

7.1-7.4

6-5

## Skills Practice

### Applying Systems of Linear Equations

Determine the best method to solve each system of equations. Then solve the system.

1.  $5x + 3y = 16$   
 $3x - 5y = -4$

$(2, 2)$

2.  $3x - 5y = 7$   
 $2x + 5y = 13$

$(4, 1)$

3.  $y = 3x - 24$   
 $5x - y = 8$

$(-8, -48)$

4.  $-11x - 10y = 17$   
 $5x - 7y = 50$

$(3, -5)$

5.  $4x + y = 24$   
 $5x - y = 12$

$(4, 8)$

6.  $6x - y = -145$   
 $x = 4 - 2y$

$(-22, 13)$

7. **VEGETABLE STAND** A roadside vegetable stand sells pumpkins for \$5 each and squashes for \$3 each. One day they sold 6 more squash than pumpkins, and their sales totaled \$98. Write and solve a system of equations to find how many pumpkins and squash they sold?

$5p + 3s = 98$   
 $p + 6 = s$

10 pumpkins  
 16 squash

8. **INCOME** Ramiro earns \$20 per hour during the week and \$30 per hour for overtime on the weekends. One week Ramiro earned a total of \$650. He worked 5 times as many hours during the week as he did on the weekend. Write and solve a system of equations to determine how many hours of overtime Ramiro worked on the weekend.

$20w + 30v = 650$   
 $w = 5v$

5 hours of overtime  
 on the weekend

9. **BASKETBALL** Anya makes 14 baskets during her game. Some of these baskets were worth 2-points and others were worth 3-points. In total, she scored 30 points. Write and solve a system of equations to find how 2-points baskets she made.

$2w + 3h = 30$   
 $w + h = 14$

12 2-pt baskets

**6-5 Practice**

**7.1-7.4 Applying Systems of Linear Equations**

Determine the best method to solve each system of equations. Then solve the system.

1.  $1.5x - 1.9y = -29$   
 $x - 0.9y = 4.5$

$(63, 65)$

2.  $1.2x - 0.8y = -6$   
 $4.8x + 2.4y = 60$

$(5, 15)$

3.  $18x - 16y = -312$   
 $78x - 16y = 408$

$(12, 33)$

4.  $14x + 7y = 217$   
 $14x + 3y = 189$

$(12, 7)$

5.  $x = 3.6y + 0.7$   
 $2x + 0.2y = 38.4$

$(18.7, 5)$

6.  $5.3x - 4y = 43.5$   
 $x + 7y = 78$

$(15, 9)$

7. **BOOKS** A library contains 2000 books. There are 3 times as many non-fiction books as fiction books. Write and solve a system of equations to determine the number of non-fiction and fiction books.

$f + n = 2000$   
 $n = 3f$

fiction: 500  
 non: 1500

8. **SCHOOL CLUBS** The chess club has 16 members and gains a new member every month. The film club has 4 members and gains 4 new members every month. Write and solve a system of equations to find when the number of members in both clubs will be equal.

$c = 16 + m$   
 $c = 4 + 4m$

after 3 months

9. Tia and Ken each sold snack bars and magazine subscriptions for a school fund-raiser, as shown in the table. Tia earned \$132 and Ken earned \$190.

Item	Number Sold	
	Tia	Ken
snack bars	16	20
magazine subscriptions	4	6

a. Define variable and formulate a system of linear equation from this situation.

$b = \text{cost of snack bar}$

$16b + 4m = 132$

$m = \text{cost of magazine}$

$20b + 6m = 190$

b. What was the price per snack bar? Determine the reasonableness of your solution.

cost of a snack bar is \$2.

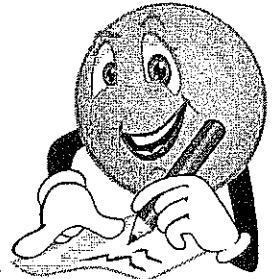
It's reasonable.

Circled problems only

## Writing & Solving Systems of Equations Quiz

**Directions** Solve each problem. Be sure to:

1. Identify the two variables in each situation
2. Write the system of equations
3. Show your work



MATH IS FUN!

