Review Sheet Unit 9

1. Determine whether the relation
   {(5,3) (-5,4) (4,2) (4,1)} is a function.
   Explain your reasoning.

2. Use the table below that shows the cost of gas in different years. Is the relation a function? Explain.

Year	2002	2004	2006
Cost ($)	1.36	1.82	2.26

Find four **solutions** of each equation. Write the solution as an ordered pair.
(Hint: make a table of values)

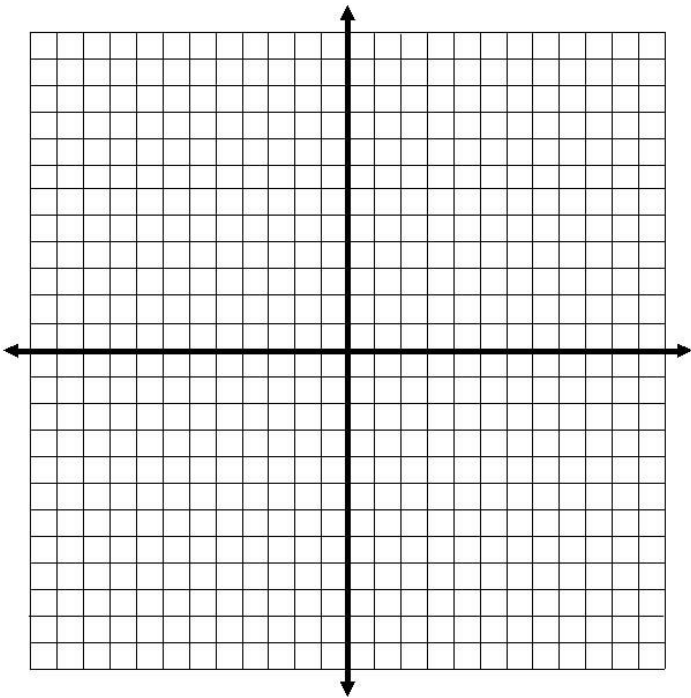3. a) y= -5x

x	y= -5x	y	(x,y)

b) x + y = -1

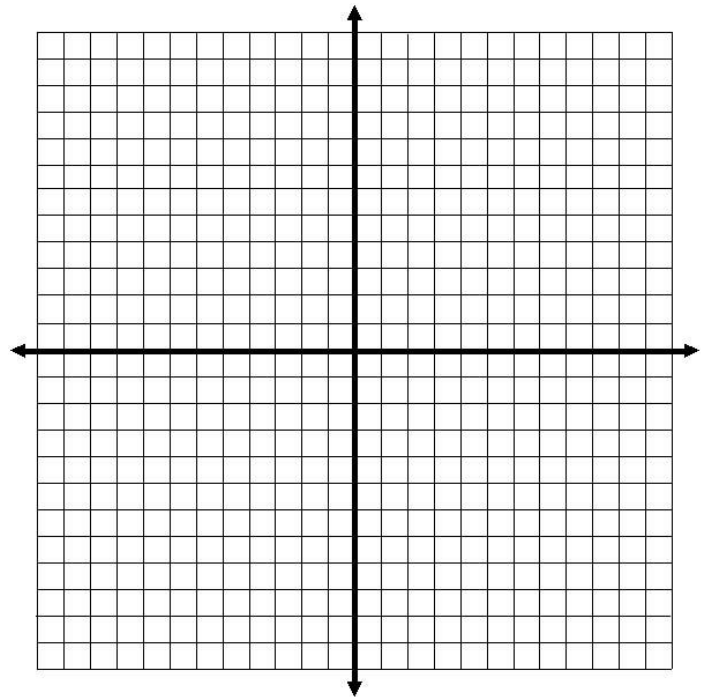| x		y	(x,y)

4. Each small smoothie x costs $1.50 and each large smoothie y costs $3. Find two solutions of 1.5x + 3y = 12 to determine how many of each type of smoothie Lisa can buy with $12.

