Name _____ Class _____ Date _____

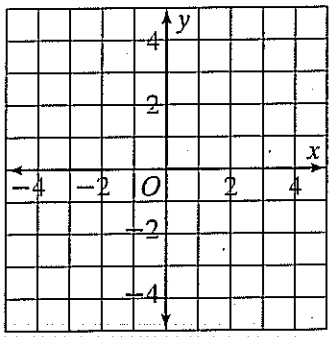
Practice 8-1

Relations and Functions

Graph each relation. Is the relation a function? Explain.

1.

x	y
-1	4
2	3
4	-1
-1	-2



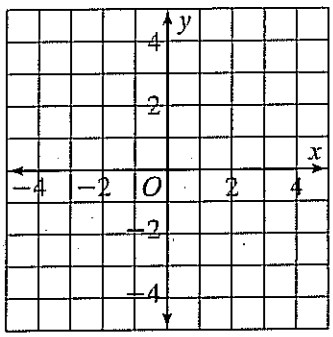
_____

_____

_____

2.

x	y
2	-4
-4	0
-2	3
3	-1



_____

_____

_____

For each relation, list the members of the domain. List the members of the range. Is the relation a function? Explain.

3. $\{(7, -2), (8, -2), (-5, 7), (-9, 1)\}$

Domain: _____ Range: _____

Function? _____

4. $\{(-8, 0), (10, 6), (10, -2), (-5, 7)\}$

Domain: _____ Range: _____

Function? _____

5. $\{(9.2, 4.7), (-3.6, 4.8), (5.2, 4.7)\}$

Domain: _____ Range: _____

Function? _____

6. Is the time is takes you to run a 100-meter race a function of the speed you run? Explain.

_____

Name _____ Class _____ Date _____

Practice 8-2

Equations With Two Variables

Write each equation as a function in "$y = \ldots$" form.

1. $3y = 15x - 12$

$y =$ _____

2. $5x + 10 = 10y$

$y =$ _____

3. $3y - 21 = 12x$

$y =$ _____

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

$y =$ _____

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

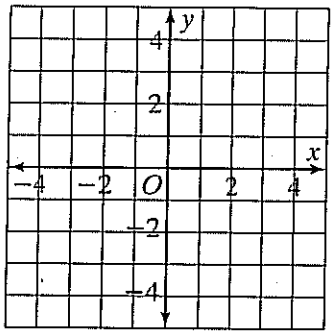
$y =$ _____

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

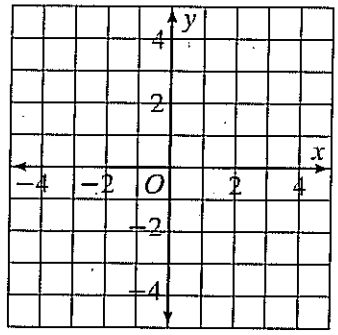
$y =$ _____

Graph each equation.

7. $y = -0.5x + 4$

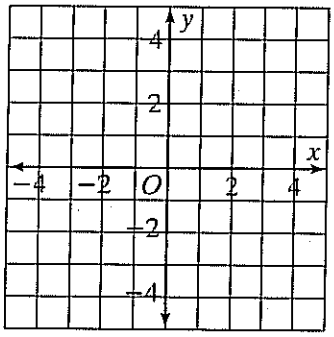


8. $y = 4$



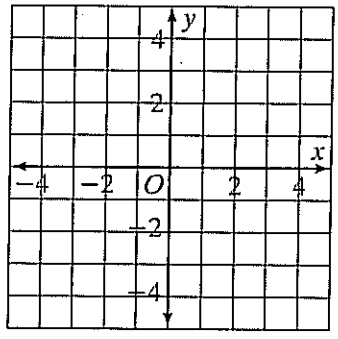
9. $2x - 3y = 6$

$y =$ _____



10. $-10x = 5y$

$y =$ _____



Is each ordered pair a solution of $3x - 2y = 12$? Write *yes* or *no*.

11. $(0, 4)$ _____ **12.** $(6, 3)$ _____ **13.** $(4, 0)$ _____

Is each ordered pair a solution of $-2x + 5y = 10$? Write *yes* or *no*.

14. $(-3, 2)$ _____ **15.** $(-10, -2)$ _____ **16.** $(5, 4)$ _____

Name _____ Class _____ Date _____

Practice 8-3

Slope and *y*-intercept

Find the slope of the line through each pair of points.

