Warm Up

Find the x-intercept of:

$$y = \frac{3}{2}x + 4$$

Because x-int is value of x when y = 0

$$0 = \frac{3}{2}x + 4$$

$$-4 \quad -4$$

$$2\left[-4 = \frac{3}{2}x\right]$$

$$\frac{-8}{3} = \frac{3x}{3}$$

$$\frac{-8}{3} = x$$

$$\left(\frac{-8}{3}, 0\right)$$

$$y = \frac{3}{2}x + 4$$

$$-\frac{3}{2}x \quad -\frac{3}{2}x$$

$$2\left[-\frac{3}{2}x + y = 4\right]$$

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

$$-2y \quad -2y$$

$$\frac{-3x}{-3} = \frac{-2y}{-3} + \frac{8}{-3}$$

$$x = \frac{2}{3}y \boxed{-\frac{8}{3}}$$

Problem 2.3 Recap

Problem 2.3

A Use the methods of Pablo and Jasmine, and Samantha to solve each system.

1. $\begin{cases} -x + 4y = 2 \\ x + 2y = 5 \end{cases}$ $\left(\frac{8}{3}, \frac{7}{6}\right)$

2. $\begin{cases} 2x + 3y = 4 \\ 5x + 3y = -8 \end{cases}$ $(-4, 4)$

3. $\begin{cases} 2x - 3y = 4 \\ 5x - 3y = 7 \end{cases}$ $\left(1, -\frac{2}{3}\right)$

4. $\begin{cases} 3x + 2y = 10 \\ 4x - y = 6 \end{cases}$ $(2, 2)$

$2($

$3x + 2y = 10$

$8x - 2y = 12$

$11x = 22$

$\frac{11x}{11} = \frac{22}{11}$

$x = 2$

$3(2) + 2y = 10$

$6 + 2y = 10$

$-6 \quad -6$

$2y = 4$

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

$y = 2$

C 1. Is System B below equivalent to System A? Explain.

System A	System B
$\begin{cases} 3x+2y=10 \\ 4x-y=6 \end{cases}$	$\begin{cases} 3x+2y=10 \\ 8x-2y=12 \end{cases}$

Same → ; ×2 for equivalent equations

2. Use the combination method to solve System B.
3. Check that your solution also satisfies System A.

$$+\begin{cases} 3x+2y=10 \\ 8x-2y=12 \end{cases}$$

$$\frac{11x}{11}=\frac{22}{11}$$

$$x=2$$

D For each system:

- Write an equivalent system that is easy to solve using the combination method.
- Solve the system.
- Check that your solution also satisfies the original system.

1. $\begin{cases} 2x+2y=5 \\ 3x-6y=12 \end{cases}$
2. $\begin{cases} x+3y=4 \\ 4x+5y=2 \end{cases}$
3. $\begin{cases} 2x+y=5 \\ 3x-2y=15 \end{cases}$
4. $\begin{cases} -x+2y=5 \\ 5x-10y=11 \end{cases}$

1. $3[2x+2y=5]$

$3x-6y=12$

$$+\begin{array}{l} 6x+6y=15 \\ 3x-6y=12 \end{array}$$

$9x=27$

2. $4[x+3y=4]$

$4x+5y=2$

$$-\begin{array}{l} 4x+12y=16 \\ 4x+5y=2 \end{array}$$

$7y=14$

3. $2[2x+y=5]$

$3x-2y=15$

$4x+2y=10$

$3x-2y=15$

4. $-5[-x+2y=5]$

$5x-10y=11$

$$-\begin{array}{l} 5x-10y=-25 \\ 5x-10y=11 \end{array}$$

$0=-36$

No Solution

$-x+2y=5$

$+x \quad +x$

$\frac{2y}{2}=\frac{x}{2}+\frac{5}{2}$

$y=\frac{1}{2}x+\frac{5}{2}$

$5x-10y=11$

$-5x \quad -5x$

$\frac{-10y}{-10}=\frac{-5x}{-10}+\frac{11}{-10}$

$y=\frac{1}{2}x-\frac{11}{10}$

These two equations are parallel lines - same slope, different y-int

There is no solution because they never cross!

Elimination Practice FRONT

1. $x - y = 1$
$x + y = -9$

2. $p + q = -2$
$p - q = 8$

3. $4x + y = 23$
$3x - y = 12$

4. $2x + 5y = -3$
$2x + 2y = 6$

5. $3x + 2y = -1$
$4x + 2y = -6$

6. $5x + 3y = 22$
$5x - 2y = 2$

7. $5x + 2y = 7$
$-2x + 2y = -14$

8. $3x - 9y = -12$
$3x - 15y = -6$

9. $-4c - 2d = -2$
$2c - 2d = -14$

10. $2x - 6y = 6$
$2x + 3y = 24$

11. $7x + 2y = 2$
$7x - 2y = -30$

12. $4.25x - 1.28y = -9.2$
$x + 1.28y = 17.6$

Instead of just the front or just the back, try 1–6 on both sides!

More Challenging BACK

Use elimination to solve each system of equations.

1. $x + y = -9$
$5x - 2y = 32$

2. $3x + 2y = -9$
$x - y = -13$

3. $2x + 5y = 3$
$-x + 3y = -7$

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

5. $4x - 2y = -14$
$3x - y = -8$

6. $2x + y = 0$
$5x + 3y = 2$

7. $5x + 3y = -10$
$3x + 5y = -6$

8. $2x + 3y = 14$
$3x - 4y = 4$

9. $2x - 3y = 21$
$5x - 2y = 25$

10. $3x + 2y = -26$
$4x - 5y = -4$

11. $3x - 6y = -3$
$2x + 4y = 30$

12. $5x + 2y = -3$
$3x + 3y = 9$

Homework

Finish classwork