Graph the following:

5. a) y= -2x

b) y= x + 5

6. Find the **constant rate of change** between the quantities in the table below.

Time (h)	0	4	8
Money Earned ($)	0	31	62

Example 3

Find the constant rate of change in the water level.

Time (min)	0	4	8
Water Level (ft)	5	4	3

rate of change $= \dfrac{\text{change in water level}}{\text{change in time}}$

$= \dfrac{5\text{ ft} - 4\text{ ft}}{0\text{ min} - 4\text{ min}}$

$= \dfrac{1\text{ ft}}{-4\text{ min}}$ or $-\dfrac{1}{4}$ ft/min

The rate of change is $-\dfrac{1}{4}$ feet per minute.

7. Find the slope of the line given:

a) F(0,1) G(6,4)

b) A(-3, 7) G(5,-1)

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8. A lizard is crawling up a hill that rises 5 feet for every horizontal change of 30 feet. Find the slope.

9. The distance Mrs. Salazar drives varies directly with how long she has been driving.

Time (hrs)	2	4	6	8
Distance (miles)	40	80	120	160

   a. Identify the constant of proportionality

   b. Write an equation that models her distance traveled.

   c. How far has she driven after 13 hours?

**10.** Determine if the graph below represents a direct variation. Explain why or why not.
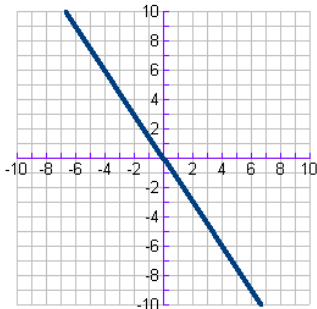
11. The cost of renting a paddle boat varies directly with the number of hours as shown in the table.

Hours	2	3	4	5
Cost ($)	18	27	36	45

   a) Identify the constant rate of change

   b) Write an equation that relates the number of hours with the cost.

   c) Find the cost of renting a paddle boat for 7 hours.

12. Determine whether the relationship between temperature and time is a direct variation.
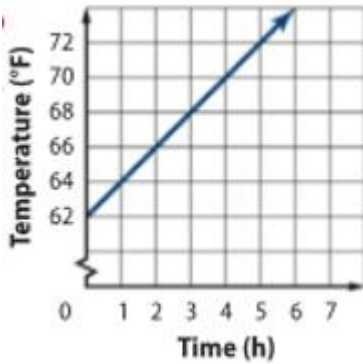
13. State the slope and y-intercept of the graph of **each** equation.

A) $y = 4x + 7$

B) $5x + y = 0$

C) $y = -8x - 7$

D) $y = \frac{-4}{3} x$

E) $-x + y = -8$

F) $4x - y = 6$

Example 5

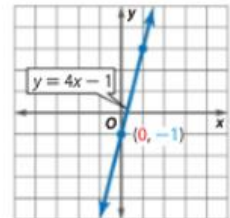State the slope and y-intercept of the graph of $y = 4x - 1$. Then graph the equation.

$y = 4x - 1$ Write the original equation.

$y = 4x + (-1)$ Write the equation in the form $y = mx + b$.