Name \_\_\_\_\_ Date \_\_\_\_\_

1. The Browns scored 13 more points than the Saints. The total of their scores was 47. How many points did each team score?

$$\begin{aligned} b &= 13 + s \\ b + s &= 47 \end{aligned}$$

Browns scored 30 points  
Saints scored 17 points

2. A company produces telephones at the rate of 600 per day. A customer survey indicates that the demand for phones with built in answering machines is twice as great as the demand for phones without the machines. If you are deciding the production quota for the day, how many phones with answering machines would you schedule for production? How many without answering machines would you make?

3. Sarah is the director of the Hoonah marching band. She must order 35 new uniforms for the band. There are usually five more girls than twice the number of boys in the band. How many uniforms of each type should she order for the band?

$$\begin{aligned} b + g &= 35 \\ g &= 5 + 2b \end{aligned}$$

boys: 10  
girls: 25

4. Mary's children decide to run a lemonade stand to earn some extra money. The cost to start the business is \$1,20 and each cup of lemonade costs 6 cents to make. If lemonade sells for 10 cents a cup, how many cups must Mary's children sell to make a profit?

5. At the "Great Hair Barber Shop" Nita and Joe do a total of 95 haircuts each week. If Nita does 16 fewer than twice as many as Joe, how many haircuts does each person do?

$$n + j = 95$$

$$n = 2j - 16$$

Nita: 58 haircuts

Joe: 37 haircuts

6. John has 6 puppies for sale and wants to advertise them in the Cleveland Plain Dealer. To advertise in the paper there is a flat or fixed rate for the first ten words of the ad and a fixed charge for each additional word. The cost of a 17-word ad is \$14.55. The cost for a 21-word ad is \$17.15. What is the flat rate for the first 10 words and the fixed charge for each additional word?

7. You are planning a huge graduation party for your son. You decide to offer both a beef and a chicken meal at the party. The chicken dish costs \$5, and the beef dish cost \$7. There will be 250 people at the party, and the total cost of the food is \$1500. How many chicken meals will there be? How many beef meals will there be?

$$5c + 7b = 1500$$

$$c + b = 250$$

125 chicken  
125 beef

8. Paula needs to replace the floor in her family room since her cat peed in several places. She wants to put down both vinyl flooring and carpet in the room. The carpet she selected costs \$2 per square foot. The vinyl floor covering costs \$1 per square foot. She has \$500 to spend on materials and must cover an area of 300 square feet. How much carpet and vinyl flooring will she buy to meet her requirements?

$$2c + v = 500$$

$$c + v = 300$$

carpet 200 sq ft  
vinyl 100 sq ft

9. A salesperson at an electronics store is given a choice of two different compensation plans. Plan A pays him a weekly salary of \$250 plus a commission of \$25 for each stereo sold. Plan B offers no salary but pays \$50 commission on each stereo sold. How many stereos must the salesperson sell to make the same amount of money with both plans? ~~Write a paragraph answering the following questions:~~ When is plan B the better plan? When is plan A the better plan? Which plan would you select and why?

$$p = 250 + 25s$$

$$p = 50s$$

to be the same: 10 stereos

10. ABLE Trucking Company has a job moving 21 tons of sand. The company has 8 drivers in the company and 2 types of trucks. One type of truck can haul 5 tons of sand and the other type of truck can haul 3 tons. Insurance requirements make it necessary for the trucks hauling 5 tons of gravel to have two drivers in the cab during operation. Three ton trucks require only one driver. Using all available drivers, how many trucks of each size will be needed to move the sand in one trip?

# Circled problems only

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## 7-4

### Practice

Form G

#### Applications of Linear Systems

Solve each word problem

$$3s + 2p = 85.50$$

$$3s + 4p = 123$$

sweatshirt: \$16

sweat pants: \$18.75

$$x + y = 27$$

$$x = 3 + y$$

$$x = 15 \quad y = 12$$

1. During a sale at the local department store, you buy three sweatshirts and two pairs of sweatpants for \$85.50. Later you return to the same store and buy three more sweatshirts and four more pairs of sweatpants for \$123. What is the sale price of each sweatshirt and each pair of sweatpants?

