

Additional Practice**Investigation 1****It's In the System**

1. Marcello is an artist who makes oil paintings and charcoal sketches. He sells each oil painting for \$500 and each charcoal sketch for \$300.
 - a. What equation shows Marcello's income I from the number of oil paintings x he sells and the number of charcoal sketches y he sells?
 - b. Find Marcello's income from selling his art if he sells 10 oil paintings and 5 charcoal sketches.
 - c. Write an equation relating numbers of oil paintings and the number of charcoal sketches Marcello must sell in order to make exactly \$20,000.
 - d. Suppose Marcello wants to make 56 works in total. What equation relates the number of paintings x and the number of charcoals y to that goal?
 - e.
 - i. Graph the equations you found in parts (c) and (d).
 - ii. Find the coordinates of the intersection point of the graphs. What does that intersection point tell us about how many paintings and how many charcoals Marcello should make?

Additional Practice *(continued)***Investigation 1****It's In the System**

2. The students at Susan B. Anthony Middle School wanted to encourage people to buy tickets to the spring musical early. Tickets purchased at the door cost \$6, and tickets purchased in advance only cost \$4. Receipts from ticket sales totaled \$2,000 and there were 410 tickets sold.
- a. Use x to represent the number of tickets sold at the door and y to represent the number of tickets sold in advance. Write a system of equations that represent the reported information about receipts from ticket sales and the total number of tickets.
- b. Graph the equations you found in part (a).
- c. Use your graph to find the number of tickets sold at the door and the number of tickets sold in advance.

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3. For the following equations, identify the slope and y -intercept, and then write the equation in equivalent $Ax + By = C$ form.

a. $y = 3x$

b. $y = -2x + 12$

c. $y = x - 10$

d. $y = 0$

e. $y = -2x - 4$

f. $y = -x - 2$

4. Write the following equations in $y = mx + b$ form and then identify the slope and y -intercept.

a. $-5x - y = -2$

b. $x = -9$

c. $x - y = 20$

d. $x + y = 12$

e. $-x + 5y = -20$

f. $2x - 3y = 25$

Additional Practice: Digital Assessments

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5. Camilla bought \$26 worth of hammers and screwdrivers at the hardware store. Each hammer costs \$4 and each screwdriver costs \$3. Circle the numbers that make the statements true.

a. An equation to find the number of hammers, h , and screwdrivers, s , that Camilla could have purchased is

$$\begin{bmatrix} 3 \\ 4 \\ 7 \\ 12 \\ 26 \end{bmatrix} h + \begin{bmatrix} 3 \\ 4 \\ 7 \\ 12 \\ 26 \end{bmatrix} s = \begin{bmatrix} 3 \\ 4 \\ 7 \\ 12 \\ 26 \end{bmatrix}$$

b. A possible combination of hammers and screwdrivers that made up Camilla's purchase is

$$\begin{bmatrix} 2 \\ 3 \\ 4 \\ 5 \\ 6 \end{bmatrix} \text{ hammers and } \begin{bmatrix} 2 \\ 3 \\ 4 \\ 5 \\ 6 \end{bmatrix} \text{ screwdrivers.}$$

6. Two equations are shown below. Which scenarios match the equations? *Select all that apply.*

$$2x + 1.5y = 12$$

$$x + y = 7$$

- At a concession stand, Peter spent \$12 on drinks and popcorn for his friends. He bought a total of 7 items. Each drink cost \$2.00 and each bag of popcorn cost \$1.50.
- Emma is selling tickets to a carnival. She sells adult tickets for \$2 and children's tickets for \$1.50. In the first 10 minutes of selling tickets, she sells 12 tickets and charges \$7.
- Ramiro bought a combination of cantaloupes and mini watermelons for a total of 7 pieces of fruit. His total purchase weighs 12 pounds. Each cantaloupe weighs 2 pounds and each mini watermelon weighs 1.5 pounds.
- At Isabella's animal shelter, there are 12 cats and 7 dogs. Each dog eats 2 cups of food and each cat eats 1.5 cups of food.
- The sum of two numbers is 7. The sum of twice the first and 1.5 times the second is 12.

7. Write each equation in $y = mx + b$ form. Write each equation in the appropriate box.

$2y - 6x = -4$

$-1 = 2x - y$

$3x - y = 2$

$6x - 2y = 4$

$6x - 3y = -3$

$y = 3x - 2$

$y = 2x + 1$

Skill: Writing Equations With Two Variables**Investigation 1****It's In the System**

1. The drama club sells 200 pounds of fruit to raise money. The fruit is sold in 5-pound bags and 10-pound bags.
 - a. Write an equation to find the number of each type of bag that the club should sell.

 - b. Graph your equation to the right.
 - c. Use your graph to find two different solution pairs for the equation.

2. The student council is sponsoring a carnival to raise money. Tickets cost \$5 for adults and \$3 for students. The student council wants to raise \$450.
 - a. Write an equation to find the number of each type of ticket they should sell.

 - b. Graph your equation to the right.
 - c. Use your graph to find two different solution pairs for the equation.

3. Anna goes to a store to buy \$70 worth of flour and sugar for her bakery. A bag of flour costs \$5, and a bag of sugar costs \$7.
 - a. Write an equation to find the number of bags of each type Anna can buy.

 - b. Graph your equation to the right.

4. You have \$50 to spend on cold cuts for a party. Ham costs \$5.99 per pound, and turkey costs \$4.99 per pound. Write an equation to relate the number of pounds of each kind of meat you could buy.

Skill: Standard Form and Slope-Intercept Form**Investigation 1****It's In the System**Write each equation in $y = mx + b$ form.

1. $3y = 15x - 12$

2. $5x + 10 = 10y$

3. $3y - 21 = 12x$

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

5. $-2(x + 3y) = 18$

6. $5(x + y) = 20 + 3x$