

**Pre-Algebra
Unit 7 Review**

Name: KEN

U7L1-2 (8-1 and 8-2)

1. Draw a mapping diagram of the following relations. Then, decide if each relation is a function and explain why or why not.

a. $\{(3, 5), (4, 7), (4, 8), (6, 10)\}$

no
 $4 \rightarrow 7$
 $4 \rightarrow 8$

c. $\{(4, 5), (5, 2), (1, -3), (-2, -3), (0, 2)\}$

yes
each x has
one y

2. Find the solution of each equation for $x = -3, 0,$ and 2 . Write each solution as an ordered pair.

a. $y = 3x - 2$

$y = 3(-3) - 2 = -11$
 $(-3, -11)$

$y = 3(0) - 2 = -2$
 $(0, -2)$

$y = 3(2) - 2 = 4$
 $(2, 4)$

b. $y = \frac{1}{2}x + 8$

$y = \frac{1}{2}(-3) + 8 = 6.5$
 $(-3, 6.5)$

$y = \frac{1}{2}(0) + 8 = 8$
 $(0, 8)$

$y = \frac{1}{2}(2) + 8 = 9$
 $(2, 9)$

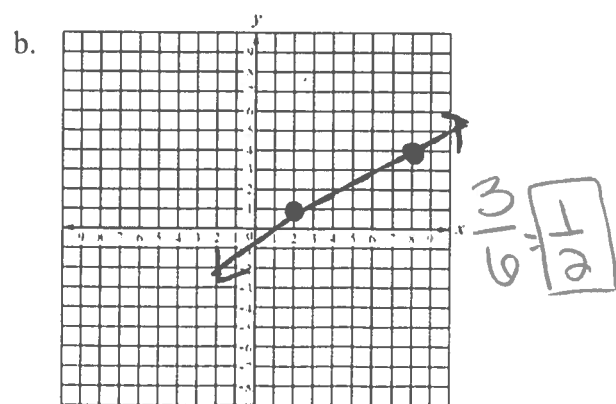
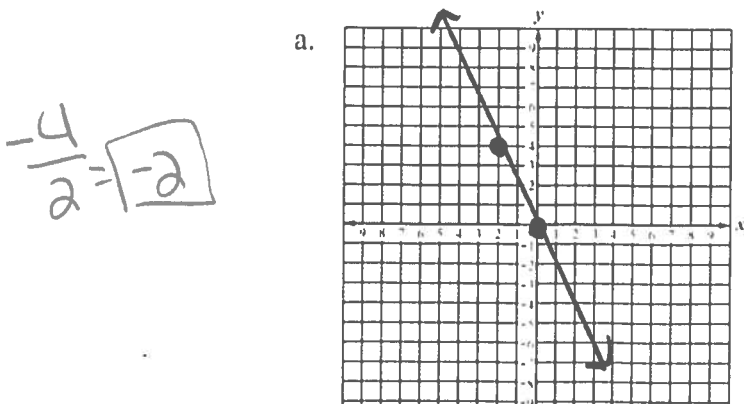
3. Is each ordered pair a solution to $x - 2y = 3$? Write yes or no. Show work.

a. $(-3, -3)$ $-3 - 2(-3) = 3$
 $3 = 3$
 $\boxed{\text{yes}}$

b. $(0, 1.5)$ $0 - 2(1.5) = 3$
 $-3 \neq 3$
 $\boxed{\text{no}}$

U7L3 (8-3)

4. Use the following graphs to find the slopes of each line.



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

a. (2, 4) and (6, 1)

$$\frac{1-4}{6-2} = \boxed{\frac{-3}{4}}$$

b. (-3, -2) and (3, 2)

$$\frac{2-(-2)}{3-(-3)} = \frac{4}{6} = \boxed{\frac{2}{3}}$$

6. A horizontal line has a slope of zero.

7. A vertical line has an undefined slope.

8. What is slope-intercept form? $y = mx + b$

a. In slope-intercept form, what does m represent?

b. In slope-intercept form, what does b represent?

9. Use the graph for the following questions.

a. Find the slope of the line.

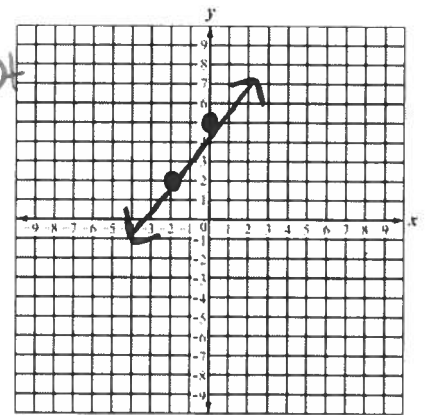
$$\frac{3}{2}$$

b. Find the y-intercept. (write as an ordered pair)

$$(0, 5)$$

c. Write an equation of the line in slope-intercept form.

