

Name: Key

Class: _____

M8-U5: Lesson #9 - Systems of Equations Review

Total: 25 pts (Double)

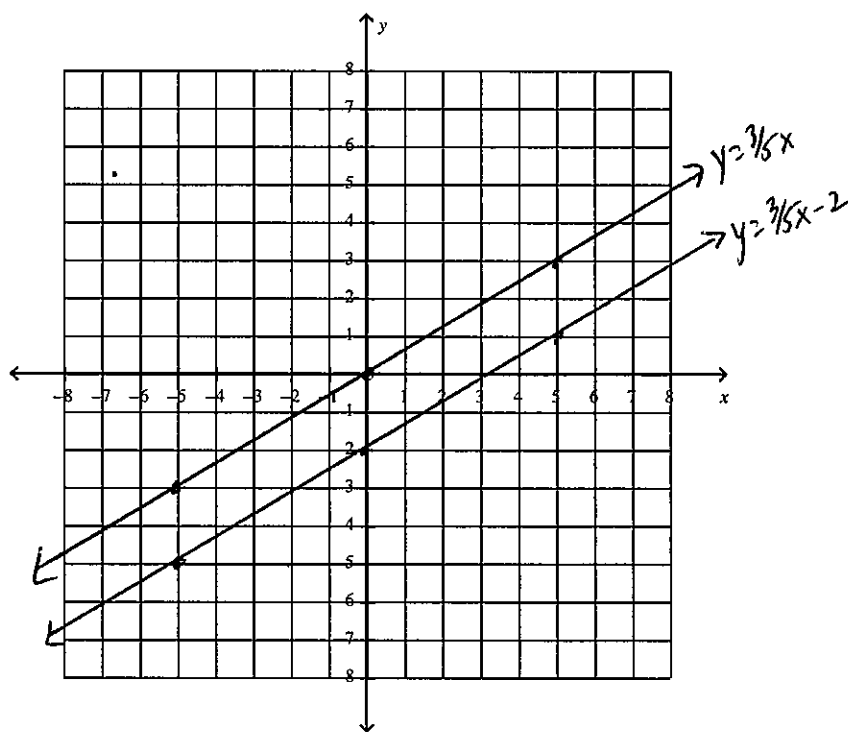
What is the **solution** to the following system of linear equations?
If there is *no solution* or *infinitely many*, explain why.

(3pts)

1.

$$\begin{cases} y = \frac{3}{5}x \\ y = \frac{3}{5}x - 2 \end{cases}$$

Same slope
- No solution
because
the lines
are parallel

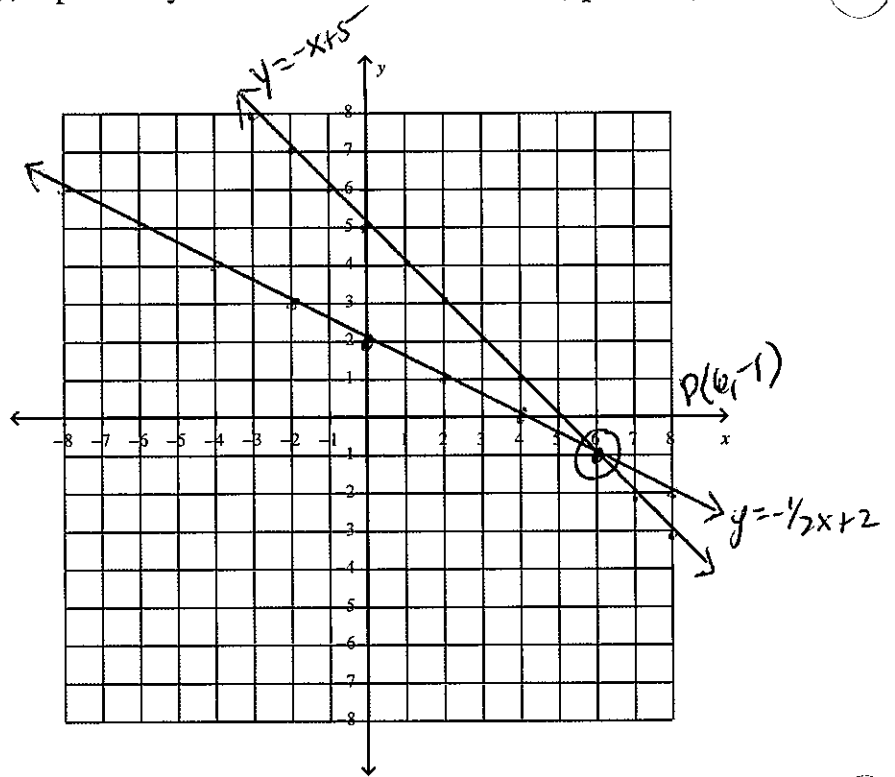


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(3pts each)

