

Name: Answer Key

Date: \_\_\_\_\_

## Lesson 5.4 Solving Systems of Linear Equations by Graphing

**For this practice, unless otherwise stated, use 1 grid square to represent 1 unit on both axes for the interval -8 to 8. Solve each system of linear equations using the graphical method.**

1. a) Complete the tables of values for the system of linear equations.

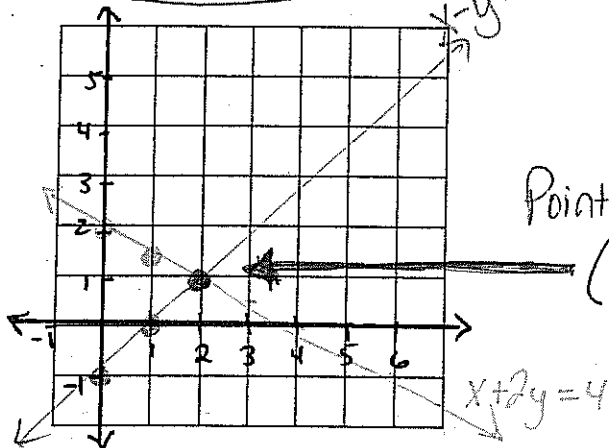
$x - y = 1$

x	0	1	2
y	-1	0	1

$x + 2y = 4$

x	0	1	2
y	2	1.5	1

- b) Graph  $x - y = 1$  and  $x + 2y = 4$  on the same coordinate plane. Find the point of intersection.



- c) Use the graph in b) to solve the system of linear equations.

$$x = 2 \quad y = 1$$

$$\begin{aligned} x + 2y &= 4 \\ (0) + 2y &= 4 \\ \frac{2y}{2} &= \frac{4}{2} \end{aligned}$$

$$y = 2$$

$$x + 2y = 4$$

$$\begin{aligned} (1) + 2y &= 4 \\ 2y &= 3 \end{aligned}$$

$$\frac{2y}{2} = \frac{3}{2}$$

$$y = 1.5$$

$$x + 2y = 4$$

$$\begin{aligned} (2) + 2y &= 4 \\ -2 & \quad -2 \end{aligned}$$

$$\frac{2y}{2} = \frac{2}{2}$$

$$y = 1$$

$$\begin{aligned} x - y &= 1 \\ (0) - y &= 1 \\ -y &= 1 \\ -x - 1 & \quad -1 \\ y &= -1 \end{aligned}$$

$$\begin{aligned} x - y &= 1 \\ (1) - y &= 1 \\ -y &= 0 \\ -1 - 1 & \quad -1 \\ y &= 0 \end{aligned}$$

$$\begin{aligned} x - y &= 1 \\ (2) - y &= 1 \\ -y &= -1 \\ -1 - 1 & \quad -1 \\ y &= 1 \end{aligned}$$

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For this practice, unless otherwise stated, use 1 grid square to represent 1 unit on both axes for the interval -8 to 8. Solve each system of linear equations using the graphical method.

2. a) Graph  $3x - 5y = 4$  and  $x + 2y = 5$  on the same coordinate plane. Find the point of intersection of the graphs. *Point of intersection (3, 1)*

