Name: _____

**COMMON CORE ALGEBRA I: UNIT #5** Study Guide

**PART I QUESTIONS: Show all of your work.**

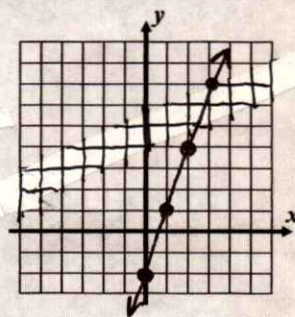1. Which of the following is the X-coordinate of the solution to the system shown below?

$$2x + 3y = 18$$
$$4x - 3y = 12$$

$$x = \underline{\phantom{---}}$$

2. The line $y = 3x - 2$ is graphed. **Graph the other line y = -x + 6** Which of the following would be the y-coordinate of the solution when both lines are graphed?



$$y = \underline{\phantom{---}}$$

3. Which of the following equations would have a solution that is the same as the solution to the system?

Solution

$$5. x - 3y = -8$$
$$5(\phantom{i}) - 3(\phantom{i}) = -8$$

$$(\underline{\phantom{-}}, \underline{\phantom{-}})$$

$$(x, y)$$

Substitute

$$4x + 7y = 38 \qquad x = 6$$

Circle:

**True OR False**

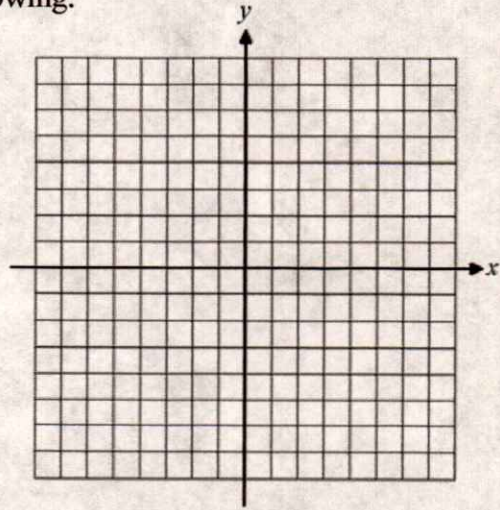4. Is $(4, 8)$ a solution to the system of equations?   $y = 5x - 12$   $y = -3x + 20$

5. The quadratic functions $f(x) = -x^2 + 8$ and $g(x) = \frac{1}{3}x - 2$ are shown. The positive solution to $f(x) = g(x)$ is which of the following.

Write a solution.

$(\underline{\quad}, \underline{\quad})$

↗ ↑

x value   y value

6. Which of the following points is a solution to the system of inequalities shown graphed below?

Write a solution
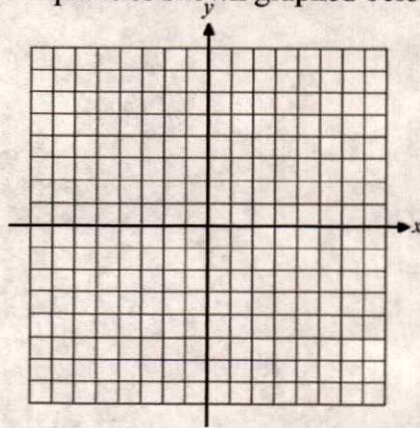
$y < \frac{-1}{2}x - 2$

$(\underline{\quad}, \underline{\quad})$

$y \geq -3x + 8$

Is this point in the double shaded?