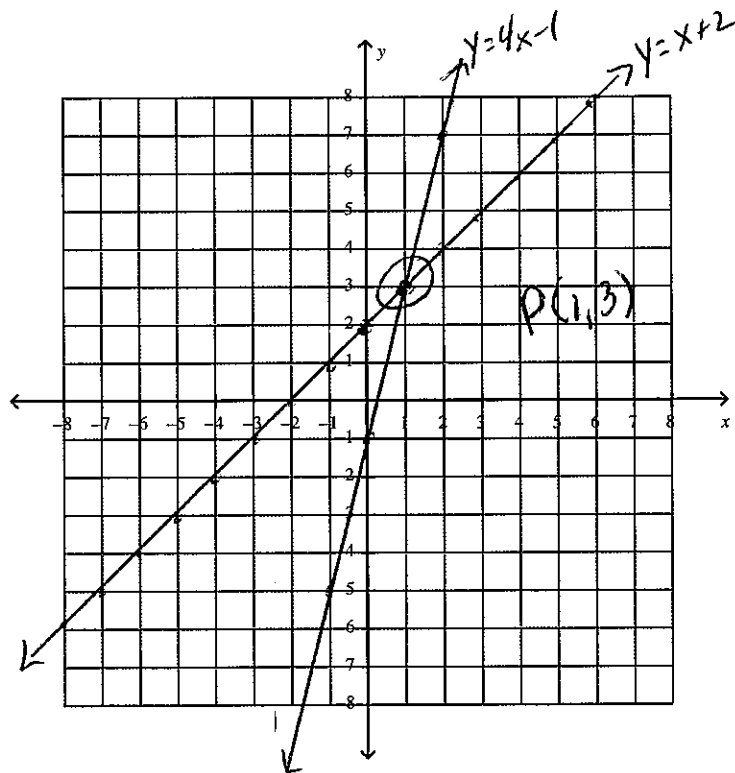
2.

$$\begin{cases} y = -\frac{1}{2}x + 2 \\ y = -x + 5 \end{cases}$$



3.

$$\begin{cases} -x + y = 2 \rightarrow y = x + 2 \\ 4x - y = 1 \rightarrow y = 4x - 1 \end{cases}$$



What is the solution to the following system of linear equations?

(3pts each)

If there is *no solution* or *infinitely many*, explain why.

Show all work and check only #4. Only an algebraic solution will be accepted

4.
$$\begin{cases} y = 4x + 10 \\ y = 3x + 9 \end{cases}$$

$$\begin{array}{r} 4x + 10 = 3x + 9 \\ -3x \quad -10 \quad -3x \quad -10 \\ \hline x = -1 \end{array}$$

$$\begin{aligned} y &= 4(-1) + 10 \\ y &= -4 + 10 \\ y &= 6 \end{aligned}$$

$$\begin{aligned} y &= 3(-1) + 9 \\ y &= -3 + 9 \\ y &= 6 \checkmark \end{aligned}$$

$$\boxed{P(-1, 6)}$$

5.
$$\begin{cases} 2x + 5y = -1 \\ x + 2y = 0 \end{cases}$$

$$\begin{array}{r} 2x + 5y = -1 \\ -2(x + 2y) = 0 \\ \hline 2x + 5y = -1 \\ -2x - 4y = 0 \\ \hline y = -1 \end{array}$$

$$\boxed{P(2, -1)}$$

$$x + 2(-1) = 0$$

$$\begin{array}{r} x - 2 = 0 \\ +2 \quad +2 \\ \hline x = 2 \end{array}$$

$$\begin{aligned} \checkmark \\ 2(2) + 5(-1) &= -1 \\ 4 - 5 &= -1 \\ -1 &= -1 \checkmark \end{aligned}$$

6.
$$\begin{cases} -6x - 4y = 10 \\ -6x - 4y = -20 \end{cases}$$

No solution, not possible for $-6x - 4y$ to be equal to two different answers @ the same time.

7. Suppose you bought supplies for a party. Three rolls of streamers and fifteen party hats cost \$30. Later, you bought two rolls of streamers and four party hats for \$11. Write and solve a system of equations to determine the cost of streamers and party hats, find their costs. (4pts)

let: $s = \text{cost of streamers} = \2.50
 $h = \text{cost of hats} = \1.50

$$\begin{array}{r} 2(3s + 15h = \$30) \\ -3(2s + 4h = \$11) \end{array} \Rightarrow \begin{array}{r} 6s + 30h = 60 \\ -6s - 12h = -33 \\ \hline 18h = 27 \\ \frac{18}{18} \quad \frac{27}{18} \\ \hline h = \$1.50 \end{array}$$

$$\begin{array}{r} 3s + 15(1.50) = 30 \\ 3s + 22.50 = 30 \\ -22.50 \quad -22.50 \\ \hline 3s = 7.50 \\ \frac{3}{3} \quad \frac{7.50}{3} \\ \hline s = \$2.50 \end{array}$$

8. Sam needs to rent a car for a one-week trip to Oregon. He is considering two companies:

A+ Auto Rental: \$175 plus \$0.10 per mile

Zippy Auto Rental: \$220 plus \$0.05 per mile.

Write and solve a system of equations to determine when the rental costs are the same for both companies. (3pts)

let: $y = \text{cost} = \$265$
 $m = \text{# of miles} = 900$

$$\begin{cases} y = .10m + 175 \\ y = .05m + 220 \end{cases}$$

$$\begin{array}{r} .10m + 175 = .05m + 220 \\ -.05m \quad -175 \quad -.05m \quad -175 \\ \hline .05m = 45 \\ \frac{.05}{.05} \quad \frac{45}{.05} \\ \hline m = 900 \end{array}$$

$$y = .10(900) + 175 = \$265$$

$$y = .05(900) + 220 = \$265$$