$$3(3) - 5y = 4$$

$$9 - 5y = 4$$

$$-5y = -5$$

$$\frac{-5y}{-5} = \frac{-5}{-5}$$

$$y = 1$$

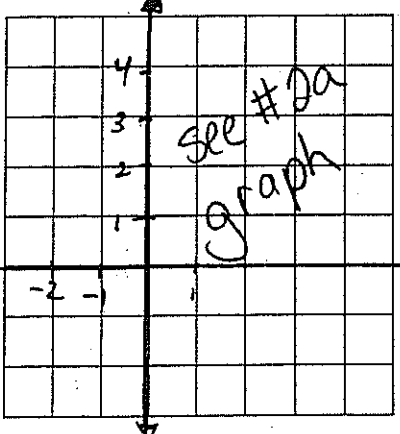
$$3(8) - 5y = 4$$

$$24 - 5y = 4$$

$$-5y = -20$$

$$\frac{-5y}{-5} = \frac{-20}{-5}$$

$$y = 4$$



x	-2	3	8
y	-2	1	4

$$3(-2) - 5y = 4$$

$$-6 - 5y = 4$$

$$-5y = 10$$

$$\frac{-5y}{-5} = \frac{10}{-5}$$

$$y = -2$$

$$x + 2y = 5$$

$$-x + 2y = 5$$

$$+1$$

$$\frac{2y}{2} = \frac{6}{2}$$

$$y = 3$$

$$x + 2y = 5$$

x	-1	1	5
y	3	2	0

$$1 + 2y = 5$$

$$-1$$

$$\frac{2y}{2} = \frac{4}{2}$$

$$y = 2$$

$$5 + 2y = 5$$

$$-5$$

$$\frac{2y}{2} = \frac{0}{2}$$

$$y = 0$$

Use the graph in a) to solve the system of linear equations.

$$x = 3, y = 1$$

3. a) Graph  $x - 3y = 5$  and  $3x + 2y = 4$  on the same coordinate plane. Find the point of intersection of the graphs. *Point of intersection (2, -1)*

$$x - 3y = 5$$

$$(8) - 3y = 5$$

$$-2 - 3y = -2$$

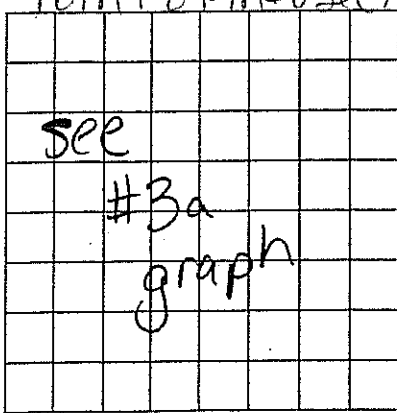
$$\frac{-3y}{-3} = \frac{3}{-3}$$

$$y = -1$$

$$5 - 3y = 5$$

$$\frac{-3y}{-3} = \frac{0}{-3}$$

$$y = 0$$



x	-1	2	5
y	-2	-1	0

$$x - 3y = 5$$

$$(-1) - 3y = 5$$

$$+1$$

$$\frac{-3y}{-3} = \frac{6}{-3}$$

$$y = -2$$

x	0	2	4
y	2	-1	-4

$$3x + 2y = 4$$

$$3(0) + 2y = 4$$

$$\frac{2y}{2} = \frac{4}{2}$$

$$y = 2$$

$$3x + 2y = 4$$

$$3(2) + 2y = 4$$

$$6 + 2y = 4$$

$$-6$$

$$\frac{2y}{2} = \frac{-2}{2}$$

$$y = -1$$

Use the graph in a) to solve the system of linear equations.

$$x = 2, y = -1$$

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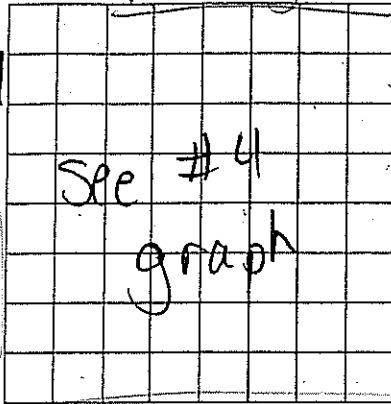
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Solve each system of equations using the graphical method.

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

Point intersection (5, 1)