2. The sum of two numbers is 27. The larger number is 3 more than the smaller number. What are the two numbers?

3. One plane at 520 feet is ascending at a rate of 40 feet per minute, while another plane at 3800 feet is descending at a rate of 120 feet per minute. How long will it take the two planes to be at the same altitude?

$$2L + 2W = 24$$

$$L = 3W$$

$$L = 9 \text{ inches}$$

$$W = 3 \text{ inches}$$

4. The perimeter of a rectangle is 24 in. and its length is 3 times its width. What are the length and the width of the rectangle?

5. You are getting ready to move and have asked some friends to help. For lunch, you buy the following sandwiches at the local deli for \$30: six tuna sandwiches and six turkey sandwiches. Later at night, everyone is hungry again and you buy four tuna sandwiches and eight turkey sandwiches for \$30.60. What is the price of each sandwich?

6. You have a cable plan that costs \$39 a month for a basic plan plus one movie channel. Your friend has the same basic plan plus two movie channels for \$45.50. What is the basic plan charge that you both pay?

7. At an all-you-can-eat barbeque fundraiser that you are sponsoring, adults pay \$6 for a dinner and children pay \$4 for a dinner. 212 people attend and you raise \$1128. What is the total number of adults and the total number of children attending?

- a. What is a system of equations that you can use to solve this problem?  
b. What method would you use to solve the system? Why?

8. A coin bank has 250 coins, dimes and quarters, worth \$39.25. How many of each type of coin are there?




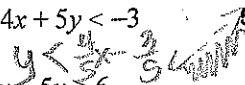
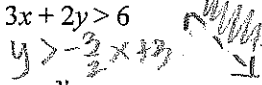

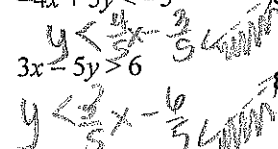
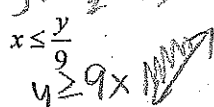
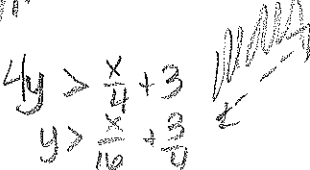
9. In 4 years, a mother will be 5 times as old as her daughter. At present, the mother is 9 times as old as the daughter. How old are the mother and the daughter today?

# 6-5 Practice

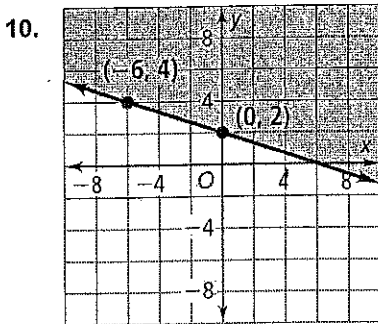
## Linear Inequalities

Form G

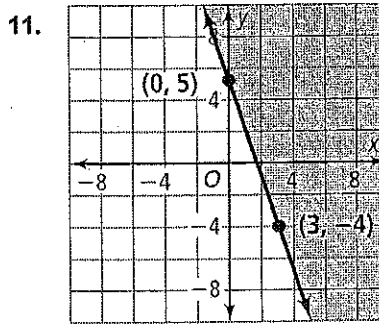
Graph each linear inequality.

1.  $x \geq -4$  
2.  $y < 2$  
3.  $3x - y \geq 6$   $y \leq 3x - 6$  
4.  $-4x + 5y < -3$   $y < \frac{4}{5}x - \frac{3}{5}$  
5.  $3x + 2y > 6$   $y > -\frac{3}{2}x + 3$  
6.  $y < x$  
7.  $3x - 5y > 6$   $y < \frac{3}{5}x - \frac{6}{5}$  
8.  $x \leq \frac{y}{9}$   $y \geq 9x$  
9.  $\frac{x}{4} < 4y - 3$   $4y > \frac{x}{4} + 3$   $y > \frac{x}{16} + \frac{3}{4}$  

Write an inequality that represents each graph.



$$y \leq -\frac{1}{3}x + 2$$



$$y \leq -3x + 5$$

12. You and some friends have \$30. You want to order large pizzas ( $p$ ) that are \$9 each and drinks ( $d$ ) that cost \$1 each. Write and graph an inequality that shows how many pizzas and drinks can you order?

