# Cairo American College

Integrated Math 2

## *Unit 1 – Linear Relations PRETEST*

Name:

_____

Date:

_____

*Score:*

**Goal:   Students convert graphical, symbolic & numerical representations of linear data**

1.  What can be determined about the signs of $x$ and $y$ if $(x, y)$ lies…
   a. in the fourth quadrant?             b. on the x-axis to the left of the origin?

2.  The line through the points (5,-3) and (-4, 0) passes through every quadrant except one. Which one?

3.  The point (5,-3) is on the line $y = 4x + b$.  Find the value of $b$.

4.  Rewrite the following equation in slope-intercept form. Then, use a table of values to graph the relation.
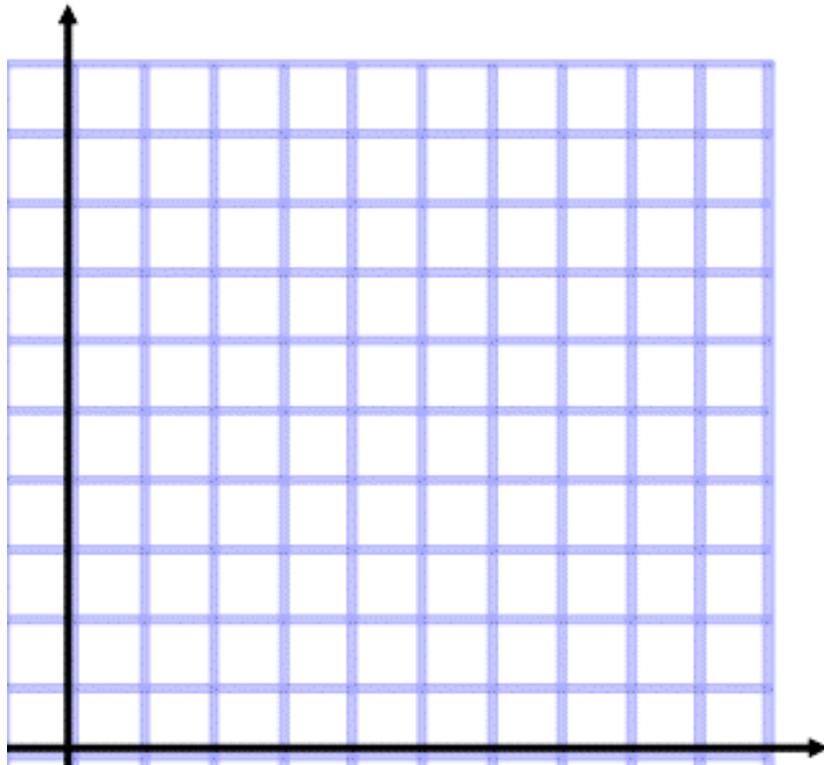
   $$2y - 4x = -6$$
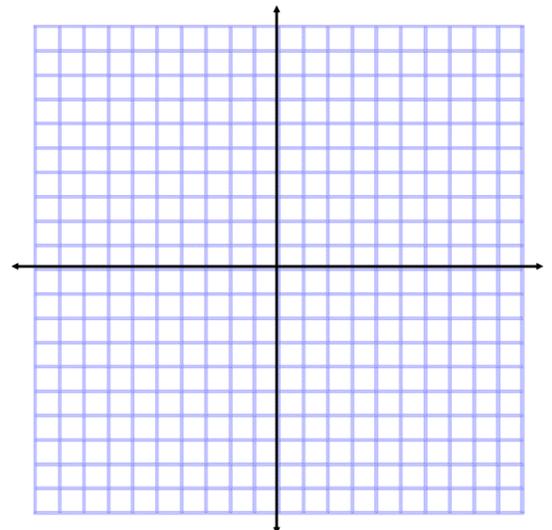
| x |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| y |  |  |  |  |  |  |

5. Snowmobiles!  The amount of money (in millions of dollars) spent in the United States on snowmobiles is shown in the table.

| Year | 1990 | 1991 | 1992 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|
| Money Spent on Snowmobiles | 300 | 400 | 450 | 700 | 925 | 975 |

A. Draw a scatter plot of the data set.

B. Describe the relationship between the year and the amount of money spent on snowmobiles.

C. Use a line of best fit to estimate the amount of money spent on snowmobiles in 1993.

6. No matter how many hours Ramon works, he makes $500 per week.  Ramon's office is closed on Saturday and Sunday.  Also, it is open 12 hours each day during the week.

A. Graph the relationship between x, the number of hours he works, and y, his weekly income.
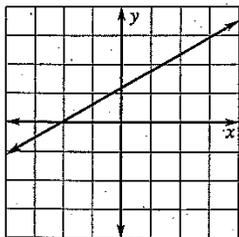
B. Write an equation for this graph?