$x = 5$   $y = 1$



See #4 graph

$x = 5y$
0   3   5
0   6   1

$y = x - 4$
0   3   6
-4   -1   2

$x = 5y$   
 $0 = 5y$   
 $0 = y$

$y = x - 4$   
 $y = 0 - 4$   
 $y = -4$

$x = 5y$   
 $3 = 5y$   
 $\frac{3}{5} = y$

$y = x - 4$   
 $y = 3 - 4$   
 $y = -1$

$\frac{3}{5}$  or  $.6$

$x = 5y$   
 $5 = 5y$   
 $1 = y$

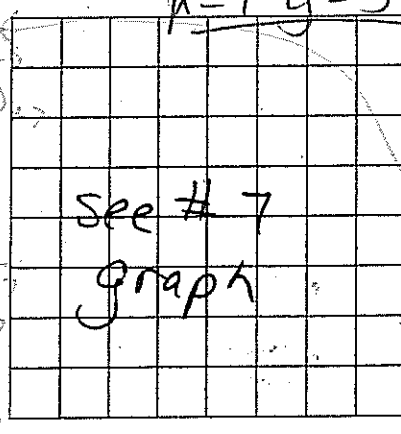
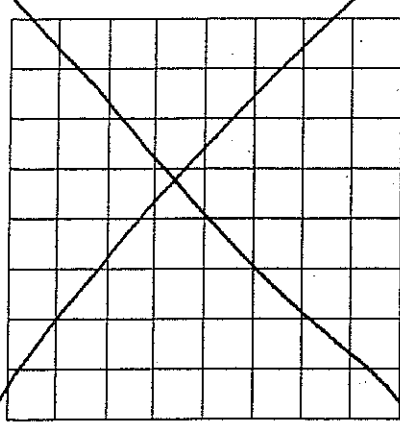
$y = x - 4$   
 $y = 6 - 4$   
 $y = 2$

6.  $x = 4$   
 $y = 3x - 5$

7.  $2y = -x + 7$   
 $y = 2x + 1$

Point intersection (1, 3)

$x = 1$   $y = 3$



See #7 graph

$y = 2x + 1$
x   0   1   2
y   1   3   5

$2y = -x + 7$
x   -1   1   3
y   4   3   2

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

$y = 2x + 1$   
 $y = 2(1) + 1$   
 $y = 2 + 1$   
 $y = 3$

$y = 2x + 1$   
 $y = 2(2) + 1$   
 $y = 4 + 1$   
 $y = 5$

$2y = -x + 7$   
 $2y = -(1) + 7$   
 $2y = 1 + 7$   
 $2y = 8$   
 $\frac{8}{2} = y$   
 $y = 4$

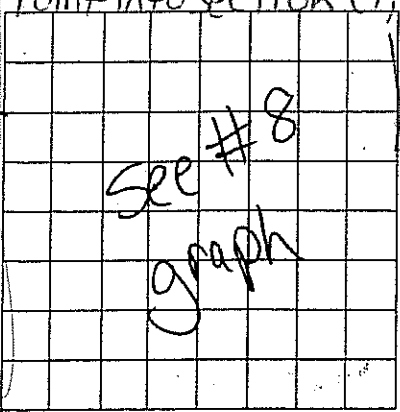
$2y = -x + 7$   
 $2y = -1 + 7$   
 $2y = 6$   
 $\frac{6}{2} = y$   
 $y = 3$

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

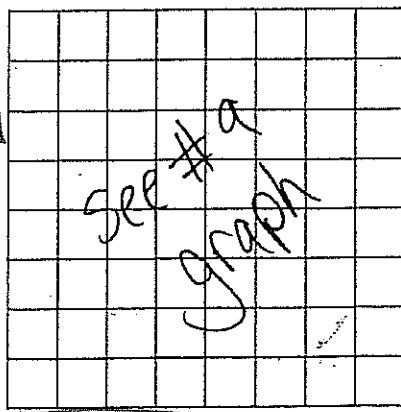
9.  $5y - x = 15$   
 $x - 3y = -9$

Point intersection (1, -1)

$x = 1$   
 $y = -1$



See #8 graph



See #9 graph

$x + 2y = -1$
-1   0   1
0   -5   -1

$4x + y = 3$
0   .5   1
3   1   -1

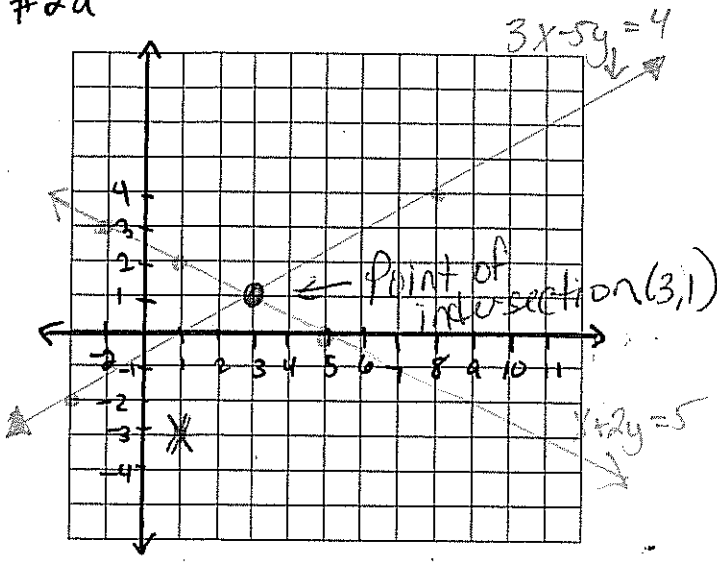
$x - 3y = -9$
x   -3   0   3
y   2   3   4