$y = mx + b$ $m = 4, b = -1$

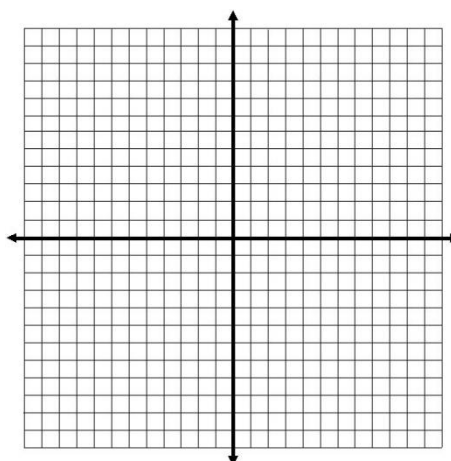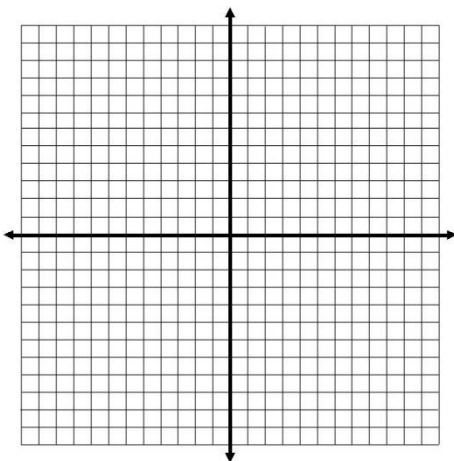The slope of the graph is 4 and the y-intercept is -1.

To graph the equation, first write the slope as $\frac{4}{1}$. Plot the point at $(0, -1)$. Then go up 4 and right 1. Connect the points and extend the line.
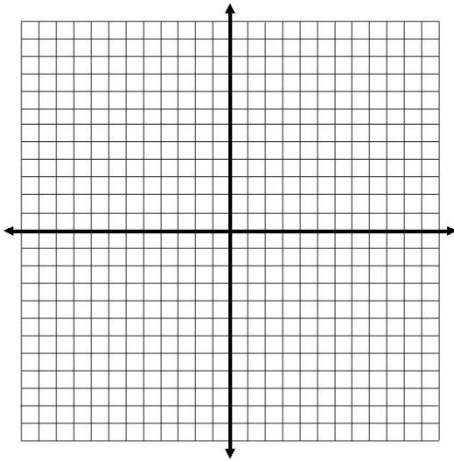

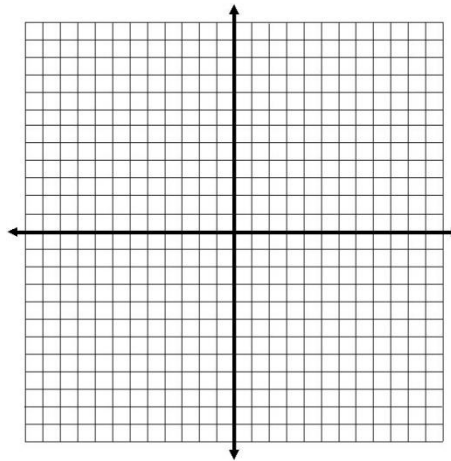**14.** Graph each equation using the slope and y-intercept.

a) $y = -x + 4$

b) $y + 6 = 2x$

Page 4

c) $y = \frac{3}{2}x - 3$

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

15. A balloon is rising above the ground. The height in feet y of the balloon can be given by $y = 7 + 2x$, where x represents the time in seconds. State the slope and y-intercept of the graph of the equation. Describe what they represent.

16. Jacob is ordering DVDs from a Web site. The site charges a flat rate for shipping, no matter how many DVDs he buys. The total cost y of Jacob's order is given by $y = 9x + 5$, where x represents the number of DVDs he buys. State the slope and y-intercept of the equation. Describe what they represent.
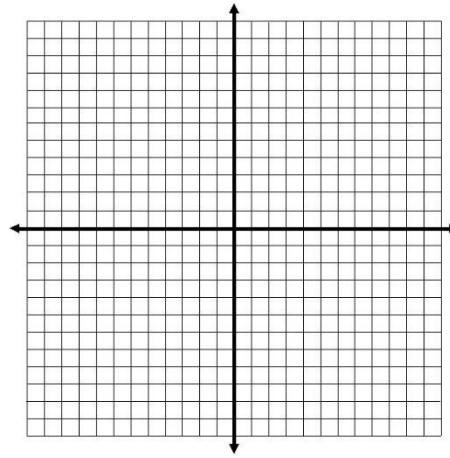
17. Solve each system by **graphing**