C. What is the domain of this graph?
   The  range?
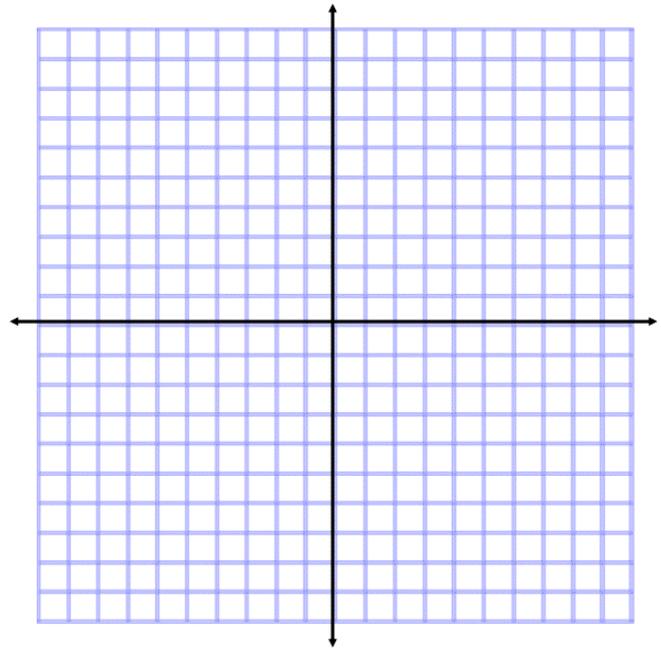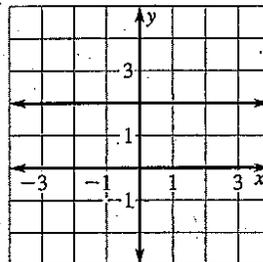
7.  What is the slope of each line pictured below:
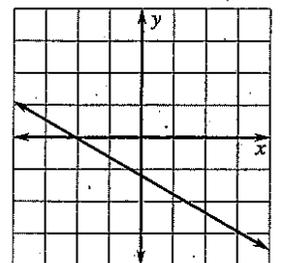    a.                                    b.                                    c.
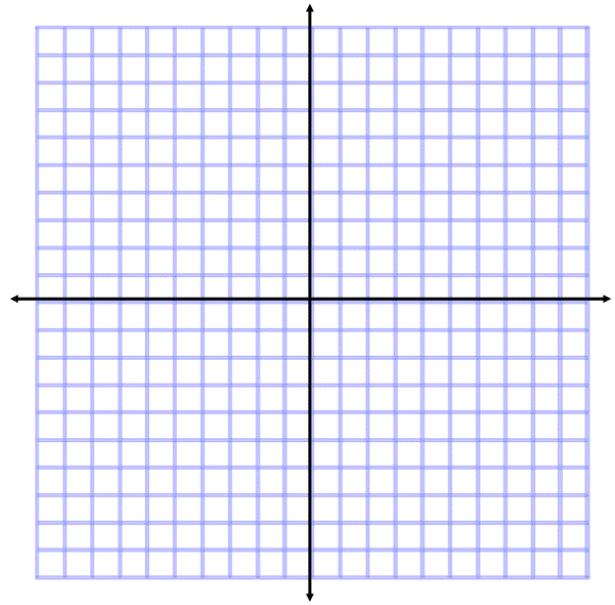
8. The amount of drinking water left in a 1000 liter tank at the end of the day is related to the number of people staying in the hotel that day. When the relation is graphed, the intercepts are x = 500 and y = 1000.

   a. Graph the relation between x and y

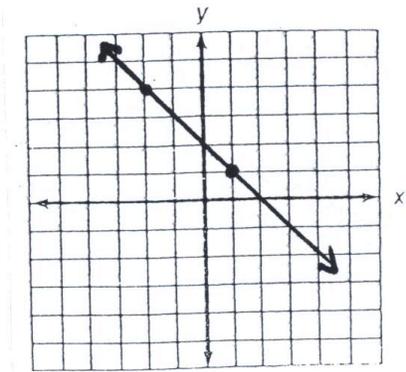   b. Explain the real life meaning of each intercept.

   c. Write the equation of this line in slope intercept form

9. Calculate the slope of the lines passing through the following pairs of points:

   (-3,2) and (1,5)

10. Write the equation of the line pictured in the
    following graph in slope intercept form.

11. You work a different number of hours each day.  Your total pay, p, varies directly with the
    number of hours h you work.

    Complete the table by finding the ratio of your total pay each day to the number of hours
    you worked that day.

| Total pay, p | $20 | $15 | $30 | $25 |
|---|---|---|---|---|
| Hours worked, h | 4 | 3 | 6 | 5 |
| Ratio | | | | |

a.  Write an equation that relates the variables p and h.

b.  If you work for 8 hours on the fifth day, what will your total pay be?

