

Name: Key Hour: \_\_\_\_\_ Date: \_\_\_\_\_

## Algebra 2 – Systems of Equations Unit Review

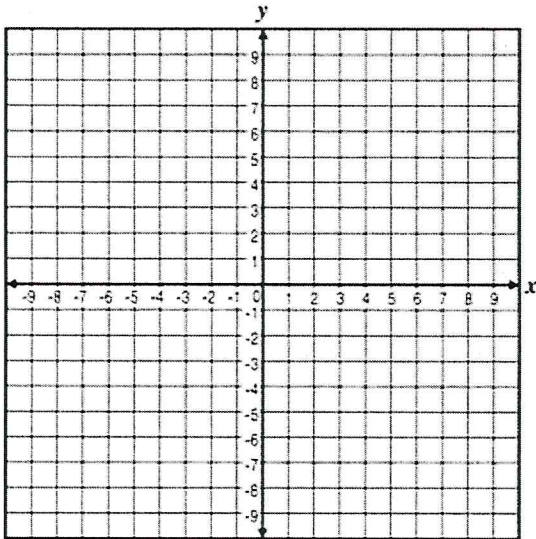
\*\*\* Unit Test: Tuesday, November 28 \*\*\*

\* For the most part this is only answers, without any required work shown

Solve the following systems of linear equations by *graphing*.

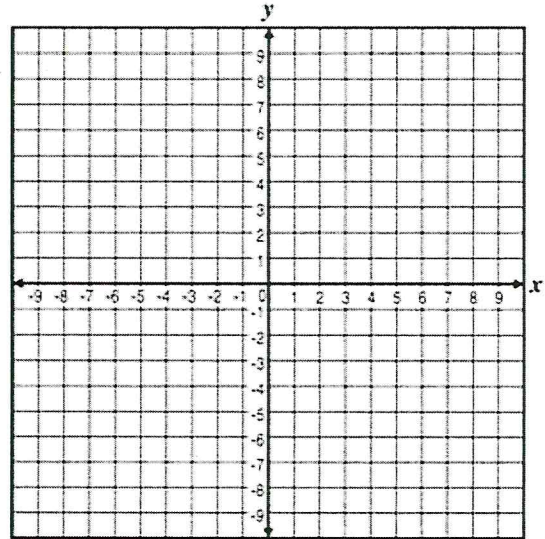
1)  $y = \frac{1}{3}x - 3$   
 $y = -x + 1$

(3, -2)



2)  $y = -\frac{1}{2}x - 1$   
 $y = \frac{1}{4}x - 4$

(4, -3)



Solve the following systems of linear equations by *elimination*.

3)  $-2x + 2y = 4$   
 $5x - 2y = -4$

(0, 2)

4)  $8x + 14y = 4$   
 $-6x - 7y = -10$

(4, -2)

Solve the following system of linear equations by *substitution*.

$$\begin{aligned} 5) \quad & -3x + y = 7 \\ & x = 4y + 16 \end{aligned}$$

$$(-4, -5)$$

$$\begin{aligned} 6) \quad & y = -3x + 5 \\ & 5x - 4y = -3 \end{aligned}$$

$$(1, 2)$$

Without graphing (ie use either substitution or elimination), determine if the system of equations has one solution, infinite solutions or no solutions. Justify your answer with a sentence.

$$\begin{aligned} 7) \quad & y = 2x + 10 \\ & 6x - 3y = -30 \end{aligned}$$

Infinitely  
Many  
Solutions

$$\begin{aligned} 8) \quad & -4x + y = 7 \\ & y = 4x + 5 \end{aligned}$$

No  
Solution

$$\begin{aligned} 9) \quad & -4x - y = 8 \\ & 3x - y = -6 \end{aligned}$$

One Solution:  
 $(-2, 0)$

For the following problems define the variables  $x$  and  $y$ , write a system of equations that satisfies the situation, solve the system and analyze the solution in the context of the problem.

10) The "Pay Upfront" car rental company charges an insurance fee of \$33 and a daily rental fee of \$8 per day. The "Drive Now Pay Later" car rental company charges an insurance fee of \$18 and has a rental fee of \$11 per day. Find the number of days and the cost when the companies are equal.

Variable Definitions:

$x =$  # of days

$y =$  total cost

Equation 1:  $y = 33 + 8x$

Equation 2:  $y = 18 + 11x$

Solution (ordered pair):  $(5, 73)$

Solution (sentence): After 5 days, the cost will be \$73.

11) The cats Moe and Iggy each catch mice on the waterfront. Moe has already caught 29 mice and catches 87 more mice each month. Iggy has caught 282 mice and catches 64 more mice each month. Find how many months it will take for the number of mice that the two cats catch to be equal.

Variable Definitions:  $x =$  # of months  $y =$  total mice

Equation 1:  $y = 29 + 87x$

Equation 2:  $y = 282 + 64x$

Solution (ordered pair):  $(11, 986)$

Solution (sentence): After 11 months they will each catch 986 mice.

12) On a recent trip to The Apple Pan, Bob and Sally spent \$19.75 on 2 steakburgers and 3 drinks. On another trip, they spent \$24 on 3 steakburgers and 2 drinks. What was the cost of a steakburger and the cost of a drink?

Variable Definitions:  $x =$  steakburger cost  $y =$  drink cost

Equation 1:  $2x + 3y = 19.75$

Equation 2:  $3x + 2y = 24$

Solution (ordered pair):  $(6.5, 2.25)$

Solution (sentence): Steakburgers cost \$6.50 and drinks cost \$2.25

13) Members of the senior class held a car wash to raise money for the senior prom. They charged \$3 to wash a car and \$5 to wash a truck. Altogether they raised \$275. If they washed a total of 75 vehicles, find how many cars and how many trucks they washed.