1. $A(1, 1), B(6, 3)$

_____

2. $J(-4, 6), K(-4, 2)$

_____

3. $P(3, -7), Q(-1, -7)$

_____

4. $M(7, 2), N(-1, 3)$

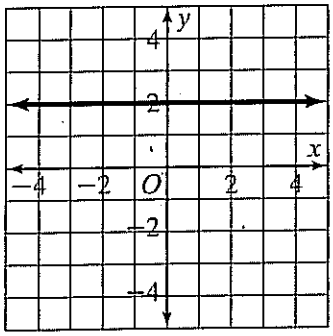
_____

Complete the table.

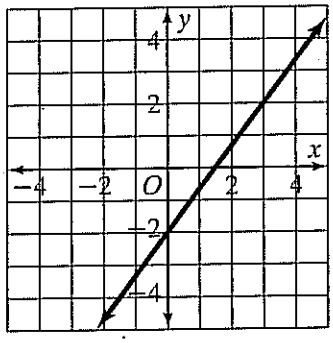
	Equation	Equation in Slope-Intercept Form	Slope	*y*-intercept
5.	$5x - y = 6$			
6.	$7x + 2y = 10$			

Find the slope of each line.

7. _____

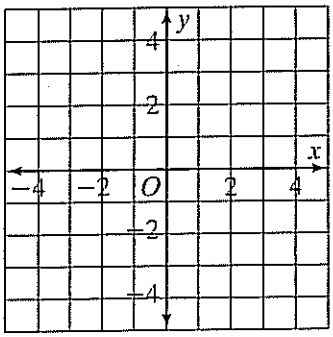


8. _____

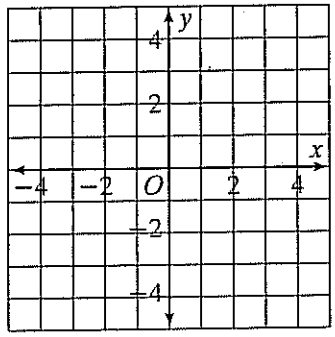


Graph each equation.

9. $y = -2x + 3$



10. $y = \frac{1}{3}x - 1$



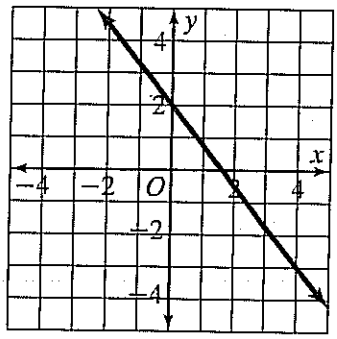
Name _____ Class _____ Date _____

Practice 8-4

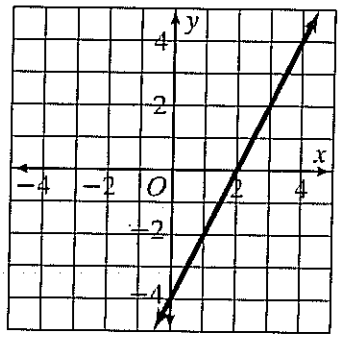
Writing Rules for Linear Functions

Write a rule for each function.

1. _____



2. _____



3. _____

x	$f(x)$
−3	18
−1	6
1	−6
3	−18

4. _____

x	$f(x)$
5	−2
7	0
9	2
11	4

5. _____

x	$f(x)$
−3	−17
−1	−11
1	−5
3	1

6. _____

x	$f(x)$
−4	4
0	6
2	7
4	8

Write a function rule to describe each situation.

7. The number of pounds $p(z)$ as a function of the number of ounces z.

_____

8. The selling price $s(c)$ after a 45% markup of an item as a function of the stores' cost c.

_____

9. The total number of miles $m(r)$ covered when you walk 7 miles before lunch, and you walk for 2 hours at r mi/hr after lunch.