12. For each of the following equations,

a. $y = -\dfrac{3}{5}x - 6$
b. $y = -\dfrac{5}{3}x + 2$
c. $y = \dfrac{3}{5}x + 1$
d. $y = -\dfrac{3}{5}x + 2$

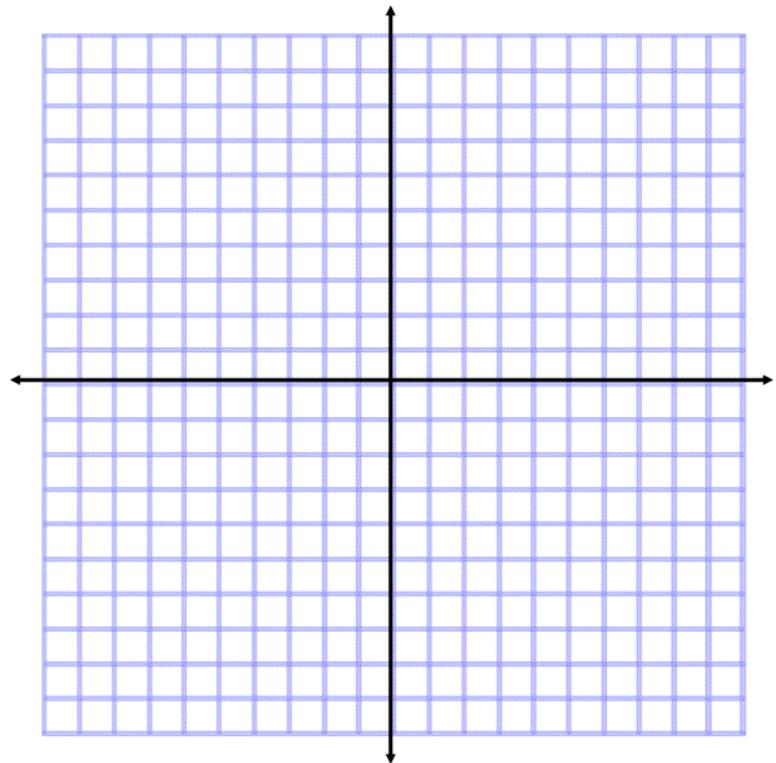A. Identify the slope and y-intercept of each equation's graph

|   |   | Slope | Y-Intercept |
|---|---|---|---|
| a | $y = -\dfrac{3}{5}x - 6$ | | |
| b | $y = -\dfrac{5}{3}x + 2$ | | |
| c | $y = \dfrac{3}{5}x + 1$ | | |
| d | $y = -\dfrac{3}{5}x + 2$ | | |

B. Graph and label each line on the axes shown.

C. Which 2 equations represent parallel lines?

D. Which 2 equations represent perpendicular lines?

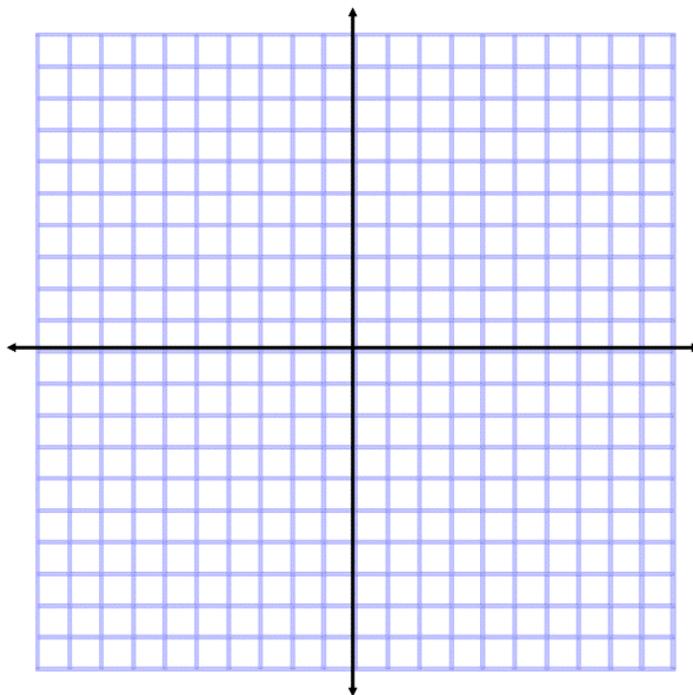E. How can you tell which lines will be parallel and perpendicular just by looking at the equations?  Explain.

13. Write an equation of the line that is parallel to the given line and passes through the given point.

$$y = 2x + 2 \qquad (3, 2)$$

14. Write an equation of a line through (0, 2) that is perpendicular to $y = -4x + 6$

15. Graph the following equation: $y + 1 = -2(x - 5)$

16. Write an equation in point-slope form of the line that passes through the given point and has the given slope:
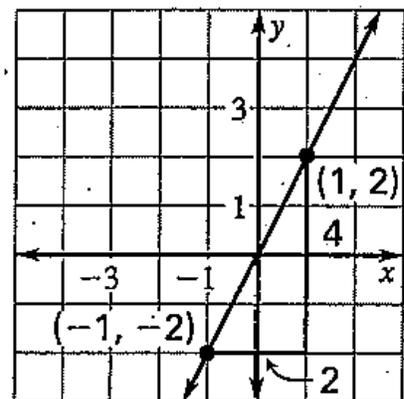
   (-6, 2)  m = -5

17. In point-slope form, write an equation of the line that passes through the given points:

   (5, 12) and (6, -2)

   B.  Now, write the equation in standard form.

18. Write an equation of the line in point slope form



   B.  Now, write the equation in slope-intercept form.