_____

7. Which of the following is the value of $y$ that solves the system of equations shown below?

$5x + 6y = 51$   $y = 2x$

8. At what point do the lines $y = 2x - 5$ and $y = -2x + 3$ intersect? Show Mr. V the calculator.
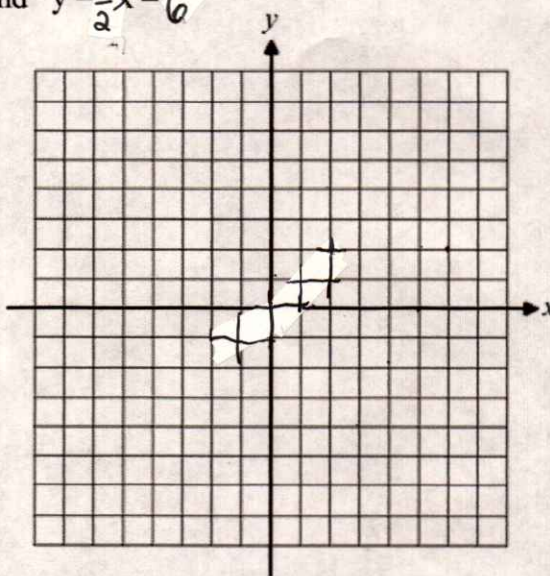
$-30-$

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**PART II QUESTIONS: Show all of your work.**

9. Find the value of $x$ that solves the system shown below. Show the work that leads to your answer.

$$y = 3x \quad \text{and} \quad 2x + y = -30$$

10. Graph the system of equations. $y = \frac{-2}{3}x + 1$ and $y = \frac{1}{2}x - 6$



11. What is the solution to #10?

intersection of the Lines $\left( \underline{\hspace{1cm}}, \underline{\hspace{1cm}} \right)$

**PART III QUESTIONS: Show all of your work.**

12. Solve the following system of equations algebraically. for the solution.

$\left( \underline{\hspace{1cm}}, \underline{\hspace{1cm}} \right)$

$$5x + 2y = 20$$
$$-2y - x = 4$$

13. Sketch the graph to the system of inequalities shown below. Explain how to shade.

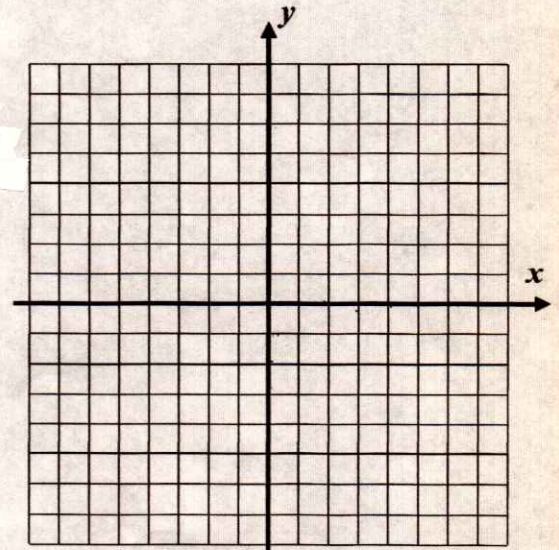$$y > 4x - 8 \quad \text{and} \quad y \le \frac{-2}{3}x + 6$$

dotted
OR
Solid

Shade Above
OR
Shade below

| X | Y |
|---|---|
| 0 | 2 |
|   | 4 |

dotted
OR
Solid

Shade Above
OR
Shade below

| X | Y |
|---|---|
| 0 | 3 |
|   | 6 |

Circle

14. Graph the point $(-5, 1)$ Is it a solution to the system? **Yes** OR **No**

Is it in the **double shaded?** _____

15. The Poughkeepsie Drama Club is selling tickets to an upcoming play. They can sell **500** tickets. The adult tickets sell for **$10** each and student tickets cost **free** They would like to raise $ **3,000** If $x$ represents the number of adult tickets and $y$ represents the number of student tickets, answer the following.
Write a system of equations that models this situation.

___ + ___ = ___

Number of adult tickets | number of Student tickets | number of All tickets

___ + ___ = ___

cost of 1 Adult ticket | number of Adult tickets | Cost of 1 Student ticket | number of Student tickets | Cost of All tickets

16. A party is thrown where **20** tables are used. Each table either sits **8** people or **10** people. A total of **170** people can be sat at the tables. If **E** represent the number of **8** person tables and **T** represents the number of **10** person tables, write a system of equations that models this situation.

___ + ___ = ___

Number of Eight person Tables | Number of Ten person Tables | Total number of tables

___ + ___ = ___

number of Seats per one eight person Table | number of Seats Eight person Tables | number of Seats Ten per one person Table | number of Ten person Tables | Total seats in the room