

Graphing Linear Equations Part 5

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Mathematics 9 Linear Relations Graphing Linear Relations Part 5

A. Finding the Solution Set for Equation Pairs

Once you have learned to graph a linear equation then we can begin to identify other important parts of the equations. Sometimes you will be required to draw graphs for two linear equations on the same graph. If we can find the coordinates of the point where the two lines intersect then we can identify the **solution set** of the equations.

Examples

Graph the following pair of linear equations and find the solution set.

1) $x + y = 5$
 $y = x - 7$

Handwritten work for solving the system:

$$\begin{array}{l} x + y = 5 \\ (2) + y = 5 \\ \underline{-2} \quad \underline{+} \quad \underline{-2} \\ y = 3 \end{array}$$

$$\begin{array}{l} x + y = 5 \\ (5) + y = 5 \\ \underline{-5} \quad \underline{+} \quad \underline{-5} \\ y = 0 \end{array}$$

$$\begin{array}{l} x + y = 5 \\ (0) + y = 5 \\ \underline{-0} \quad \underline{+} \quad \underline{-0} \\ y = 5 \end{array}$$

$$\begin{array}{l} y = x - 7 \\ y = (0) - 7 \\ y = -7 \end{array}$$

$$\begin{array}{l} y = x - 7 \\ y = (4) - 7 \\ y = -3 \end{array}$$

$$\begin{array}{l} y = x - 7 \\ y = (-1) - 7 \\ y = -8 \end{array}$$

$x + y = 5$

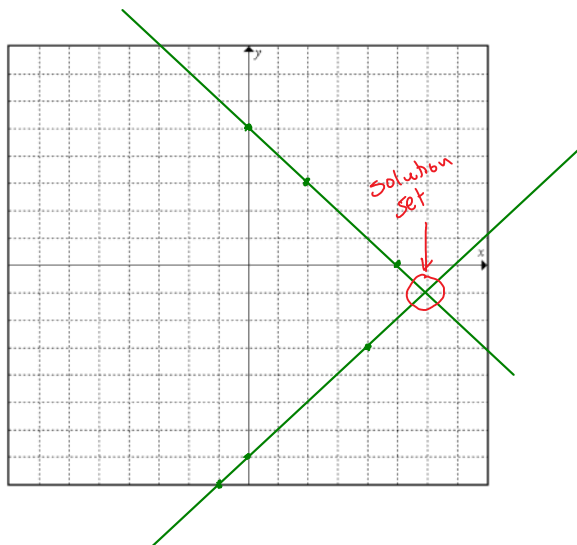
x	y
2	3
5	0
0	5

$y = x - 7$

x	y
0	-7
4	-3
-1	-8

To Solve

- Create a table of values for each of the equations.
- Carefully graph both on the same graph.
- Find the coordinates of the point where the two lines intersect and record the coordinates of the solution set.



Solution Set (6 , -1)

2) $3x + y = 11$
 $x - 2y = 6$

$3x + y = 11$

x	y
1	8
5	-4
3	2

$x - 2y = 6$

x	y
2	-2
0	-3
-2	-4

$3x + y = 11$
 $3(1) + y = 11$
 $3 + y = 11$
 $-3 \quad -3$
 $y = 8 \checkmark$

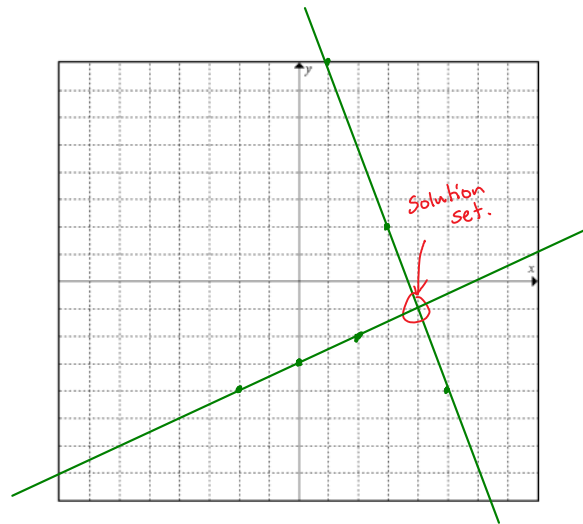
$x - 2y = 6$
 $(2) - 2y = 6$
 $2 - 2y = 6$
 $-6 \quad -2$
 $-2y = 4$
 $\frac{-2y}{-2} = \frac{4}{-2}$
 $y = -2$

$3x + y = 11$
 $3(5) + y = 11$
 $15 + y = 11$
 $-15 \quad -15$
 $y = -4 \checkmark$

$x - 2y = 6$
 $(0) - 2y = 6$
 $-2y = 6$
 $\frac{-2y}{-2} = \frac{6}{-2}$
 $y = -3$

$3x + y = 11$
 $3(3) + y = 11$
 $9 + y = 11$
 $-9 \quad -9$
 $y = 2 \checkmark$

$x - 2y = 6$
 $(-2) - 2y = 6$
 $-2 - 2y = 6$
 $+2 \quad +2$
 $-2y = 8$
 $\frac{-2y}{-2} = \frac{8}{-2}$
 $y = -4$



Solution Set (4 , -1)

Name: _____

Graphing Linear Equations Part 5 Assignment

Graph the following pair of linear equations and find the solution set.