_____

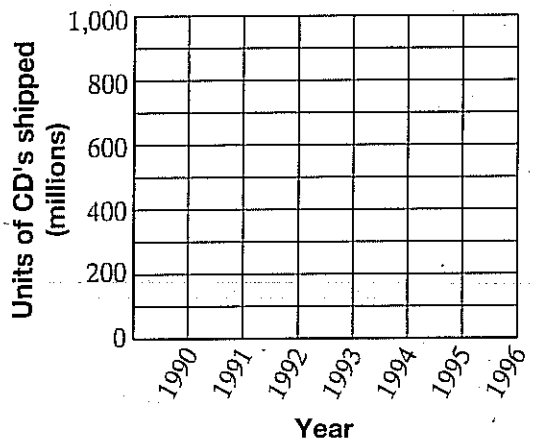
Name _____ Class _____ Date _____

Practice 8-5

Scatter Plots

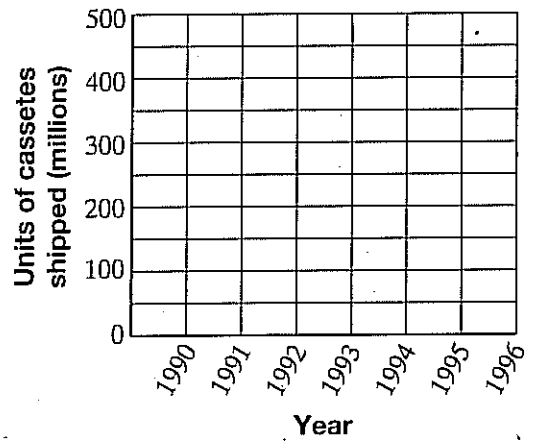
Use the data in the table.

1. Make a (year, units of CD's) scatter plot.

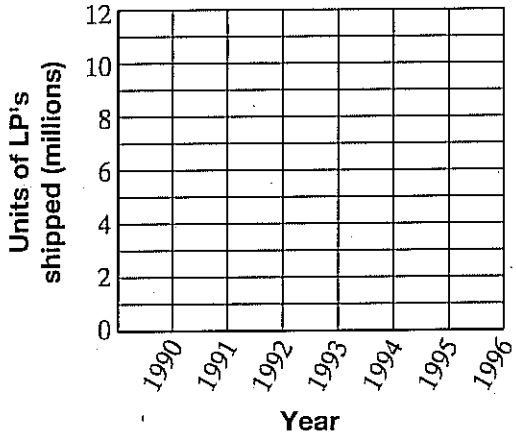


Sales of Recorded Music			
Year	Millions of Units Shipped		
	CD's	Cassettes	LP's
1990	287	442	12
1991	333	360	5
1992	408	366	2
1993	495	340	1
1994	662	345	2
1995	723	273	2
1996	779	225	3

2. Make a (year, units of cassettes) scatter plot.



3. Make a (year, units of LP's) scatter plot.



Is there a *positive correlation*, a *negative correlation*, or *no correlation* between the data sets in each scatter plot?

4. (year, units of CD's) scatter plot _____

5. (year, units of cassettes) scatter plot _____

6. (year, units of LP's) scatter plot _____

Name _____ Class _____ Date _____

Practice 8-6

Solve by Graphing

A giraffe was 1 ft tall at birth, 7 ft tall at the age of 4, and $11\frac{1}{2}$ ft tall at the age of 7.

1. Use the data to make a (age, height) scatter plot.
2. Draw a trend line.
3. Write an equation for your trend line in slope-intercept form.

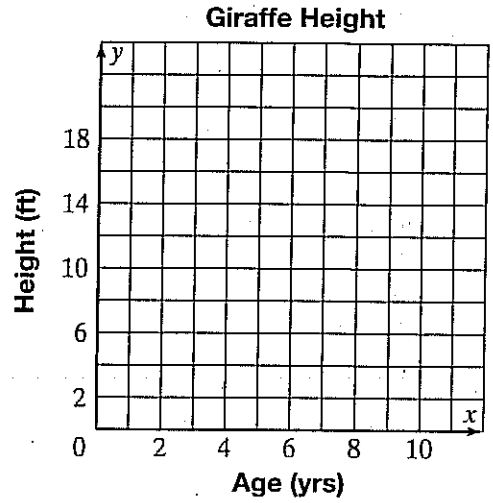
_____

4. Use your equation to find the following information.
   a. the giraffe's height at the age of 5

_____

   b. the age at which the giraffe was 16 ft tall

_____



A hippopotamus weighed 700 lb at the age of 1 and 1,900 lb at the age of 3, and 2,500 lb at the age of 4.

5. Use the data to make a (age, weight) scatter plot.
6. Draw a trend line.
7. Write an equation for your trend line.

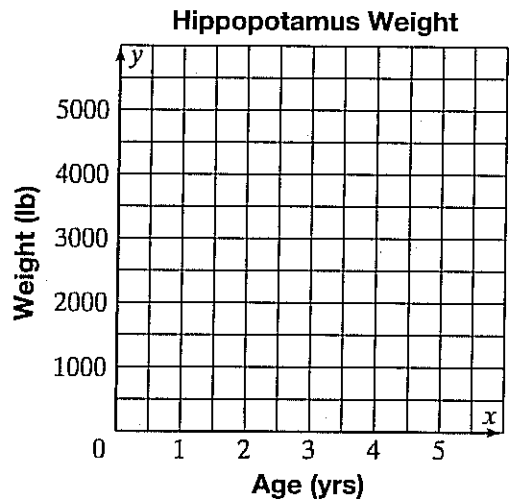
_____

8. Use the equation to predict the following information.
   a. the hippo's weight at the age of 8

_____

   b. the age at which the hippo weighed 7,900 lb

_____



9. Can this equation be used to predict the hippo's weight at any age? Explain.

_____

_____

Name _____ Class _____ Date _____

Practice 8-7

Solving Systems of Linear Equations

Is each ordered pair a solution of the given system? Write *yes* or *no*.

