Warm Up

Rewrite in Slope-Intercept form (y =)

$4x + 6y + 12 = 0$

$-12 \quad -12$

$4x + 6y = -12$

$-4x \quad -4x$

$6y = -12 - 4x$

$\frac{6y}{6} = \frac{-12}{6} - \frac{4x}{6}$

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

Write this equation so it is in "x = " form

$4x + 6y + 12 = 0$

$-12 \quad -12$

$4x + 6y = -12$

$-6y \quad -6y$

$\frac{4x}{4} = \frac{-6y}{4} - \frac{12}{4}$

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

Answers to Yesterday's Classwork

B.

1. $\begin{cases} y = 1.5x - 0.4 \\ y = 0.3x + 5 \end{cases}$

(4.5, 6.35)

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

(-1, 4)

3. $\begin{cases} 3x - y = 30 \\ x + y = 14 \end{cases}$

(11, 3)

4. $\begin{cases} x + 6y = 15 \\ -x + 4y = 5 \end{cases}$

(3, 2)

5. $\begin{cases} x - y = -5 \\ -2x + 2y = 10 \end{cases}$

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

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Equivalent Equations Method

$$\begin{cases} y = 6x + 4 \\ y = 4x - 2 \end{cases}$$

Because we are looking for a common solution, we can assume the x-values in the two equations are the same, and the y-values are the same.

If the y-values are the same ...

$$6x + 4 = 4x - 2$$

1. $\begin{cases} y = 1.5x - 0.4 \\ y = 0.3x + 5 \end{cases}$

$1.5x - 0.4 = 0.3x + 5$

$10\left[\frac{3}{2}x - \frac{2}{5} = \frac{3}{10}x + 5\right]$

$15x - 4 = 3x + 50$

$+4 \qquad +4$

$15x = 3x + 54$

$-3x \qquad -3x$

$\frac{12x}{12} = \frac{54}{12}$

$x = 4.5$

$y = 1.5x - 0.4$

$y = 1.5(4.5) - 0.4$

$y = 6.75 - 0.4$

$y = 6.35$

$(4.5, 6.35)$

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

$+y \quad +y$

$x = y-5$

$\Rightarrow x = 3-y$

$x = y-5$

$3-y = y-5$

$+y \quad +y$

$3 = 2y-5$

$+5 \quad +5$

$8 = 2y$

$\frac{8}{2} = \frac{2y}{2}$

$4 = y$

$x+y=3$

$x+4=3$

$-4 \quad -4$

$x=-1$

$(-1,4)$

* always use one of the original eqs.

5. $\begin{cases} x - y = -5 \\ -2x + 2y = 10 \end{cases}$

Isolate x

$x - y = -5$

$+y \quad +y$

$x = y - 5$

$-2x + 2y = 10$

$-2y \quad -2y$

$\frac{-2x}{-2} = \frac{-2y}{-2} + \frac{10}{-2}$

$x = y - 5$

equations are the same!

$y - 5 = y - 5$

$+5 \quad +5$

$y = y$

$y - 5 = y - 5$

$-y \quad -y$

$-5 = -5$

True statement

infinite # of solutions

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

$+y \quad +5$

$\rightarrow \begin{cases} x = y - 5 \\ x = y - 4 \end{cases}$

Same equations, just rearranged

$-2y \quad -2y$

$-2x = -2y + 8$

$\frac{-2x}{-2} = \frac{-2y}{-2} + \frac{8}{-2}$

$x = y - 4$

$y - 5 = y - 4$

$+5 \quad +5$

$y = y + 1$

$-y \quad -y$

$0 = 1$

False statement (no solutions)

Why are there no solutions?

$x = y - 5 \rightarrow y = x + 5$

$x = y - 4 \rightarrow y = x + 4$

Slopes the same
y int different
} PARALLEL LINES

Classwork

Page 33, #'s 3-8

Solve each system of equations.

3. $\begin{cases} y = 6x + 4 \\ y = 4x - 2 \end{cases}$

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

5. $\begin{cases} y = -2x - 9 \\ y = 12x + 19 \end{cases}$

6. $\begin{cases} y = -x + 16 \\ y = -x - 8 \end{cases}$

7. $\begin{cases} y = 17x - 6 \\ y = 12x + 44 \end{cases}$

8. $\begin{cases} y = -20x + 14 \\ y = -8x - 44 \end{cases}$

Homework

Finish Classwork