$$9p + d \leq 30$$



13. Tickets to a play cost \$5 at the door and \$4 in advance. The theatre club wants to raise at least \$400 from the play. Write and graph an inequality for the number of tickets the theatre club needs to sell. If the club sells 40 tickets in advance, how many do they need to sell at the door to reach their goal?

$$5d + 4a \geq 400$$



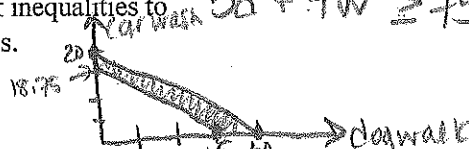
**SYSTEM**

14. Mark is a student, and he can work for at most 20 hours a week.

He needs to earn at least \$75 to cover his weekly expenses. His dog-walking job pays \$5 per hour and his job as a car wash attendant pays \$4 per hour. Write a system of inequalities to model the situation, and graph the inequalities.

$$d + w \leq 20$$

$$5d + 4w \geq 75$$

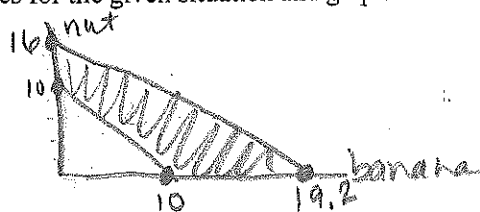


**SYSTEM**

15. Britney wants to bake at most 10 loaves of bread for a bake sale. She wants to make banana bread that sells for \$1.25 each and nut bread that sells for \$1.50 each and make at least \$24 in sales. Write a system of inequalities for the given situation and graph the inequalities.

$$b + n \leq 10$$

$$1.25b + 1.5n \geq 24$$



**5-6 Practice**

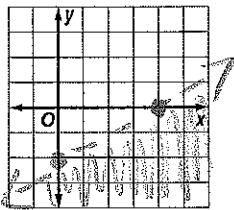
**6.5 Graphing Inequalities in Two Variables**

Determine which ordered pairs are part of the solution set for each inequality.

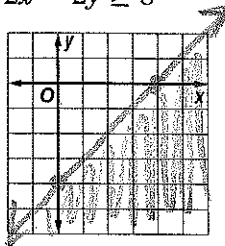
- $3x + y \geq 6$ ,  $(4, 3)$ ,  $(-2, 4)$ ,  $(-5, -3)$ ,  $(3, -3)$
- $y \geq x + 3$ ,  $(6, 3)$ ,  $(-3, 2)$ ,  $(3, -2)$ ,  $(4, 3)$
- $3x - 2y < 5$ ,  $(4, -4)$ ,  $(3, 5)$ ,  $(5, 2)$ ,  $(-3, 4)$

Graph each inequality.

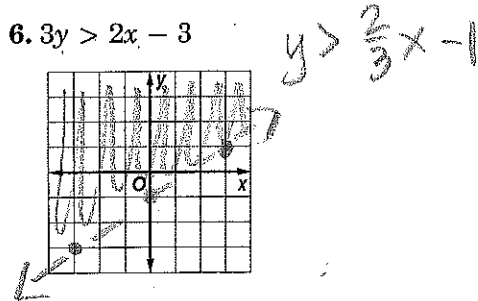
4.  $2y - x < -4$



5.  $2x - 2y \geq 8$

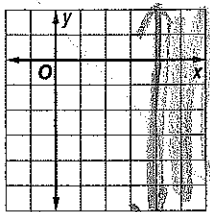


6.  $3y > 2x - 3$

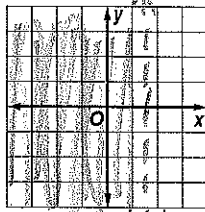


Use a graph to solve each inequality.

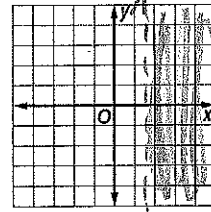
7.  $-5 \leq x - 9$



8.  $6 > \frac{2}{3}x + 5$



9.  $\frac{1}{2} > -2x + \frac{7}{2}$



**10. MOVING** A moving van has an interior height of 7 feet (84 inches). You have boxes in 12 inch and 15 inch heights, and want to stack them as high as possible to fit. Write an inequality that represents this situation.

