

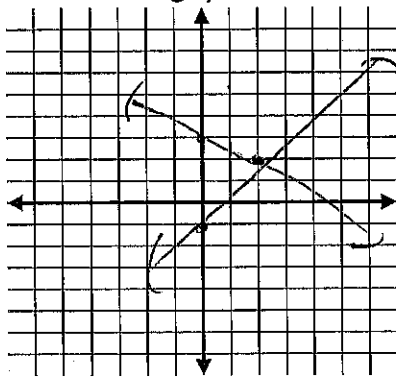
Unit 6 Study Guide

Name: _____

- Target 1: Write and solve a system of equations modeling a real world problem
- Target 2: Write and solve a system of inequalities modeling a real world problem
- Target 3: Represent constraints using equations and inequalities
- Target 4: Analyze the reliability of solutions (does the answer make sense?)
- Target 5: Solve a system involving two variables using the substitution method
- Target 6: Solve a system involving two variables using the elimination method
- Target 7: Solve a system of equations involving two variables by graphing
- Target 8: Graph a system of linear inequalities
- Target 9: Interpret the solution set of a system of inequalities

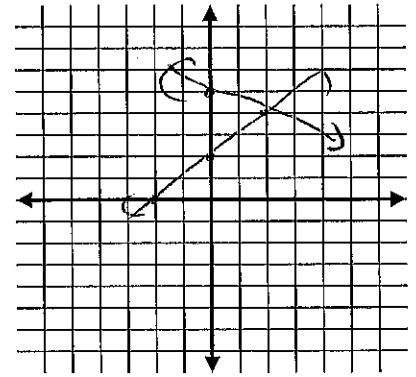
Use graphing to solve the following systems.

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



$(2, 2)$

2. $y = -\frac{1}{2}x + 5$
 $x + 2y = 10$
 $-x + y = 2$



$(2, 4)$

Use substitution to solve the following systems.

3. $y = 3x$
 $4x + 2y = 30$

$$4x + 2(3x) = 30$$

$$4x + 6x = 30$$

$$10x = 30$$

$$x = 3$$

$$y = 9$$

$(3, 9)$

4. $x = y - 7$
 $2x - 5y = -2$

$$2(y - 7) - 5y = -2$$

$$2y - 14 - 5y = -2$$

$$-3y = 12$$

$$y = -4$$

$$x = -11$$

$(-11, -4)$

5. $2x - y = -2$
 $4x + y = 26 \rightarrow y = 26 - 4x$

$$2x - (26 - 4x) = -2$$

$$2x - 26 + 4x = -2$$

$$6x = 24$$

$$x = 4$$

$$y = 26 - 4 \cdot 4 = 10$$

$(4, 10)$

Use elimination to solve the following systems.

$$\begin{array}{r} 6. \quad 3x + 5y = -16 \\ -3x + 2y = +2 \end{array}$$

$$7y = -14$$

$$y = -2$$

$$3x + 7(-2) = -16$$

$$3x = -6$$

$$x = -2$$

$$\boxed{(-2, -2)}$$

$$\begin{array}{r} 7. \quad 3(2x - 7y = 9) \\ 2(-3x + 4y = 6) \end{array}$$

$$6x - 21y = 27$$

$$-6x + 8y = 12$$

$$-13y = 39$$

$$y = -3$$

$$-3x + 4(-3) = 6$$

$$-3x - 12 = 6$$

$$-3x = 18$$

$$x = -6$$

$$\boxed{(-6, -3)}$$

$$\begin{array}{r} 8. \quad 4(4x + 3y = -1) \\ 5(5x + 4y = 1) \end{array} \quad \begin{array}{r} -20x - 15y = -5 \\ 25x + 16y = 4 \end{array}$$

$$y = 9$$

$$4x + 3(9) = -1$$

$$4x + 27 = -1$$

$$4x = -28$$

$$x = -7$$

$$\boxed{(-7, 9)}$$

Use any method to solve the following systems.

$$\begin{array}{r} 9. \quad x + y = 8 \\ x - y = -14 \end{array}$$

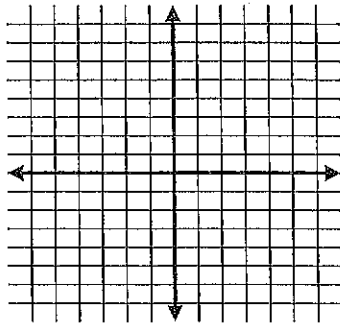
$$2x = -6$$

$$x = -3$$

$$-3 + y = 8$$

$$y = 11$$

$$\boxed{(-3, 11)}$$



$$\begin{array}{r} 10. \quad -3x + 2y = 10 \\ 2(-2x - y = -5) \end{array}$$

$$-3x + 2y = 10$$

$$-4x - 2y = -10$$

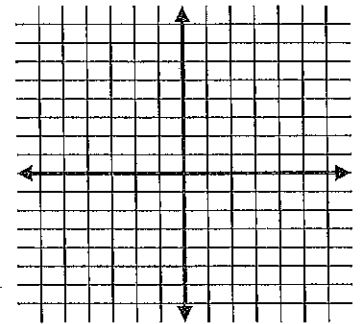
$$-7x = 0$$

$$x = 0$$

$$2y = 10$$

$$y = 5$$

$$\boxed{(0, 5)}$$

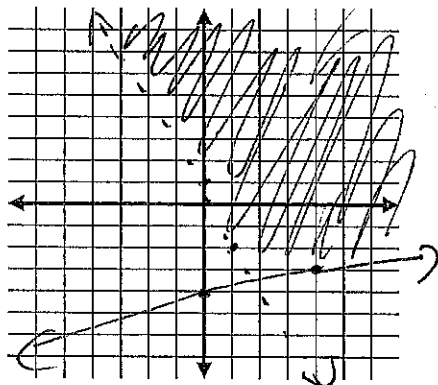


Unit 6 Study Guide – Day 2

Name: _____

Solve each system by graphing.