$$y = \frac{3}{2}x + 5$$



10. Use $y = 5x - 4$ for the following questions.

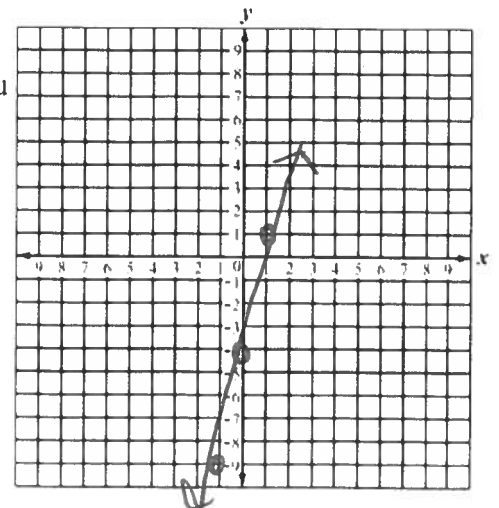
a. What is the y-intercept of this line? (Write your answer as an ordered pair.)

$$(0, -4)$$

b. What is the slope of this line? Use arrows to show how you would use the slope to find more points on this line. (Example: up 1, right 3)

$$\begin{array}{ccc} \underline{5} & \uparrow 5 & \downarrow 5 \\ & \rightarrow 1 & \leftarrow 1 \end{array}$$

c. Graph this line using the slope and y-intercept.



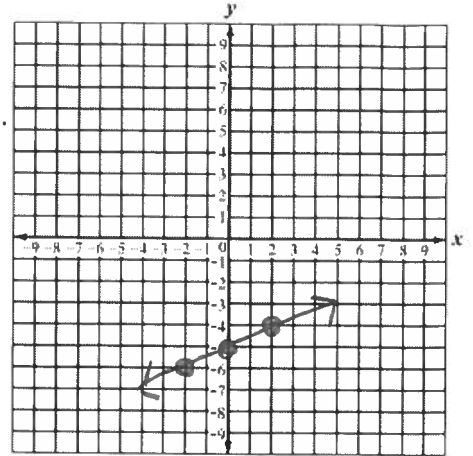
11. Use $3x - 6y = 30$ for the following questions.

a. Solve this equation for y (put into slope-intercept form).

$$-6y = -3x + 30$$

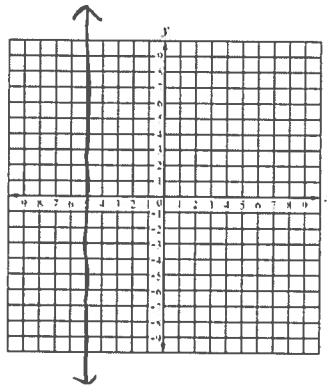
$$y = \frac{1}{2}x - 5$$

b. Graph this equation using the slope and y-intercept.

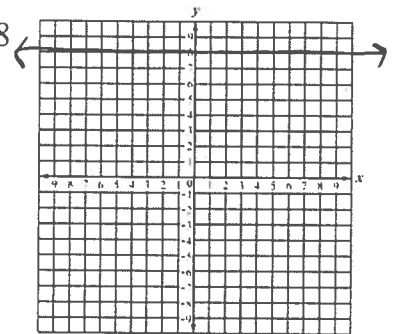


12. Graph the following special cases.

a. $x = -5$



b. $y = 8$



U7L4 (8-4)

13. Write a **function** to find the number of months depending on the number of years.
Use $m(y)$ to represent the number of months and y to represent the number of years.

$$m(y) = 12y$$

a. Use your **function** to find the number of months in 3.25 years.

$$m(3.25) = 12(3.25)$$

$$= \boxed{39 \text{ months}}$$

14. Write a **function** to find the total cost of an order if each shirt is \$15.99 and shipping is \$7. Use s to represent the number of shirts and $t(s)$ to represent the total cost.

$$t(s) = 15.99s + 7$$

a. Use your **function** to find the total cost of 4 shirts.

$$t(4) = 15.99(4) + 7$$

$$= \boxed{870.96}$$

15. Write a function for each table. (Find the slope, find the y-intercept, and write the function).

$$f(x) = 5x + 4$$

x	y
0	-1
1	2
2	5
3	8

x	y
-1	4
0	6
1	8
2	10

x	y
-2	-6
0	4
2	14
4	24

$$m = \frac{3}{1} = 3$$

$$b = -1$$

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

$$m = \frac{2}{1} = 2$$

$$b = 6$$

$$f(x) = 2x + 6$$

$$m = \frac{10}{2} = 5$$

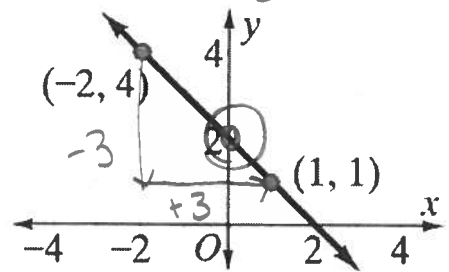
$$b = 4$$

16. Use the graph to write a function for the following line.

$$m = \frac{-3}{3} = -1$$

$$b = 2$$

$$f(x) = -x + 2$$



17. Write a function for a line that has a slope of $-\frac{1}{2}$ and y-intercept of 3

$$f(x) = -\frac{1}{2}x + 3$$

18. Write a function for a line with slope 2 that contains the point $(-1, 1)$. (Find the y-intercept using slope-intercept form).