$12x + 15y \leq 84$

**11. BUDGETING** Satchi found a used bookstore that sells pre-owned videos and CDs. Videos cost \$9 each, and CDs cost \$7 each. Satchi can spend no more than \$35.

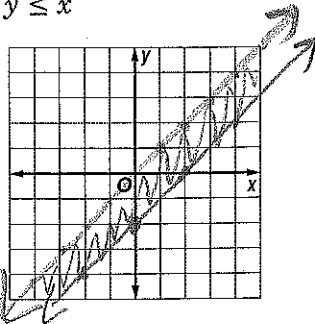
- Write an inequality that represents this situation.  $9v + 7c \leq 35$
- Does Satchi have enough money to buy 2 videos and 3 CDs? **no**

**6-8 Practice**

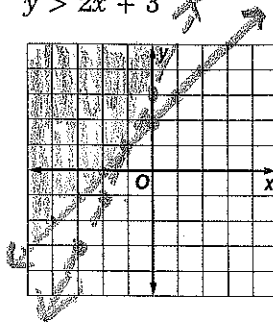
**7.6 Systems of Inequalities**

Solve each system of inequalities by graphing.

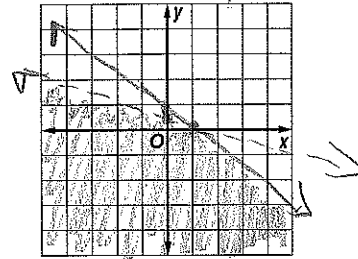
1.  $y > x - 2$   
 $y \leq x$



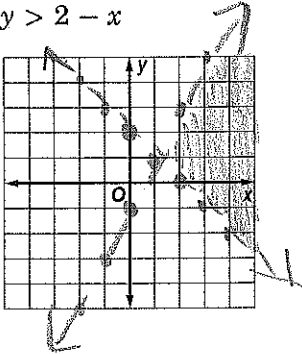
2.  $y \geq x + 2$   
 $y > 2x + 3$



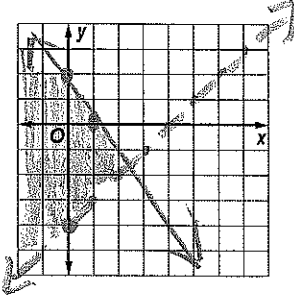
3.  $x + y \geq 1$   
 $x + 2y > 1$



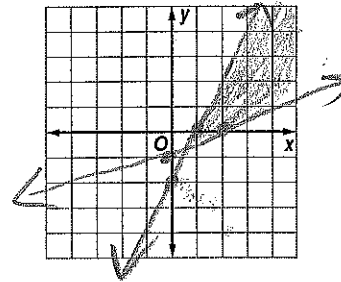
4.  $y < 2x - 1$   
 $y > 2 - x$



5.  $y > x - 4$   
 $2x + y \leq 2$



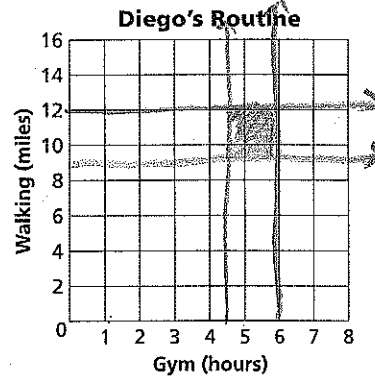
6.  $2x - y \geq 2$   
 $x - 2y \geq 2$



7. **FITNESS** Diego started an exercise program in which each week he works out at the gym between 4.5 and 6 hours and walks between 9 and 12 miles.

- Make a graph to show the number of hours Diego works out at the gym and the number of miles he walks per week.
- List three possible combinations of working out and walking that meet Diego's goals.

5 hrs, 10 miles    5 hrs, 11 miles  
5 hrs, 10 miles



8. **SOUVENIRS** Emily wants to buy turquoise stones on her trip to New Mexico to give to at least 4 of her friends. The gift shop sells stones for either \$4 or \$6 per stone. Emily has no more than \$30 to spend.

- Make a graph showing the numbers of each price of stone Emily can purchase.
- List three possible solutions.

(4, 2)  
(1, 4)  
(5, 2)

$4x + 6y \leq 30$   
 $x + y \geq 4$

