

**Instructions:** Do all work on *your own paper*. Show all steps that lead to your solution. If a problem requires graphing, use graph paper and a straightedge for lines. *Separate your work by section.*

## Vocabulary

1. Define each word in the list below using your notes or the text.

*Write or draw an example of each word or phrase.*

- open sentence in two variables
- solution to an open sentence
- graph of an equation
- $x$ -intercept and  $y$ -intercept of a line
- slope of a line

## Section 3-1

1. Find the value of  $k$  so that  $(2, 3)$  solves  $6x - ky = k$ .
2. Solve  $5x + 3y = 30$  if  $x$  and  $y$  are restricted to be *whole numbers*. (Hint: What are the whole numbers?)
3. Solve  $3x + 5y \leq 17$  if  $x$  and  $y$  are restricted to be *positive integers*. (Hint: What are positive integers?)
4. Dopey needs \$1.75 in change to buy a snack from a machine that only takes the exact amount. He has a roll of quarters and a roll of dimes. Find all combinations of each type of coin he could use. (A) Define two variables to represent the values requested in the problem; (B) write an equation based on the given information; and (C) *solve* the equation.

## Section 3-2

- Know the standard form of a line ( $Ax + By = C$ )
- Be able to graph an equation in standard form using a "T-chart"

1. *Graph* each equation in the coordinate plane. Use a T-chart.

$$x + 3y = 9$$

$$3x - y = 6$$

$$2x + 7y + 14 = 0$$

2. *Graph* each equation in the coordinate plane. Use a T-chart.

$$2x + 3 = 0$$

$$2y - 5 = 0$$

3. Find the value of  $k$  so that the point  $P(4, 3)$  lies on the line  $kx + (k + 1)y = 2$ .

## Section 3-3

- Find the slope of a line through two given points.
- Find the slope of a line given in standard form.
- Graph a line if you are given its slope and one point on the line.

1. What is the difference between a *zero slope* and *no slope*?
2. What is the slope of a *horizontal* line? What is the slope of a *vertical* line?
3. Find the value of  $k$  so that  $6x + ky = 10$  has a slope of  $-2$ .

*Continued on the reverse side...*

4. Find the *slope* of the line that passes through each pair of points.

$(4, 2), (-1, -3)$

$(-2, 3), (4, -1)$

$(-2, -4), (-2, 4)$

$\left(\frac{2}{3}, 3\right), \left(\frac{5}{3}, 7\right)$

5. Transform each equation into *standard form*, then find the *slope* of each line.

$3x + 2y = 4$

$3y + 2 = 9x$

$\frac{1}{3}x - \frac{1}{2}y = 1$

$\frac{x}{4} - \frac{y}{-6} = 1$

6. *Graph* the line passing through the given point and having the given slope.

$P(3, -1), m = -\frac{3}{2}$

$P(-3, 2), m = 0$

$P(2, 2), \text{no slope}$