$5y - x = 15$
x   -3   0   5
y   2.4   3   4

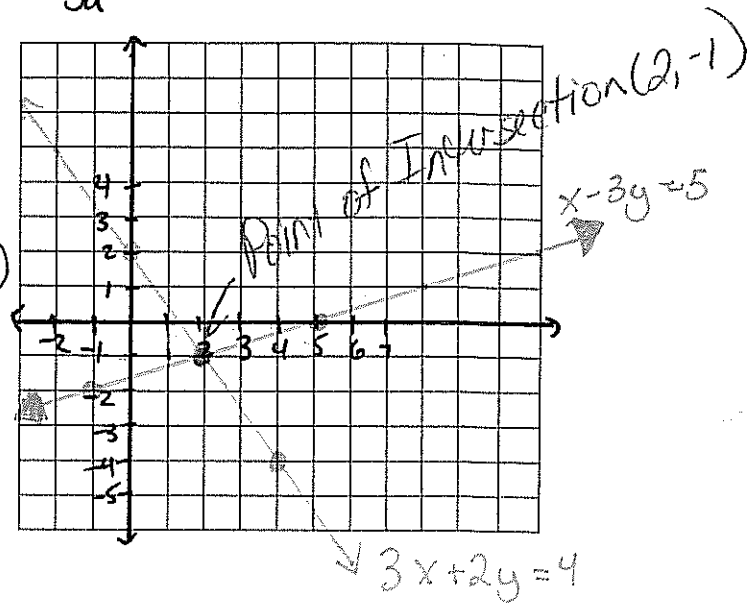
Point of Intersection

$x = 3$   
 $y = 3$

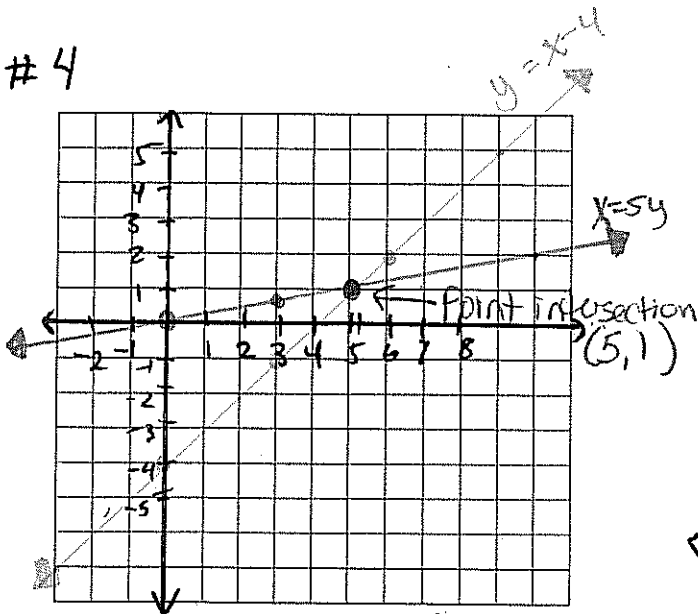
#2a