A) $\quad y = x \qquad\qquad y = \frac{1}{2}x - 1$

Solution:

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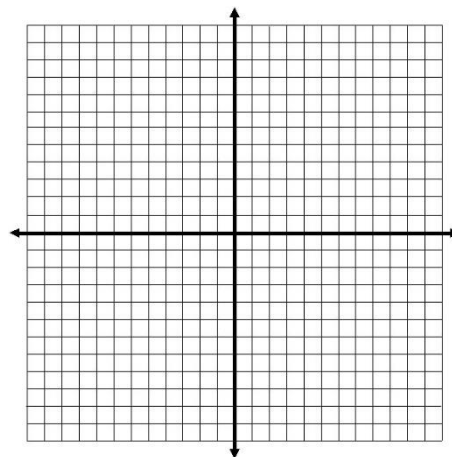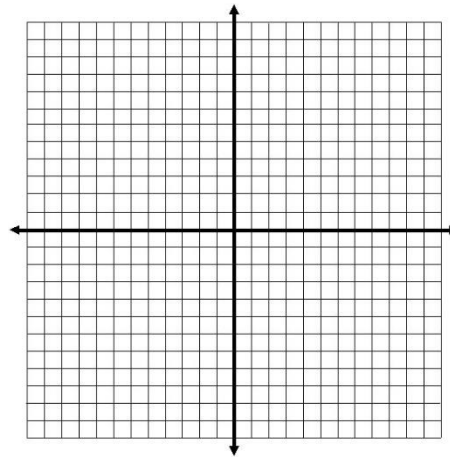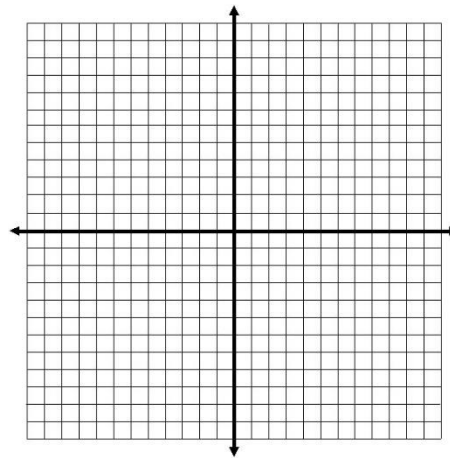
B) y= x +2   y= 3x

Solution:

C) y= 2x + 1   x + y = -2

Solution:

D) 5x -3y = -3   y= -x + 1

Solution:

18. The sum of two numbers is 9 and the difference of the numbers is 1. Write a system of equations to represent this situation. Then solve the system to find the numbers.

19. Solve each system algebraically.

a) $y=4$ $y=3x-11$

b) $y=6-x$ $x=-1$

c) $2x+y=3$ $y=-3x+7$

d) $-5x+y=2$ $-3x+6y=12$

e) $7x-3y=-4$ $7x=-2+3y$

f) $-4x+y=6$ $-5x-y=21$

g) Tickets to a museum costs $3 for children and $8 for adults. A group of four visitors to the museum spent a total of $22 on tickets. Write and solve a system of equations to represent this situation. Interpret the solution. (Let x= number of children , y= number of adults)

20. As a waitress, Rachel earns $25 for a five-hour shift. Her customers tip her an average of $3 per order. Which equation represents her total earnings for one shift?

(a) $y=25x+3x$ (b) $y=3+25x$ (c) $y=25+3x$

21. What are Parallel lines? (Describe the slopes and draw a visual)

22. What are Perpendicular lines? (Describe the slopes and draw a visual)   Pg 7
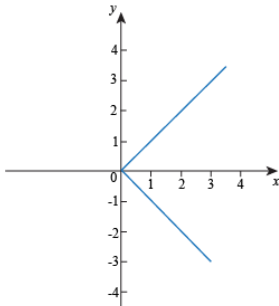
23. Are the following sets of lines parallel, perpendicular or neither?

