

## Chapter 6 Test Review

## Algebra 1

Name: \_\_\_\_\_

Period: \_\_\_\_\_ Date: \_\_\_\_\_

Tell whether the ordered pair is a solution of the linear system.

1.  $(4, -1)$

$x + 2y = 2$

$x - 2y = 6$

**Yes**

$4 + 2(-1) = 2$

$4 - 2 = 2$

$2 = 2 \checkmark$

$4 - 2(-1) = 6$

$4 + 2 = 6$

$6 = 6 \checkmark$

2.  $(8, 5)$

$5x - 4y = 20$

$3y = 2x + 1$

$5(8) - 4(5) = 20$

$40 - 20 = 20$

$20 = 20$

$3(5) = 2(8) + 1$

$15 = 16 + 1$

$15 \neq 17$

**No**

For numbers 3 & 4, graph the linear system, then answer the following questions:

3.  $5y = -5x + 20$

$y = \frac{1}{5}x + 4$

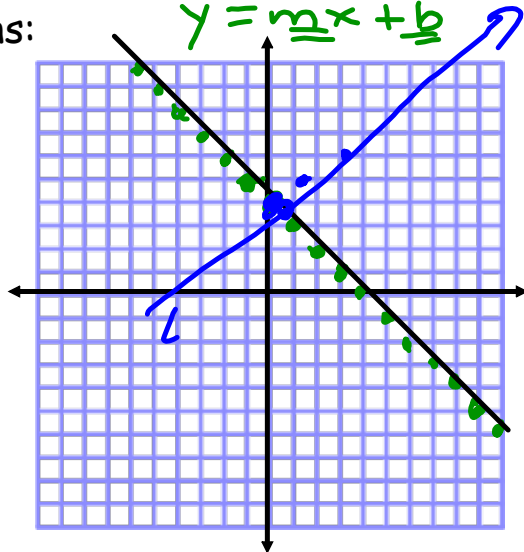
$m = \frac{1}{5}$

$b = 4$

$y = -x + 4$

$m = -1$

$b = 4$



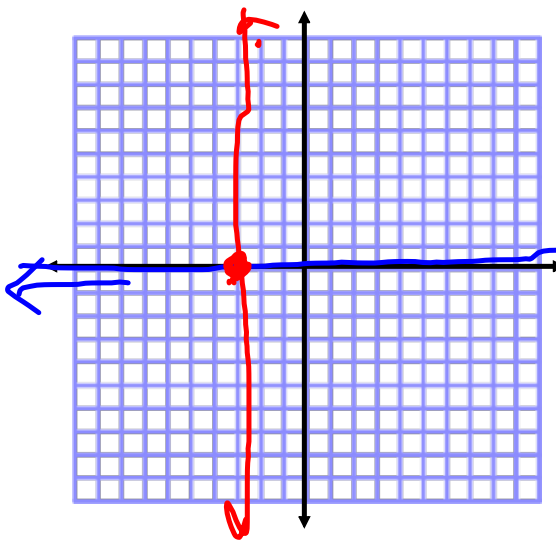
a) What is the solution to the system?  $(0, 4)$

b) Find the sum of x and y values.

$0 + 4$

$4$

4.  $y = 0$   
 $x = -3$



a) What is the solution to the system?  $(-3, 0)$

b) Find the sum of x and y values.

$-3 + 0$

$-3$

Solve the linear system using substitution.

5.  $x = y + 1$   
 $x + 2y = 7$

$$y + 1 + 2y = 7$$

$$3y + 1 = 7$$

$$-1 \quad -1$$

$$3y = 6$$

$$\frac{3y}{3} = \frac{6}{3}$$

$$y = 2$$

$$x = 2 + 1$$

$$x = 3$$

(3, 2)

6.  $3x + y = 4$   
 $4x - 3y = 1$

$$y = 4 - 3x$$

$$4x - 3(4 - 3x) = 1$$

$$4x - 12 + 9x = 1$$

$$13x - 12 = 1$$

$$+12 \quad +12$$

$$13x = 13$$

$$\frac{13x}{13} = \frac{13}{13}$$

$$x = 1$$

$$y = 4 - 3(1)$$

$$y = 4 - 3 = 1$$

(1, 1)

Solve the linear system using elimination.

7.  $x = 2y + 4$   
 $3x + 4y = 2$

$$x = 2y + 4$$

$$(2)x = 2(2y + 4)$$

$$3x + 4y = 2$$

$$2x - 4y = 8$$

$$+ 3x + 4y = 2$$

$$\hline 5x = 10$$

$$\frac{5x}{5} = \frac{10}{5}$$

$$x = 2$$

$$-2 = 2y + 4$$

$$\frac{-2 - 4}{2} = \frac{2y + 4}{2}$$

$$\frac{-6}{2} = \frac{2y}{2}$$

$$y = -1$$

(2, -1)

8.  $4x + 3y = 7$   
 $7x + 2y = 9$

$$-8x - 6y = -14$$

$$21x + 6y = 27$$

$$\hline 13x = 13$$

$$x = 1$$

$$4x + 3y = 7$$

$$-4x \quad -3y = -4$$

$$\hline 3y = 3$$

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

$$y = 1$$

(1, 1)

Determine whether the linear system has one solution, no solution, or infinitely many solutions.