$$1 = 2(-1) + b$$

$$3 = b$$

$$f(x) = 2x + 3$$

19. Write a function for a line containing the points $(-3, -2)$ and $(3, 0)$.

Slope: $\frac{0 - (-2)}{3 - (-3)} = \frac{2}{6} = \frac{1}{3}$

y-intercept: $-2 = -3\left(\frac{1}{3}\right) + b$

Function:

$$-1 = b$$

$$f(x) = \frac{1}{3}x - 1$$

U7L5-6 (8-7 and 8-8)

20. Check whether (0, 2) is a solution of each system. Show work.

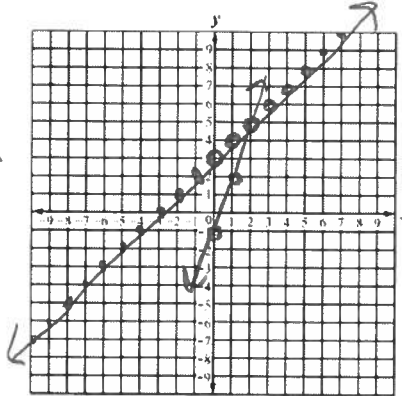
a. $\begin{cases} x - 2y = -4 \\ y = x + 2 \end{cases}$
 $0 - 2(2) = -4$
 $-4 = -4 \checkmark$
 $a = -0 + 2$
 $a = 2 \checkmark$
Yes

b. $\begin{cases} y = 3x + 2 \\ 2x = 3y \end{cases}$
 $2 = 3(0) + 2$
 $2 = 2 \checkmark$
 $2(0) = 3(2)$
 $0 \neq 6$
No

21. Solve the following systems by graphing.

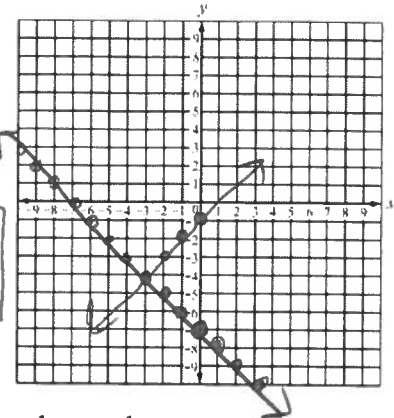
b. $\begin{cases} y = x + 3 \\ 3x - y = 1 \end{cases}$
 $y = 3x - 1$

(2, 5)



b. $\begin{cases} y = -x - 7 \\ x + y = -7 \\ x - y = 1 \end{cases}$
 $y = x - 1$

(-3, -4)



22. A bag contains red and blue marbles. (1) There are 20 fewer blue marbles than red marbles, and (2) twice as many red marbles as blue marbles. Let $x = \#$ red marbles and $y = \#$ blue marbles.

a. Write a system of equations (use statement 1 and 2).

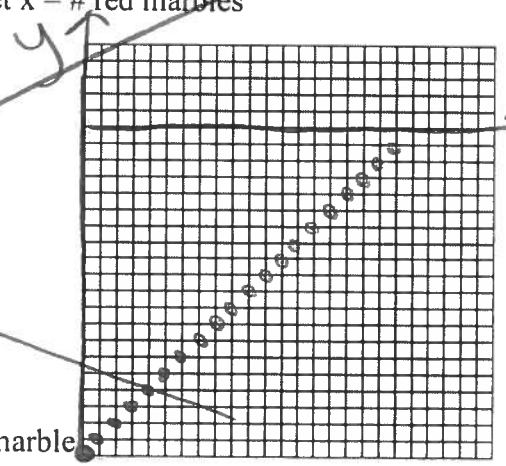
$\begin{cases} y = x - 20 \\ x = 2y \end{cases}$

b. Get both equations into slope-intercept form.

$y = x - 20$

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

c. Solve your system by graphing to find the number of each marble.



23. A grocery store charges \$3/lb for chicken and \$5/lb for beef. How many pounds of each can you buy for less than \$15? Write an inequality where $x =$ pounds of chicken and $y =$ pounds of beef. Then graph your inequality.

$3x + 5y < 15$

$y < -\frac{3}{5}x + 3$

a. From your graph, give two possible combinations of pounds of meat you could buy.

2# chicken
1# beef

0# chicken
3# beef

