WS 31.1 – Solving Systems of Equations by Graphing
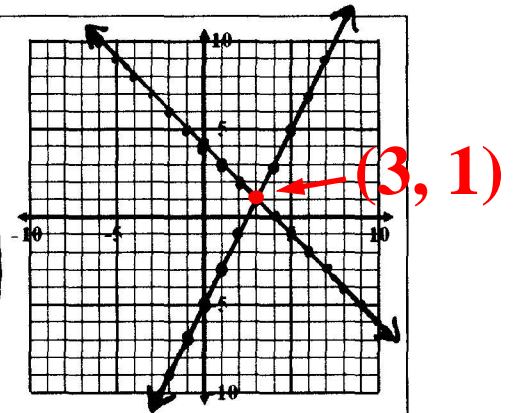
Solve each system of equations by graphing.

1. $\begin{cases} x + y = 4 \\ 2x - y = 5 \end{cases}$ $\longrightarrow$ $y = -1x + 4$
$\longrightarrow$ $y = 2x - 5$

$x + y = 4$	$2x - y = 5$
$\underline{y = -1x + 4}$	$-y = -2x + 5$
	$\underline{y = 2x - 5}$

(3,1) is the solution to the system.

(3, 1)

2. $\begin{cases} x + y = 0 \\ 3x - 2y = 10 \end{cases}$ $\Longrightarrow$ $y = -1x$
$\Longrightarrow$ $y = \frac{3}{2}x - 5$

$x + y = 0$	$3x - 2y = 10$
$\underline{y = -1x}$	$-2y = -3x + 10$
	$\underline{y = \frac{3}{2}x - 5}$

(2,-2) is the solution to the system.

(2, -2)

3. $\begin{cases} 2x + y = 7 \\ x + y = 3 \end{cases}$ $\Longrightarrow$ $y = -2x + 7$
$\Longrightarrow$ $y = -1x + 3$

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

(4,-1) is the solution to the system.

(4, -1)
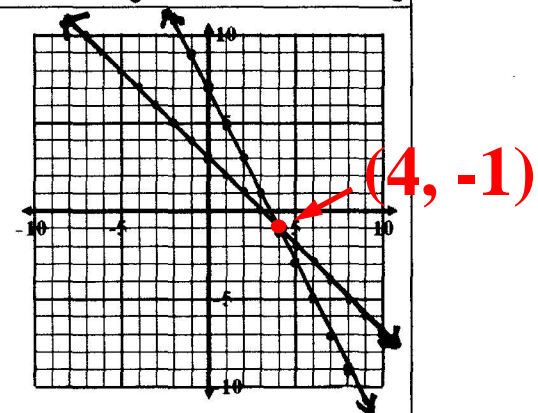
4. $\begin{cases} x + y = 1 \\ 2x - 2y = 6 \end{cases}$ $\longrightarrow$ $y = -1x + 1$
$\Longrightarrow$ $y = 1x - 3$

$x + y = 1$	$2x - 2y = 6$
$\underline{y = -1x + 1}$	$-2y = -2x + 6$
	$\underline{y = 1x - 3}$
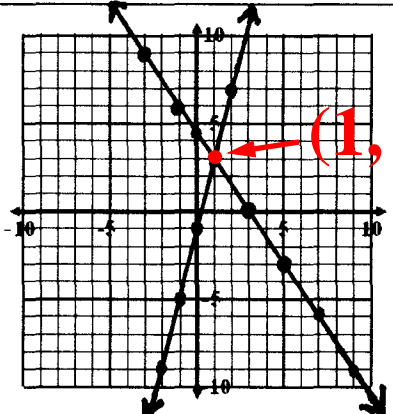
(2,-1) is the solution to the system.

(2, -1)
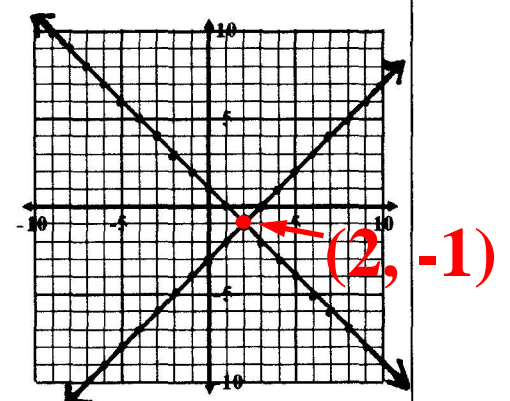
5. $\begin{cases} 3x+2y=9 \implies y=-\frac{3}{2}x+\frac{9}{2} \\ 4x-y=1 \implies y=4x-1 \end{cases}$

$3x+2y=9$

$2y=-3x+9$

$y=-\frac{3}{2}x+\frac{9}{2}$

$4x-y=1$

$-y=-4x+1$

$y=4x-1$

(1,3) is the solution to the system.

 (1, 3)

Use Algebra to determine whether the point **(1, 4)** is a solution to each system.

6. $\begin{cases} y=x+3 \\ y=2x-2 \end{cases}$

$y=x+3 \implies 4\overset{?}{=}1+3$
works here $4=4$

$y=2x-2 \implies 4\overset{?}{=}2(1)-2$
not here $4\neq 0$

(1,4) is **not** a solution to this system.

7. $\begin{cases} y=3x+1 \\ y=-x+5 \end{cases}$

$y=3x+1 \implies 4\overset{?}{=}3(1)+1$
works here $4=4$

$y=-x+5 \implies 4\overset{?}{=}-(1)+5$
works here $4=4$

(1,4) **is** a solution to this system.

8. $\begin{cases} y=5x-1 \\ y=-2x+6 \end{cases}$

$y=5x-1 \implies 4\overset{?}{=}5(1)-1$
works here $4=4$

$y=-2x+6 \implies 4\overset{?}{=}-2(1)+6$
works here $4=4$

(1,4) **is** a solution to this system.

Use Algebra to determine whether the point **(-2, 6)** is a solution to each system.

9. $\begin{cases} y-x=8 \\ 4x-y=2 \end{cases}$

$y-x=8 \implies 6-(-2)\overset{?}{=}8$
works here $8=8$

$4x-y=2 \implies 4(-2)-6\overset{?}{=}8$
not here $-14\neq 8$

(-2,6) is **not** a solution to this system.

10. $\begin{cases} x+y=4 \\ x-y=8 \end{cases}$

$x+y=4 \implies (-2)+6\overset{?}{=}4$
works here $4=4$

$x-y=8 \implies (-2)-6\overset{?}{=}8$
not here $-8\neq 8$

(-2,6) is **not** a solution to this system.

11. $\begin{cases} 4x+y=-2 \\ y=-x+4 \end{cases}$

$4x+y=-2 \implies 4(-2)+6\overset{?}{=}-2$
works here $-2=2$

$y=-x+4 \implies 6\overset{?}{=}-(-2)+4$
works here $6=6$

(-2,6) **is** a solution to this system.