9.  $3x - y = 5$   
 $y = 3x - 5$

$$-3x \quad -3x$$

$$3x - y = 5$$

$$-3x + y = -5$$

$$\hline 0 = 0$$

True  
Inf many

10.  $y = 2x - 1$   
 $y = 2x + 1$

$$+2x + y = +1$$

$$-2x + y = 1$$

$$\hline 0 = 2$$

False  
no sol.

11.  $3x + y = 12$   
 $y = 3x + 12$

$$3x + y = 12$$

$$-3x + y = 12$$

$$\hline 2y = 24$$

$$y = 12$$

one solution

12. The sum of two numbers is  $-5$ , and the difference of the two numbers is  $-17$ .

a) Write a linear system.

$$x + y = -5$$

$$x - y = -17$$

b) Find the numbers.

$$\frac{2x}{2} = \frac{-22}{2}$$

$$x = -11$$

$$\begin{array}{r} -11 + y = -5 \\ +11 \quad +11 \\ \hline y = 6 \end{array}$$

$$\boxed{\begin{array}{c} -11 \\ 6 \end{array}}$$

13. Owen went to a farmers market last week bought 6 cantaloupes and 4 watermelons for a total of \$36. At the same market, Brendan bought 4 cantaloupes and 5 watermelons for \$36.25.

a) Write a linear system.

$$\begin{array}{l} (-6) \quad 6C + 4W = 36 \\ (-4) \quad 4C + 5W = 36.25 \end{array}$$

b) Find the cost of each cantaloupe and each watermelon.

$$\begin{array}{r} -30C - 20W = -180 \\ 16C + 20W = 145 \\ \hline -14C = -35 \end{array}$$

$$\boxed{C = \$2.50}$$

$$\begin{array}{l} 6(2.50) + 4W = 36 \\ 15 + 4W = 36 \\ 4W = 21 \\ W = 5.25 \end{array}$$

c) How much would it cost to purchase 10 cantaloupes and 3 watermelon?

$$10(2.50) + 3(5.25)$$

$$\boxed{\$40.75}$$

#### 14. AIR Practice

A theater sells tickets for a concert. Tickets for lower-level seats sell for \$35 each, and tickets for upper-level seats sell for \$25 each. The theater sells 350 tickets for \$10,250.

How many tickets of each type were sold?

Lower level tickets:

Upper level tickets:

$$x + y = 350 \longrightarrow \boxed{x = 350 - y}$$

$$35x + 25y = 10,250$$

$$35(350 - y) + 25y = 10,250$$

$$12250 - 35y + 25y = 10250$$

$$\begin{array}{r} 12250 - 10y = 10250 \\ -12250 \quad -12250 \\ \hline -10y = -2000 \end{array}$$

$$\frac{-10y}{-10} = \frac{-2000}{-10}$$

$$y = 200$$

15. Dennis mowed his next door neighbor's lawn for a handful of dimes and nickels, 80 coins in all. Upon completing the job he counted out the coins and it came to \$6.60.

a) Write a linear system.

$$d + n = 80 \rightarrow d = 80 - n$$

$$.10d + .05n = 6.60$$

b) How many of each coin did he earn?

$$.10(80 - n) + .05n = 6.60$$

$$8 - .10n + .05n = 6.60$$

$$8 - .05n = 6.60$$

$$-8 \quad -8$$

$$-.05n = -1.40$$

$$\frac{-1.40}{-.05}$$

$$n = 28$$

$$d = 52$$

16. Graph the system of linear inequalities below. Then answer the question:

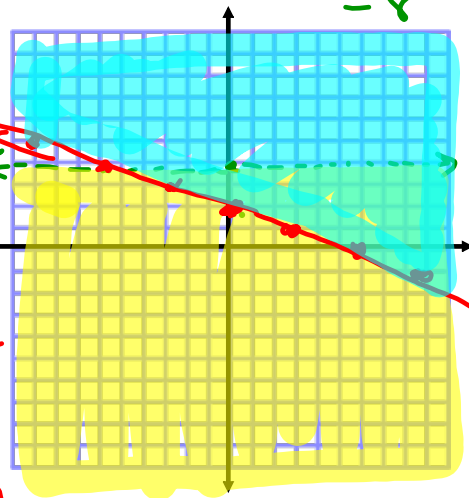
$$y < 4$$

$$x + 3y \geq 6$$

$$\begin{array}{r} x \quad x \\ \hline 3y \geq -x + 6 \\ \hline \frac{3y}{3} \geq \frac{-x}{3} + \frac{6}{3} \end{array}$$

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

$$m = -\frac{1}{3} \quad b = 2$$



Circle all points that are solutions to the system:

- (0,0)
- (3,3)
- (5,2)
- (-2,6)
- (7,2)

### 17. AIR Practice

A system of equations is shown.

$$y = 3x - 2$$

$$y = x^2$$

$$m = 3$$

$$b = -2$$

What are the solutions to the system of equations?



- (1,1)
- (2,4)