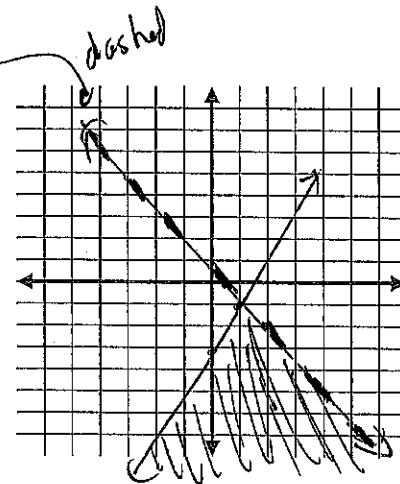
11. $y > -3x + 1$
 $x - 4y \leq 16$



$-4y \leq -x + 16$

$y \geq \frac{1}{4}x - 4$

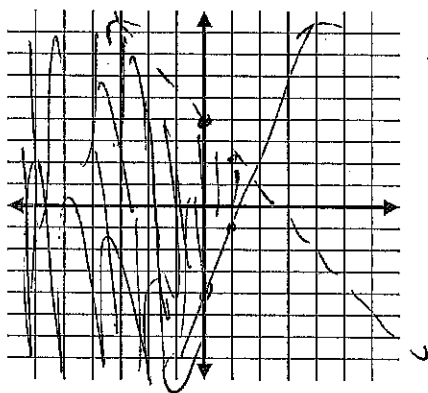
12. $2x - y \geq 3$
 $y < -x$



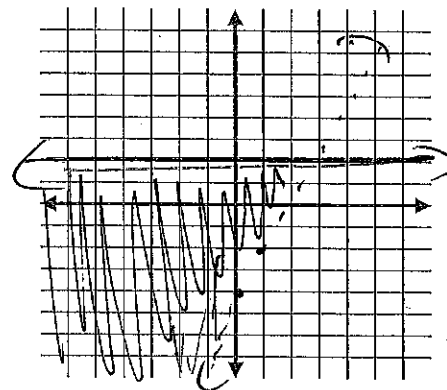
$-y \geq -2x + 3$

$y \leq 2x - 3$

13. $y < -2x + 4$
 $y \geq 3x - 4$



14. $y \leq 2$
 $2x - y < 4$



$-y < -2x + 4$

$y > 2x - 4$

Applications of Systems

Name _____

Write a system of equations to represent each situation below. Then, solve the system.

1. You want to hire a clown for your cousin's birthday party. Bozo charges an initial fee of \$50 plus \$30 per hour. Sprinkles charges an initial fee of \$100 plus \$10 per hour.

Bozo: $y = 50 + 30x$
 Sprinkles: $y = 100 + 10x$

using substitution...

$$50 + 30x = 100 + 10x$$

$$20x = 50$$

$$x = 2.5 \quad y = 125$$

at 2.5 hours
the cost is \$125

You should hire Bozo if your party is shorter than 2.5 hours & sprinkles if the party is more than 2.5 hours

2. Your family wants to rent a truck to help haul mulch. Menards charges an initial fee of \$20 plus \$1 per mile. UHaul charges an initial fee of \$40 plus \$0.50 per mile.

Menards: $y = 20 + 1x$

UHaul: $y = 40 + 0.50x$

$$20 + 1x = 40 + 0.50x$$

$$0.50x = 20$$

$$x = 40$$

$$y = 60$$

at 40 miles
the cost is \$60

you should use Menards if you are driving less than 40 miles & UHaul if you are driving more than 40 miles

3. The speech team is selling Wildcat pens and pencils as a fundraiser. They have to stay within a budget of \$100 to purchase the custom pens and pencils. They have to order at least 50 items. Each pencil costs \$0.25 and each pen costs \$0.50.

Write a system of inequalities to represent the situation, include any related constraints.

$x = \# \text{ of pens}$ $y = \# \text{ of pencils}$

$$0.25x + 0.50y \leq 100$$

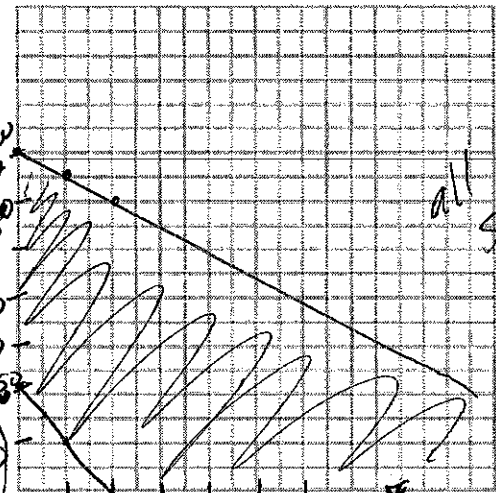
$$x + y \geq 50$$

$$x \geq 0, y \geq 0$$

$$0.50y \leq -0.25x + 100$$

$$y \leq -0.5x + 200$$

$$y \geq -x + 50$$



all solutions are in here

pens: 50