    A) $y = 2x + 5$ $y = 2x - 6$
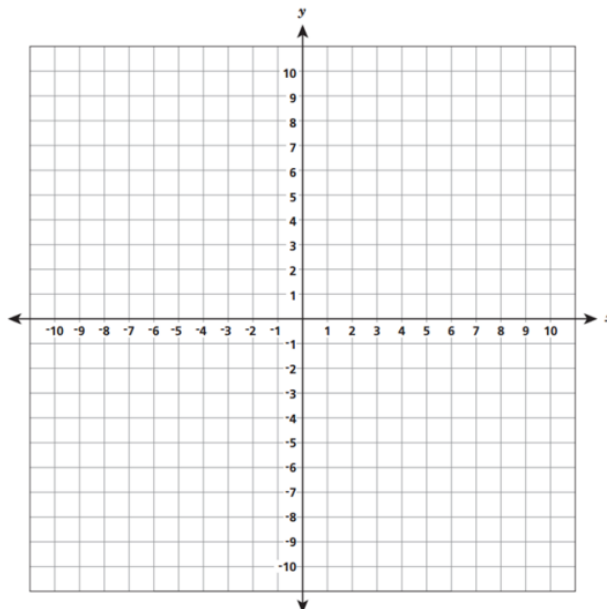
    B) $y = 3x + 8$ $y = \frac{1}{3}x - 2$

    C) $2y = -8x + 2$ $y = \frac{1}{4}x + 10$

**24.** Determine if the graph is a function. Explain why or why not.

25. Graph the system of equations on the graph below. Identify the solution. If there is no solution, explain why. Describe the lines as parallel, perpendicular, or neither.

$$3y = 5x - 6$$
$$3x + 5y = 15$$

Pg 8

26. A) Determine the constant rate of change (slope) of each graph below.

B) Interpret the meaning of the slope.

Weight of a Jar with Marbles
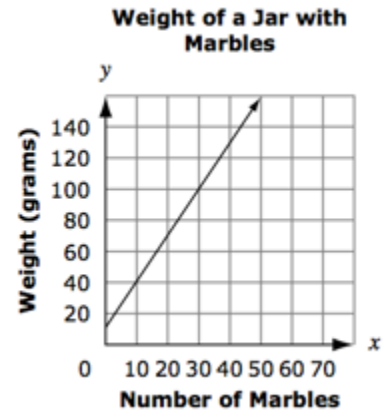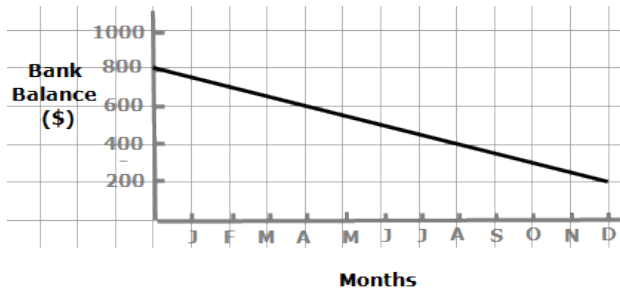
A)   A)

B)   B)

27. What quadrant **or** axis are the following coordinate points located at?
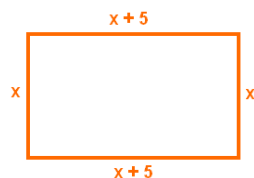
A) (3,5) _____   C) (-1, 0) _____

B) (-4, -7) _____   D) (0,4) _____

E) If the points above were part of a line, which point would be the y-intercept? Explain your reasoning.

28. Given the line y= -4x -5, one of the points on the line has a y coordinate of 19.

Find the x coordinate of this point.

29. Using the figure:

A) Find the perimeter of the figure   B) Find the area of the figure in

terms of x   in terms of x

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