Advanced Algebra
Homework #1
Linear Equations and Inequalities

Name _____

Period _____

SHOW ALL WORK.

Complete Parts A & B, OR Parts B & C

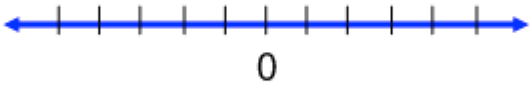
PART A:

1. Solve the equation

$5w + 2 = 2w + 5$

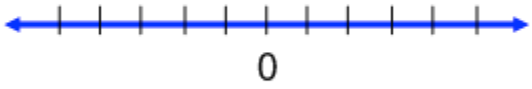
2. Solve the inequality. Then graph the solution.

$4x - 8 \geq -4$



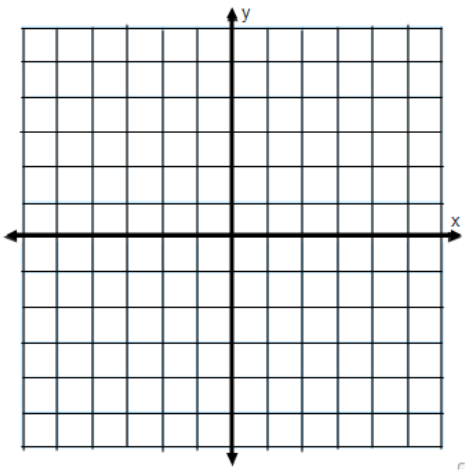
3. Solve the inequality. Then graph the solution.

$18 + 2x \leq 9x + 4$



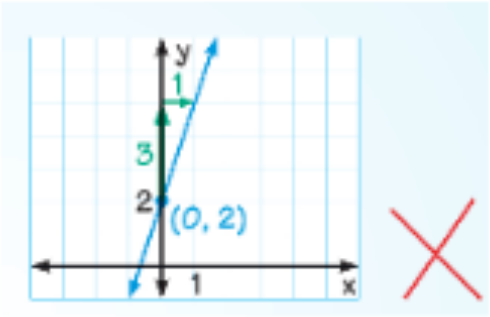
4. Graph the equation.

$f(x) = -\frac{5}{4}x + 1$



5. Describe and correct the error in graphing the equation.

$y = 2x + 3$



6. Write the equation of the line that has the given slope and y-intercept.

$m = -\frac{7}{5},\ b = 8$

PART B:

Solve the equation

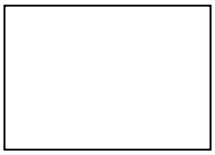
7. $1 = \frac{1}{3}a - 5$

8. $2c + 14 = 6 - 4c$

9. $\frac{1}{2}t + \frac{1}{3}t = 10$

10. Solve for x. Then find the length of each side of the rectangle.

Perimeter = 46



x + 2

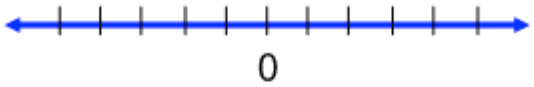
2x + 3

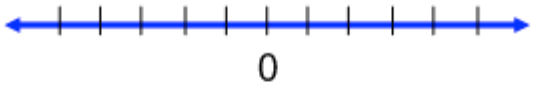
11. The bill for the repair of your bicycle was $180. The cost of parts was $105. The cost of labor was $25 per hour. How many hours did the repair work take?

Solve the inequality. Then graph the solution.

12. $-5 < x + 1 < 4$

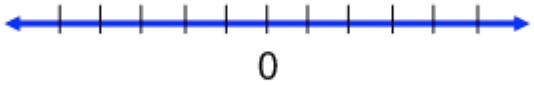
13. $2 \leq x - 3 \leq 6$

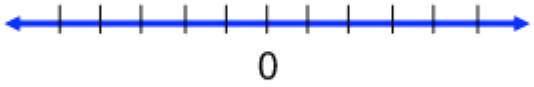




14. $x + 1 < -3$ or $x - 2 > 0$

15. $x - 4 \leq -6$ or $x + 2 > 5$



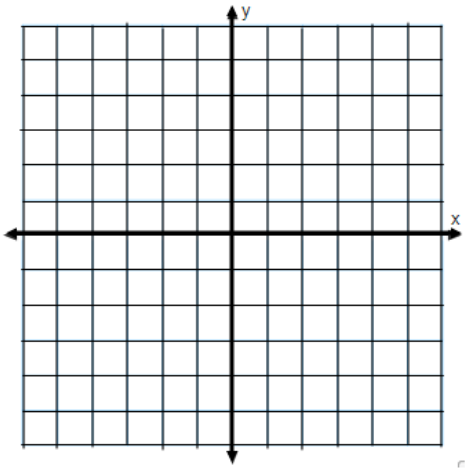


16. Find the x and y-intercepts of the line with the given equation.

$4x - 5y = 20$

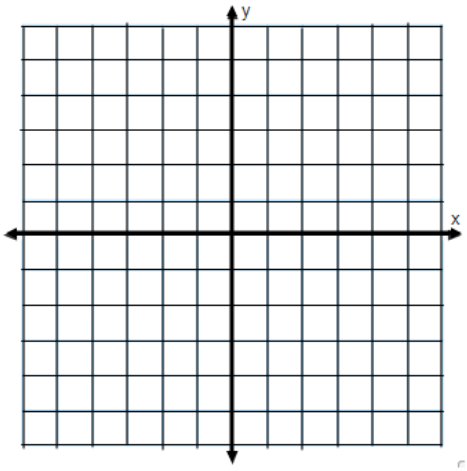
17. Graph the equation. Label any intercepts.

$-5x + 10y = 20$



18. Graph the equation.

$14 - 3x = 7y$



19. Write the equation of the line that passes through the given point and has the given slope.

(8, 13), m = -9

20. Write an equation of a line that passes through the given points.

(4, -1), (6, -7)

PART C:

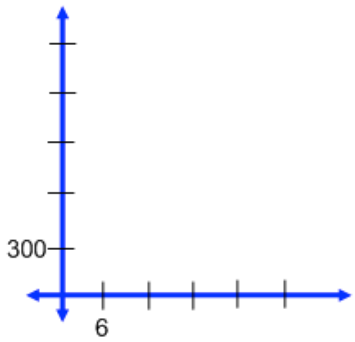
21. Solve the equation.

$\frac{3}{7}w - \frac{2}{9} = \frac{4}{9}w + \frac{1}{7}$

22. A salesperson at a car dealership has a base salary of $25,000 per year and earns 5% commission on total sales. How much must the salesperson sell to earn $50,000 in one year?

23. You and a friend are each typing your research papers on computers. The function y = 1400 – 50x models the number y of words you have left to type after x minutes. For your friend, y = 1200 – 50x models the number y of words you have left to type after x minutes.

a. Graph the two equations in the same coordinate plane. Describe how the graphs are related geometrically.



b. What do the x-intercepts, y-intercepts, and slopes represent?

c. Who will finish first? Explain.

24. A company will lease office space in two buildings. The annual cost is $21.75 per square foot in the first building and $17 per square foot in the second. The company has $86,000 budgeted for rent.

a. Write an equation that models the possible amounts of space rented in the buildings.

b. How many square feet of space can be rented in the first building if 2,500 square feet are rented in the second?

c. If the company wants to rent equal amounts of space in the buildings, what is the total number of square feet that can be rented?