1. $y = 6x + 12$
$2x - y = 4$
$(-4, -12)$ _____

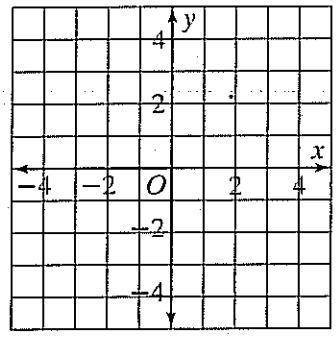
2. $y = -3x$
$x = 4y + \frac{1}{2}$
$\left(-\frac{1}{2}, \frac{3}{2}\right)$ _____

3. $x + 2y = 2$
$2x + 5y = 2$
$(6, -2)$ _____

Solve each system by graphing. Check your solution.

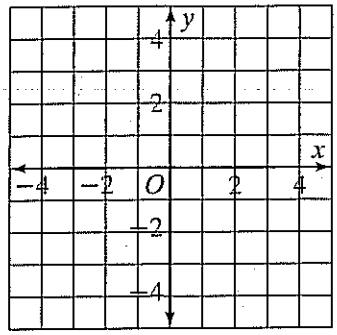
4. $x + y = 3$
$x - y = -1$
Solution:

_____



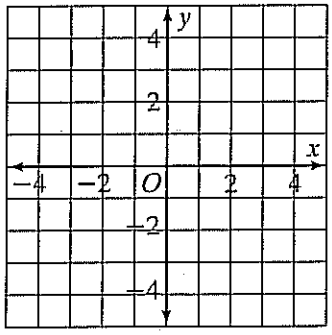
5. $2x + y = 1$
$x - 2y = 3$
Solution:

_____



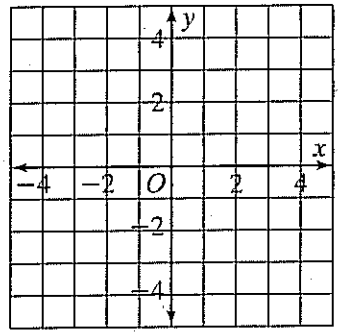
6. $y + 2 = 0$
$2x + y = 0$
Solution:

_____



7. $3x + 2y = -6$
$x + 3y = -2$
Solution:

_____



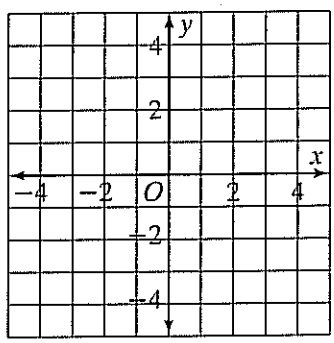
Write a system of linear equations. Solve by graphing.

8. The sum of two numbers is 3. Their difference is 1. Find the numbers.

_____

_____

_____



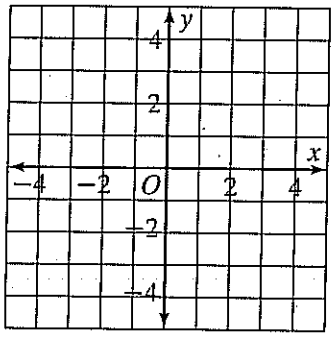
Name _____ Class _____ Date _____

Practice 8-8

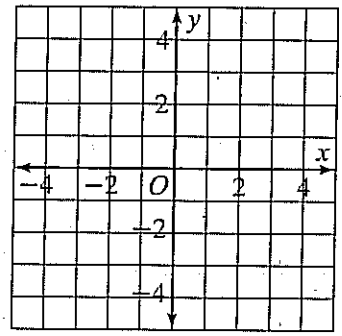
Graphing Linear Inequalities

Graph each inequality.

