

## 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.  $y = -x + 5$   
 $y = 3x + 1$

Substitution

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

Choose the best method and solve.

2.  $3x - 3y = 15$   
 $y = -2x + 2$  Substitution

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

$$3x + 6x - 6 = 15$$

$$9x - 6 = 15$$

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

$$x = 3$$

$$y = -2x + 2$$

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

$$= -6 + 2$$

$$y = -4$$

Choose the best method and solve.

3.  $3(-5x + 7y = 10) \rightarrow -15x + 21y = 30$   
 $15x - 21y = 22$

elimination

$$\frac{15x - 21y = 22}{-15x + 21y = 30}$$

$$0x + 0y = 52$$

$$0 \neq 52$$

NO SOLUTION

## Choose the best method and solve.

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

$2(x + y = -5)$

Elimination

$-2x + 2y = -5$

$+ 2x + 2y = -10$

$\frac{4y}{4} = \frac{-15}{4}$

$y = \frac{-15}{4}$

$x + y = -5$

$x - \frac{15}{4} = -5$

$+ \frac{15}{4} \quad + \frac{15}{4}$

$x = \frac{-5 \cdot 4}{1 \cdot 4} + \frac{15}{4} = \frac{-20}{4} + \frac{15}{4}$

$x = \frac{-5}{4}$

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?

Let  $x =$  student tickets &  $y =$  non-student tickets.

$$\begin{array}{r} 13 \\ 937 \\ x \quad 5 \\ \hline 4685 \end{array}$$

$x + y = 937$   
 $3x + 5y = 3943$

use substitution

$y = 937 - x$

$= 937 - 371$

$$\begin{array}{r} 937 \\ - 371 \\ \hline 566 \end{array}$$

$3x + 5(937 - x) = 3943$

$3x + 4685 - 5x = 3943$

$-2x + 4685 = 3943$   
 $-4685 \quad -4685$

$-2x = -742$   
 $-2 \quad -2$

$x = 371$

$y = 566$

371 student tickets  
& 566 non-student tickets

$$\begin{array}{r} 4685 \\ -3943 \\ \hline 742 \end{array}$$

$$\begin{array}{r} 371 \\ 2 \overline{)742} \\ \underline{-742} \\ 0 \end{array}$$

