hrs. The lines intersect at 4 hrs.

2 hrs: B ; 10 hrs: S

5.) Which of the points below are on the line y = 3x + 2

A. (0, 2) b. (2, 0) C. (100, 302) d. (302, 100)

$2 = 3(0) + 2$ $2 = 2$ ✓

$0 = 3(2) + 2$ $0 \neq 6 + 2$ X

$302 = 3(100) + 2$ $302 = 300 + 2$ ✓

$100 = 3(302) + 2$ $100 = 906 + 2$ X

Both boats cost $180 to rent them for 4 hrs.