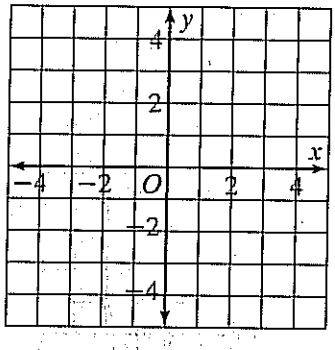
1. $y < x$



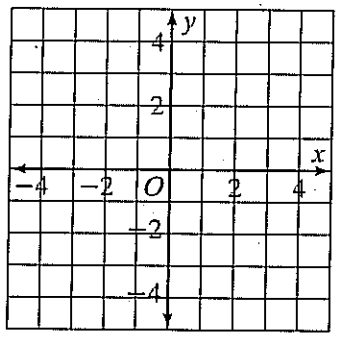
2. $x + y \leq 2$



3. $x + 2y \geq 4$

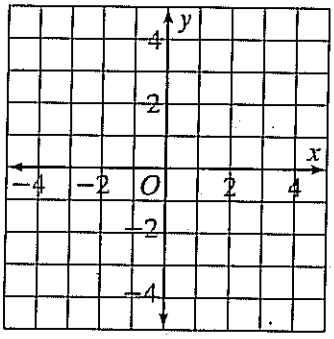


4. $x > -2$

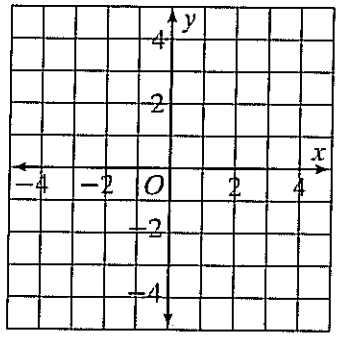


Solve each system by graphing.

5. $y \geq -x - 2$
   $x - 2y < 4$



6. $x + y < 3$
   $y \geq 3x - 2$



7. Is the origin a solution to the system in Exercise 5? _____

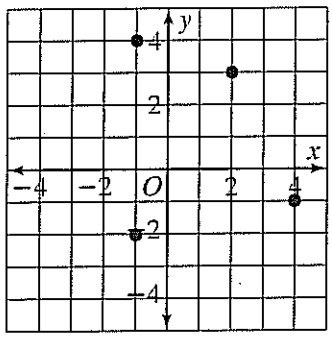
8. Is $(4, 0)$ a solution to the system in Exercise 5? _____

9. Is $(1, 0)$ a solution to the system in Exercise 6? _____

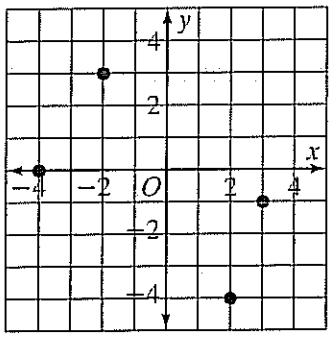
10. Is $(-1, 0)$ a solution to the system in Exercise 6? _____

Chapter 8 Answers

Practice 8-1

1. 

No; a pencil held vertically would pass through both $(-1, 4)$ and $(-1, -2)$.

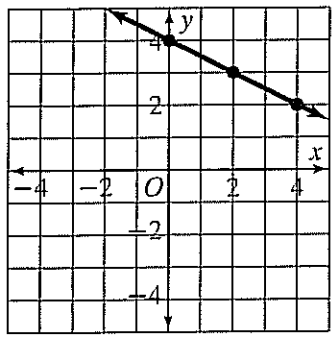
2. 

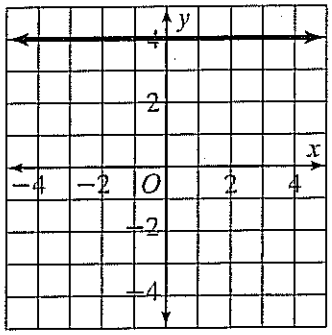
Yes; a pencil held vertically would not pass through any two points.

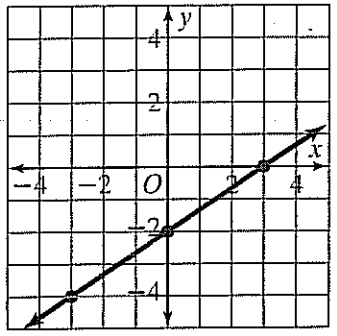
3. $\{7, 8, -5, -9\}, \{-2, 7, 1\}$ Yes; there is one range value for each domain value. **4.** $\{-8, 10, -5\}$, $\{0, 6, -2, 7\}$ No; there are two range values for the domain value 10. **5.** $\{9.2, -3.6, 5.2\}, \{4.7, 4.8\}$ Yes; there is one range value for each domain value. **6.** Yes; there is one time for each speed.

