Unit 2: Linear Equations, Inequalities, and Systems   Name:

          Hour:

1. Simplify and combine like terms:
     a. $2x - 3 - (- 3x + 10)$ b. $- 10x + 3(6x - 5)$

2. Solve the following equations for the variable w.
     a. $4x - 6w = y$ b. $5 - w + 6 = 2w$

3. Solve the equation. SHOW YOUR WORK!

     a. $9 = x + 12$ b. $6 = \frac{x}{3}$ c. $- 6x = 24$
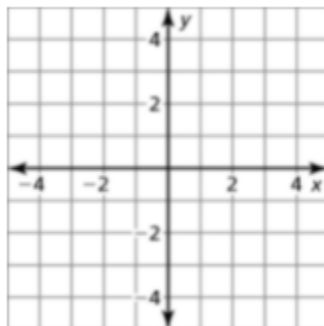
     d. $2(x - 4) - 8 = 3x$ e. $\frac{p+3}{2} = 7 + 2$ f. $4y - 2(y + 4) = 22$

4. Given the following linear equations, identify the slope and the y-intercept. Finally graph
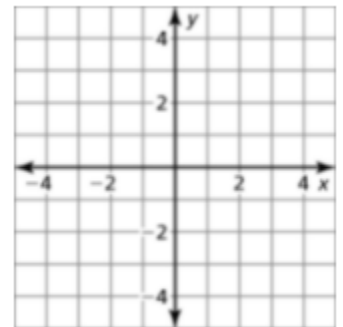
a. $y = -\frac{2}{3}x + 4$

Slope _____

y-int _____

b. $y = - 3 + \frac{1}{2}x$
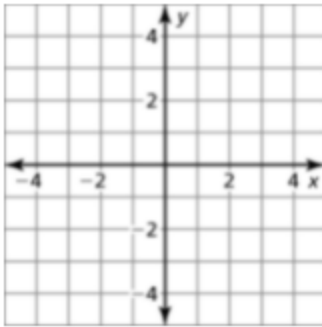

Slope _____

y-int _____

5. Find the x & y intercepts and graph

$$2x - 4y = 8$$
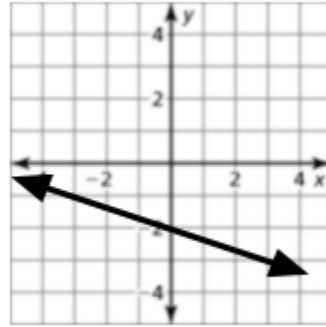
x-int (,)   y-int (,)

6. Look at the graph below

y-intercept _____

Slope = _____

Given the slope and the y-intercept, find the equation of the line in _slope-intercept form_.

7. Slope = 0 & y-int = (0, − 3)

8. Slope = $\frac{3}{4}$ & y-int = (0, 4)

y = _____

y = _____

9. The function $g(h) = -2h + 18$ represents the number of gallons g that remain in the car's gas tank after h hours of traveling at 70 mph.
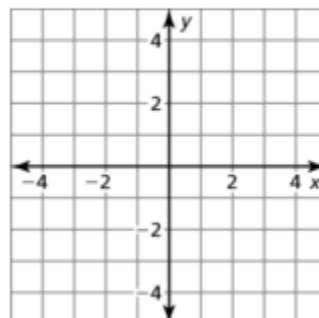
a) How large is the gas tank? _____

b) How many gallons are left in the tank after 3 hours? _____

c) In how many hours will the tank be empty? _____

d) How many gallons per hour does the car use? _____

10. Solve the system by graphing. Answer as an ordered pair (,   )

a) $\begin{cases} y = -2 \\ x = -1 \end{cases}$ (,   )
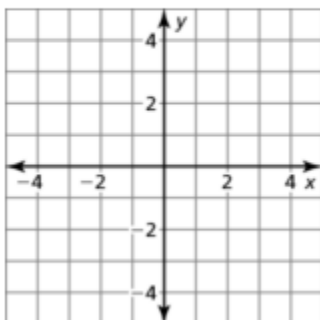
b) $\begin{cases} y = -\frac{1}{2}x + 4 \\ y = 2x - 1 \end{cases}$ (,   )

11. Tell whether the ordered pair is a solution to the system of linear equations. (Show WORK)

a) $(2, -5)$; $3x + 2y = -4$

$x + y = -3$

b) $(-2, 2)$; $y = 2x + 6$

$y = 3x + 9$

12. Solve the system by elimination. Answer: ordered pair (,   )

$4x + 2y = 6$

$4x - 2y = -14$

13. Solve the system by substitution. Answer: ordered pair (,   )

$y = 3x - 4$

$y = 2x + 2$

14. Determine the number of solutions the following system of equations has - no solutions, infinite solutions or one solution. SHOW ALL WORK!

a. $-5x + y = -2$

$20x - 4y = 8$

b. $2x + y = -6$

$-4x + y = 9$

c. $-3x + 2y = 1$
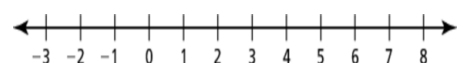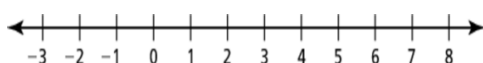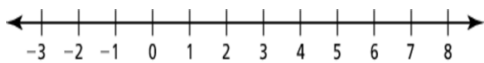
$3x - 2y = -4$

15. Solve the inequality and Graph the solution.

a. $-\frac{x}{2} \le -2$

b. $2(y - 3) + y < 6$

c. $k - 4 < 3k$

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 ←─┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──→
  -3 -2 -1  0  1  2  3  4  5  6  7  8
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  -3 -2 -1  0  1  2  3  4  5  6  7  8
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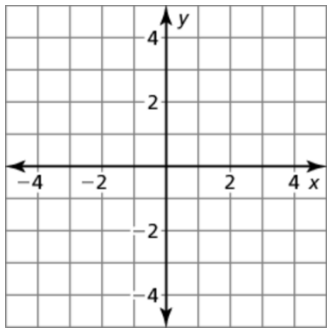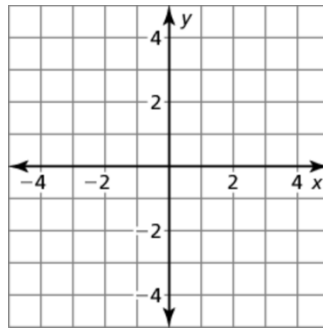
16. Graph each inequality in the Cartesian Coordinate plane. Shade the proper half plane.
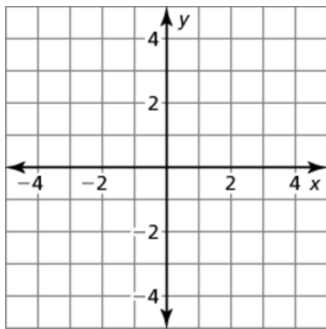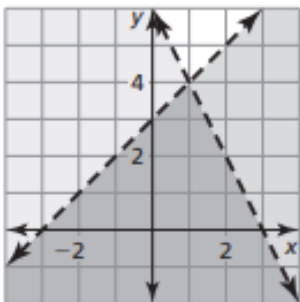
a. $3x + 2y \leq 6$

b. $-3x + y > -4$

17. Graph each system of inequalities in the Cartesian Coordinate plane. Shade the intersection.

a. $y \leq -2x + 1$

$y > \frac{1}{3}x - 2$

18. Given the system of inequalities. Write the equation of each inequality.

Dashed line with a positive slope: _____

Dashed line with a negative slope: _____