Variable Definitions:  $x =$  cars  $y =$  trucks

Equation 1:  $3x + 5y = 275$

Equation 2:  $x + y = 75$

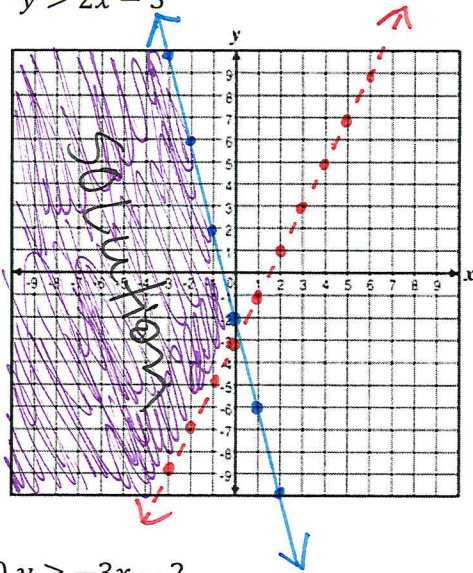
Solution (ordered pair):  $(50, 25)$

Solution (sentence): They washed 50 cars and 25 trucks.

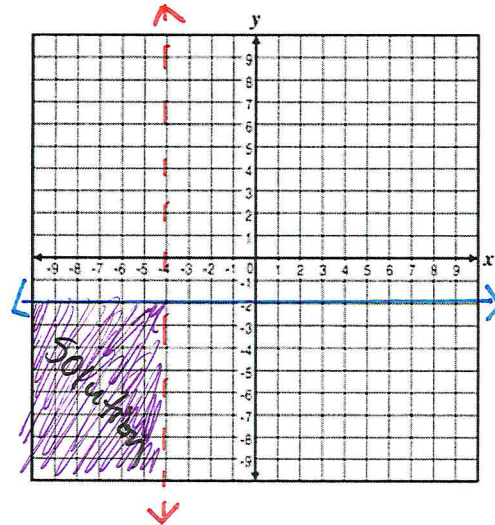


Solve the systems of inequalities by graphing. Shade neatly & make your solution region obvious.

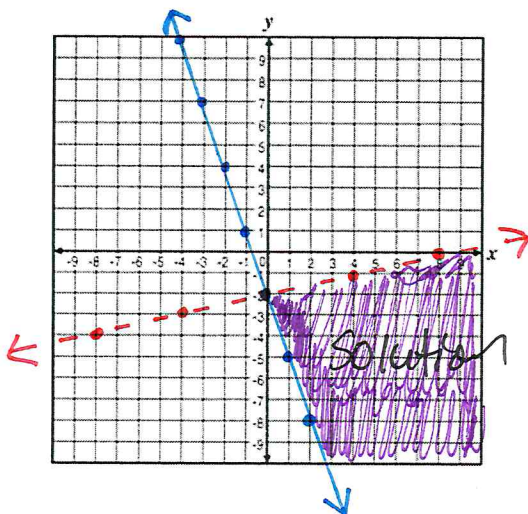
14)  $y \leq -4x - 2$   
 $y > 2x - 3$



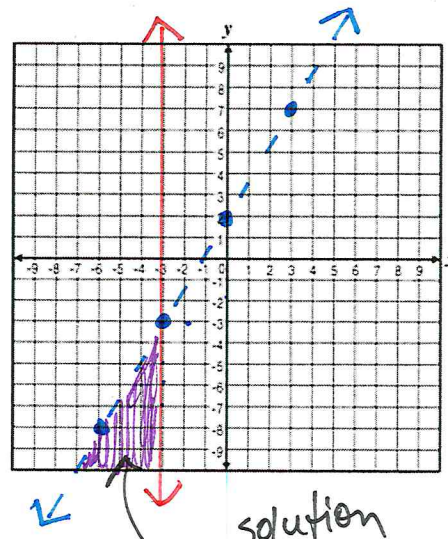
15)  $x < -4$   
 $y \leq -2$



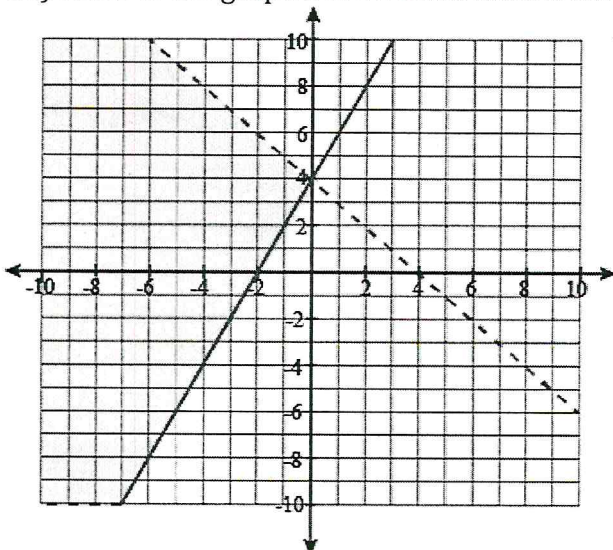
16)  $y \geq -3x - 2$   
 $y < \frac{1}{4}x - 2$



17)  $x \leq -3$   
 $y < \frac{5}{3}x + 2$



18) Refer to the graph below. Determine if the following ordered pairs are solutions and explain why/not



		Yes	No	Explain
A	(0, 0)		X	not in the shaded region
B	(-4, 2)	X		In the shaded region
C	(2, 0)	X		on the solid line
D	(-2, 6)		X	on the dashed line