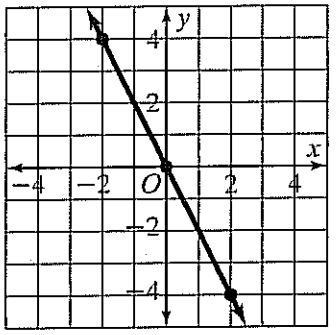
Practice 8-2

1. $5x - 4$ **2.** $\frac{1}{2}x + 1$ **3.** $4x + 7$ **4.** $-x + \frac{2}{3}$ **5.** $-\frac{1}{3}x - 3$ **6.** $-\frac{2}{5}x + 4$

7. 

8. 

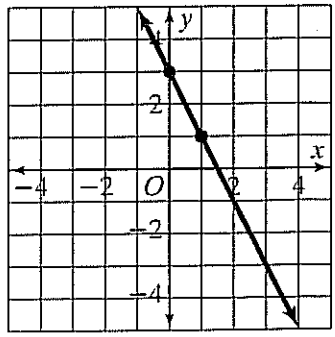
9. $\frac{2}{3}x - 2$; 

10. $-2x$; 

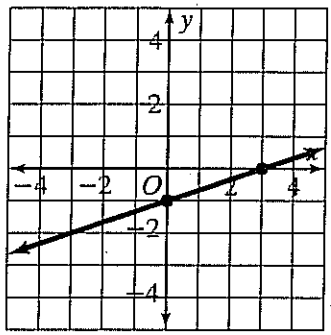
11. no **12.** yes **13.** yes **14.** no **15.** yes **16.** yes

Practice 8-3

1. $\frac{2}{5}$ **2.** undefined **3.** 0 **4.** $-\frac{1}{8}$ **5.** $y = 5x - 6, 5, -6$ **6.** $y = -\frac{7}{2}x + 5, -\frac{7}{2}, 5$ **7.** 0 **8.** $\frac{4}{3}$ **9.**



10.

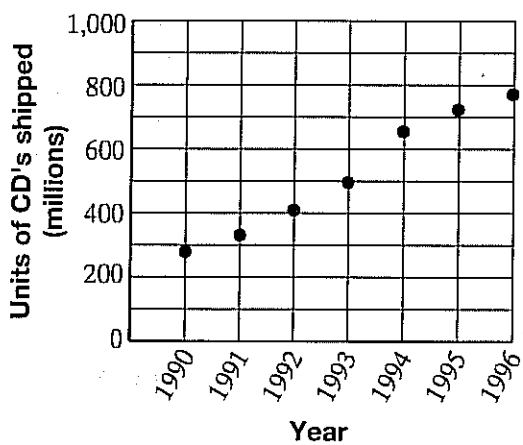


Practice 8-4

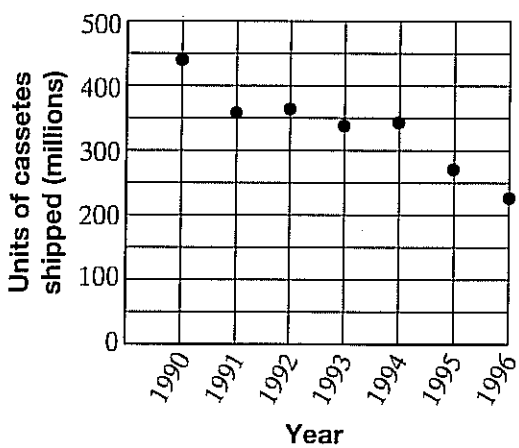
1. $y = -\frac{5}{4}x + 2$ 2. $y = 2x - 4$ 3. $f(x) = -6x$
4. $f(x) = x - 7$ 5. $f(x) = 3x - 8$
6. $f(x) = \frac{1}{2}x + 6$ 7. $p(z) = \frac{z}{16}$ 8. $s(c) = 1.45c$
9. $m(r) = 2r + 7$

Practice 8-5

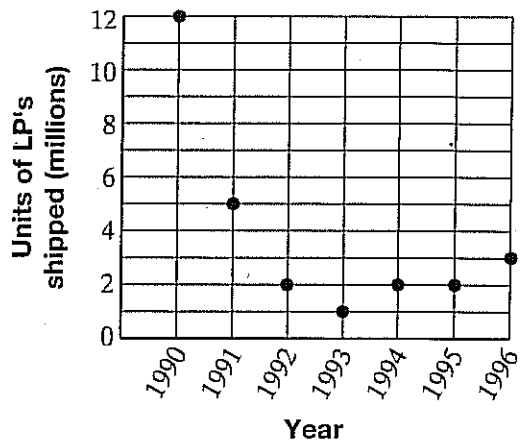
1.



2.



