

3.2 Part 3 Choosing the Best Method

- **Graphing** is best if...
 - > The directions ask for this
 - > The equations are in slope-intercept form
- **Substitution** is best if...
 - > A variable has already been isolated
 - > A variable has a coefficient of 1 or -1
- **Elimination** is best...
 - > Coefficients are already opposites
 - > ALWAYS!

Choose the best method and solve.

1. $y = -x + 5$

$y = 3x + 1$

$$\begin{array}{r} -x + 5 = 3x + 1 \\ +x \quad +x \\ \hline 5 = 4x + 1 \\ -1 \quad -1 \\ \hline 4 = 4x \\ \frac{4}{4} = \frac{4x}{4} \\ 1 = x \end{array}$$

$$\begin{array}{l} y = 3(1) + 1 \\ y = 3 + 1 \\ y = 4 \end{array}$$

$(1, 4)$

Choose the best method and solve.

2. $3x - 3y = 15$

$y = -2x + 2$

$y = -2\left(\frac{7}{3}\right) + 2$

$y = -\frac{14}{3} + \frac{6}{3}$

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

$3x - 3(-2x + 2) = 15$

$3x + 6x - 6 = 15$

$9x - 6 = 15$

$\frac{9x}{9} = \frac{21}{9}$

$x = \frac{7}{3}$

$\left(\frac{7}{3}, -\frac{8}{3}\right)$

Choose the best method and solve.

3.3 $(-5x + 7y) = (10)3$

~~$15x - 21y = 22$~~

~~$-15x + 21y = 30$~~

$0 \neq 52$

no solution

Choose the best method and solve.

4. $-2x + 2y = -5 \rightarrow -2x + 2y = -5$
 $2(x + y) = (-5) \cdot 2 \rightarrow 2x + 2y = -10$

$$\begin{array}{r} \cancel{2x} + 2y = -5 \\ \underline{2x + 2y = -10} \\ + 0y = 5 \\ + 0y = 5 \\ + 0y = 5 \end{array}$$

\downarrow

$$\begin{array}{r} x - 3.75 = -5 \\ \underline{+ 3.75} \\ x = -1.25 \end{array}$$

$$\begin{array}{r} \frac{4y}{4} = \frac{-15}{4} \\ y = -3.75 \end{array}$$

$(-1.25, -3.75)$

5. Tickets for the community play are \$3 for students and \$5 for non-students. On opening night 937 tickets are sold and \$3943 is collected. How many tickets were sold to students? How many were sold to non-students?

$x = \text{student tickets}$ $y = \text{non-student tickets}$

money $3x + 5y = 3943$
 tickets $3(x + y) = (937) \cdot 3$

$$\begin{array}{r} \cancel{3x} + 5y = 3943 \\ \underline{-3x - 3y = -2811} \\ + 2y = 1132 \\ + 2y = 1132 \\ + 2y = 1132 \end{array}$$

$$\frac{2y}{2} = \frac{1132}{2}$$

$$y = 566$$

$$\begin{array}{r} x + y = 937 \\ x + 566 = 937 \\ \underline{-566 \quad -566} \\ x = 371 \end{array}$$

371 student tickets
566 non-student tickets