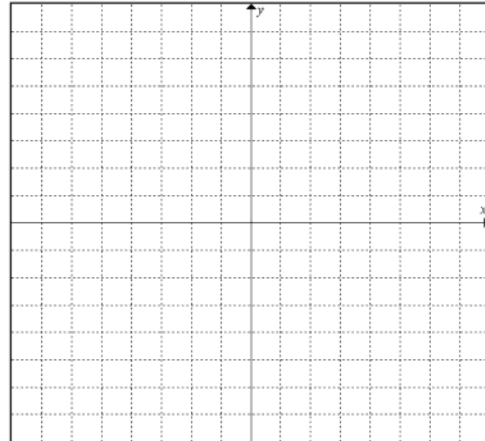
1) $x + y = 10$
 $x - y = 4$

$x + y = 10$

x	y

$x - y = 4$

x	y



Solution Set (,)

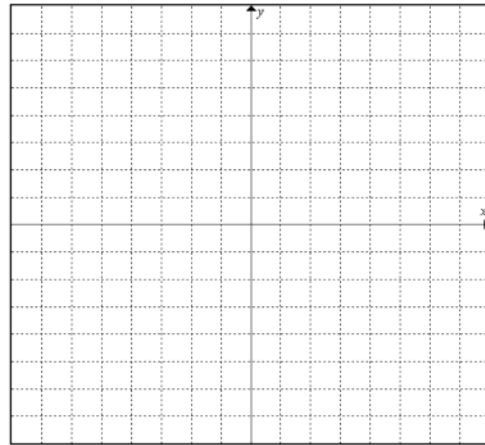
2) $3x + 2y = 18$
 $x - y = 1$

$3x + 2y = 18$

x	y

$x - y = 1$

x	y



Solution Set (,)

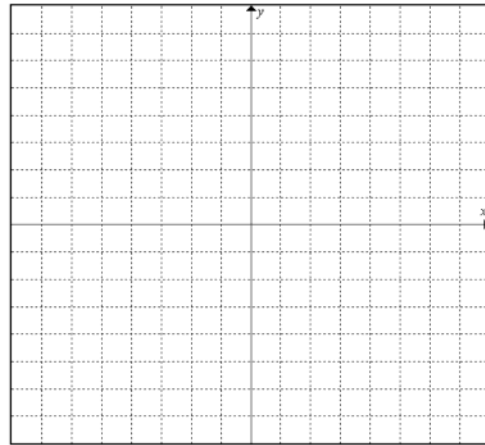
3) $2x + y = 5$
 $x - 3y = -8$

$2x + y = 5$

x	y

$x - 3y = -8$

x	y



Solution Set (,)

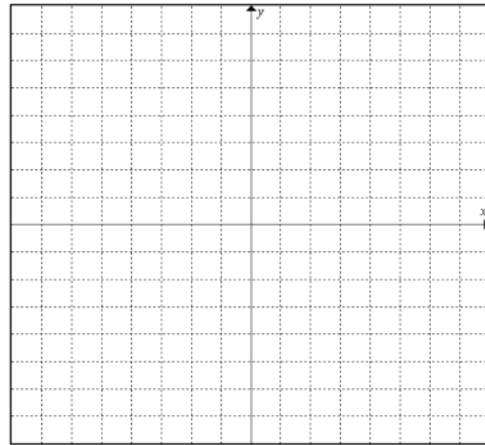
4) $6x + y = -11$
 $x - 3y = -5$

$6x + y = -11$

$x - 3y = -5$

x	y

x	y



Solution Set (,)

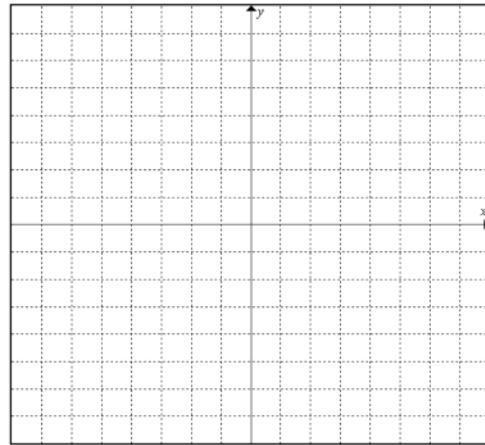
5) $2x + 3y = 18$
 $2x - 3y = -6$

$2x + 3y = 18$

$2x - 3y = -6$

x	y

x	y



Solution Set (,)

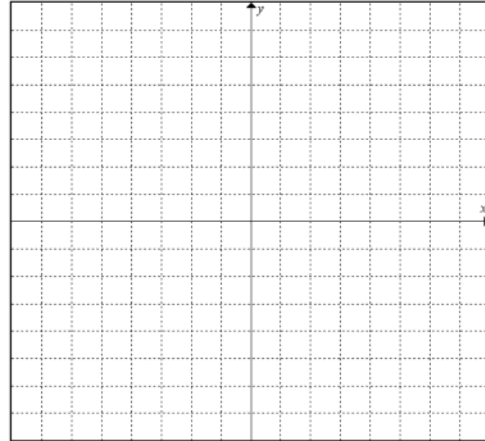
6) $5x - y = 0$
 $x + y = -6$

$5x - y = 0$

x	y

$x + y = -6$

x	y



Solution Set (,)

Answers

1) (7, 3)

2) (4, 3)

3) (1, 3)

4) (-2, 1)

5) (3, 4)

6) (-1, -5)