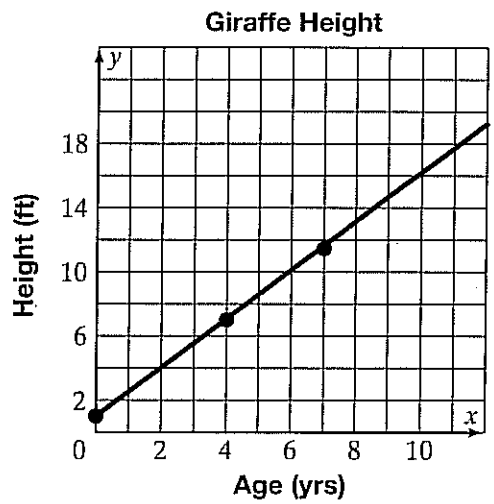
3.



4. positive correlation 5. negative correlation
6. no correlation

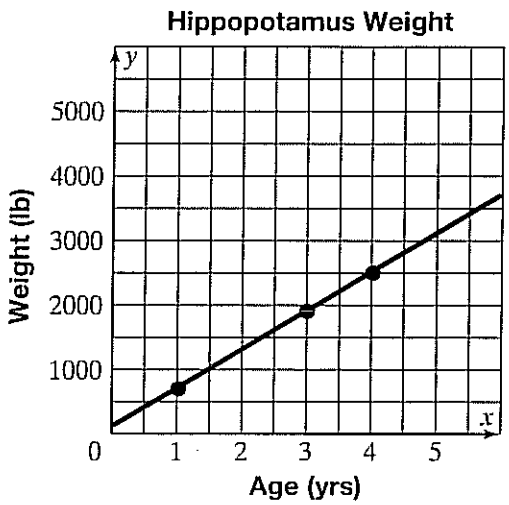
Practice 8-6

1–2.



3. $y = \frac{3}{2}x + 1$ 4.a. $8\frac{1}{2}$ ft b. 10 yrs

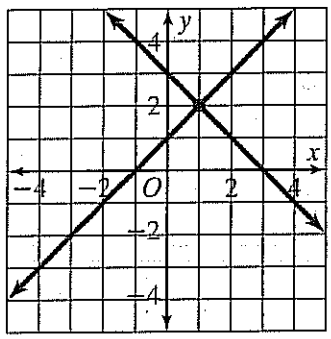
5–6.



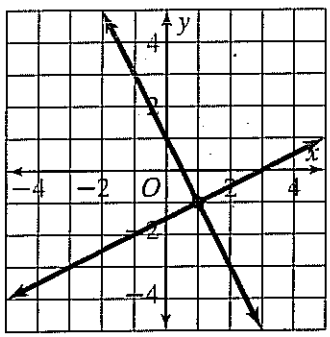
7. $y = 600x + 100$ **8.a.** 4,900 lb **b.** 13 yrs
9. Sample answer is shown: No; the hippo will not continue to gain weight indefinitely.

Practice 8-7

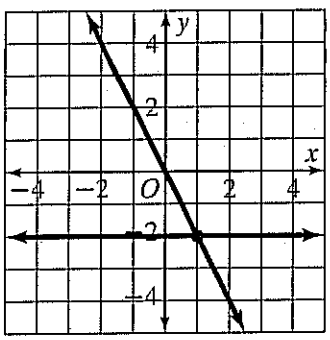
1. yes **2.** no **3.** yes
4. (1, 2);



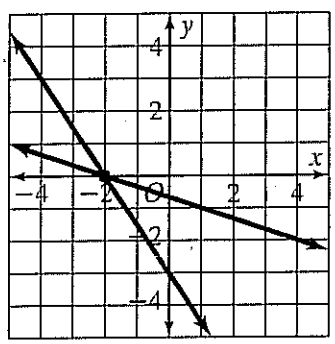
5. (1, −1);



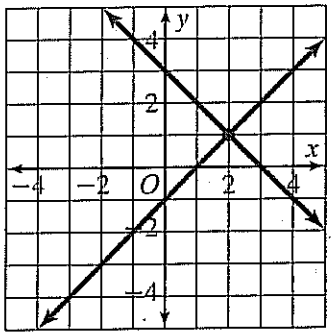
6. (1, −2);



7. (−2, 0);