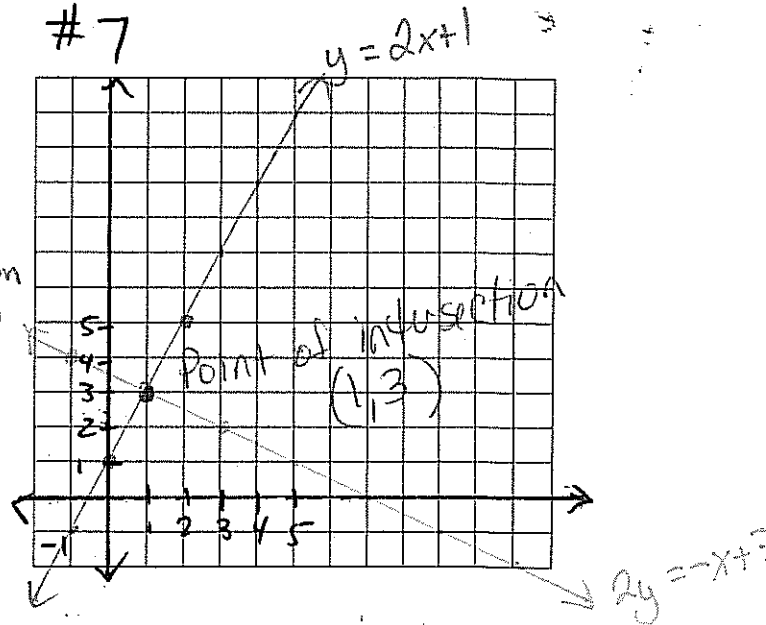
#3a



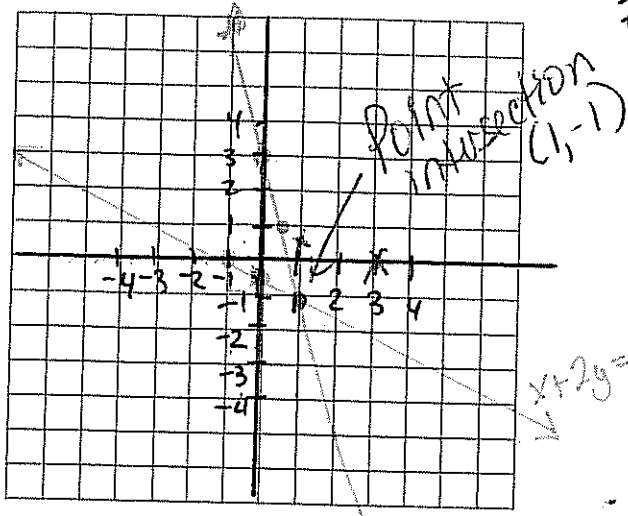
#4



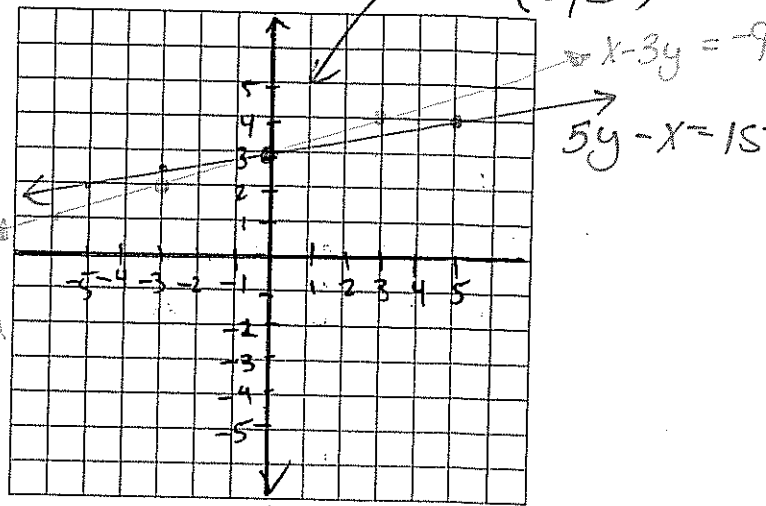
#7



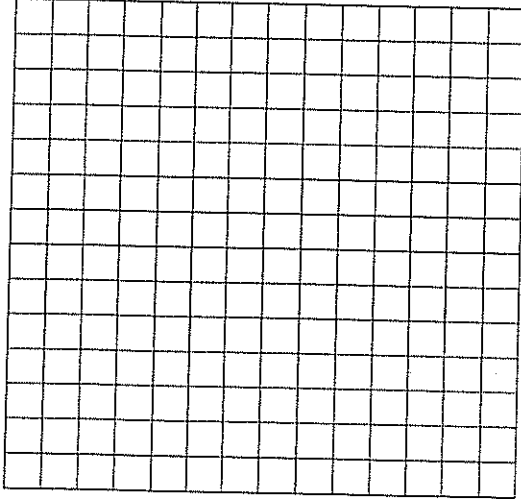
#8



#9



Extra



Extra