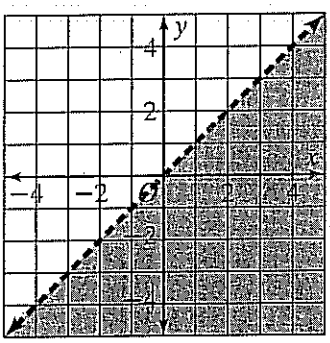


8. $x + y = 3; x - y = 1$; (2, 1); 2 and 1

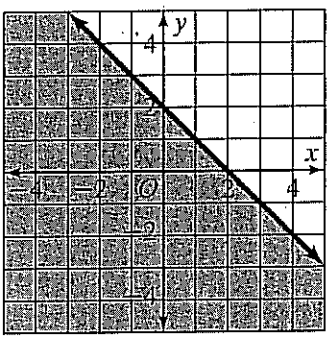


Practice 8-8

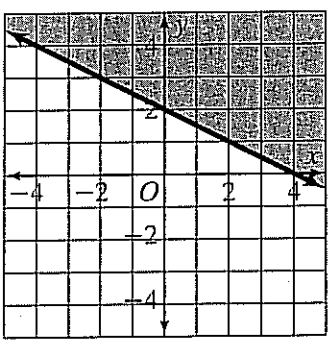
1.



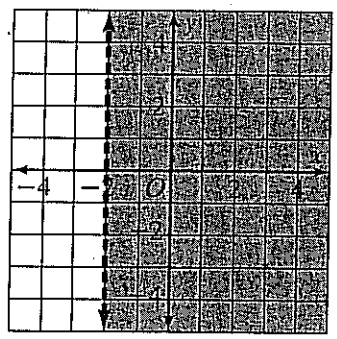
2.



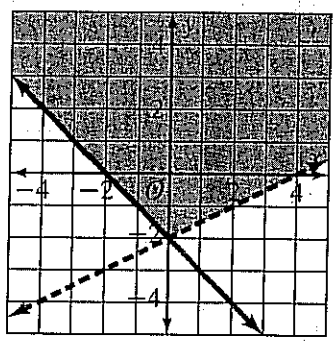
3.



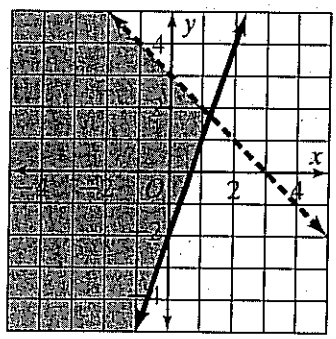
4.



5.

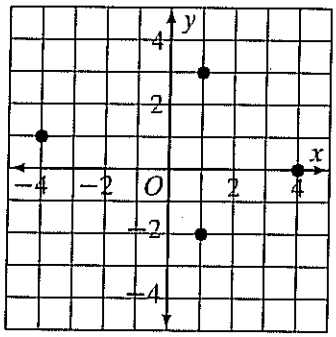


6.



7. yes 8. no 9. no 10. yes

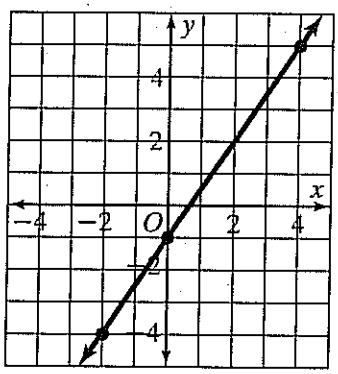
Reteaching 8-1



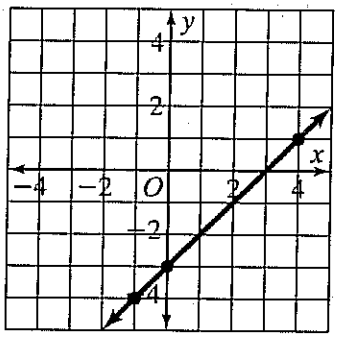
No; a pencil held vertically would pass through both (1, 3) and (1, −2).

Reteaching 8-2

1. $y = \frac{3}{2}(0) - 1 = 0 - 1 = -1, (0, -1)$;
$y = \frac{3}{2}(-2) - 1 = -3 - 1 = -4, (-2, -4)$;
$y = \frac{3}{2}(4) - 1 = 6 - 1 = 5, (4, 5)$



2.. $y = 0 - 3 = -3, (0, -3)$; $y = 4 - 3 = 1$, $(4, 1)$; $y = -1 - 3 = -4, (-1, -4)$



Reteaching 8-3

1. -3 2. $-\frac{5}{2}$ 3. $\frac{1}{4}$ 4. $-\frac{7}{8}$ 5. $-\frac{5}{2}$ 6. 3 7. 0
8. undefined

Reteaching 8-4

1. $f(x) = 7x$ 2. $f(x) = x - 8$
3. $f(x) = -2x + 9$ 4. $f(x) = \frac{1}{3}x + 9$
5. $f(x) = -\frac{1}{4}x - 7$ 6. $f(x) = 6x - 11$

Reteaching 8-5

1.