Review: Linear Concepts

Name:_____

Accelerated 7th Grade Math

Directions...
 ➢ Read each question carefully.
 ➢ Show all work for full credit.

1. What does the word *slope* mean and what *formula* do you use to find it?

2. Find the slope for each of the following.
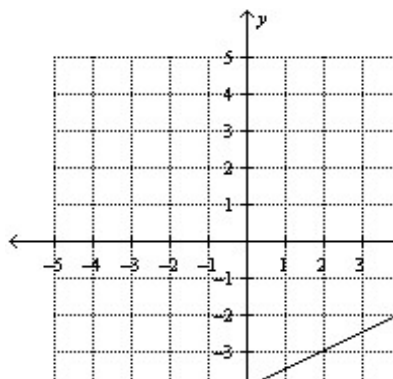
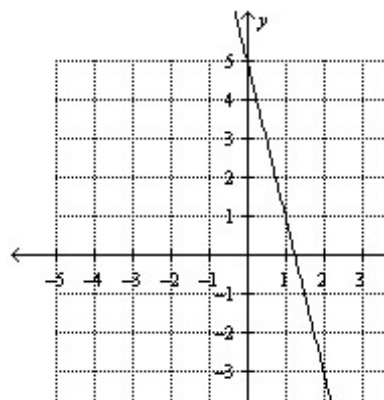   a. $y = 2x - 7$

   b. $y = -\frac{2}{3}x - 6$

c.

x	y
2	4
4	2
6	0
8	-2

d.

x	y
-12	10
-9	1
-6	-8
-3	-17

e.
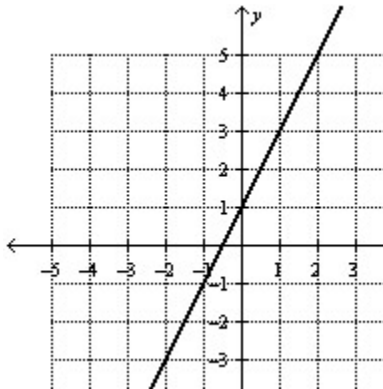

f.

g. (2, -1) (8, 4)

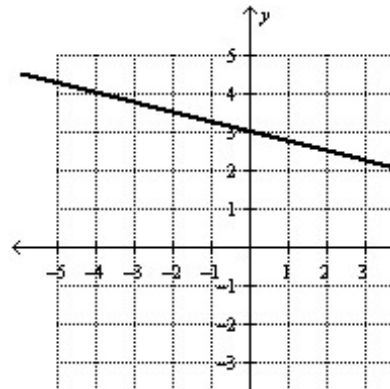h. (4, 10) (10, 12)

i. (-6, -4) (6, 1)

3. What is the general form of a **linear equation** and what does the *m* and the *b* stand for?

4. Write a linear equation for each of the following...
    a.   b.

5. <u>For each of the following, **find the slope and y-intercept, then write an equation**.</u>
    a.   b.

x	y
-3	12
0	24
3	36
6	48
9	60

x	y
2	16
4	8
6	0
8	-8
10	-16

slope = _____   slope = _____

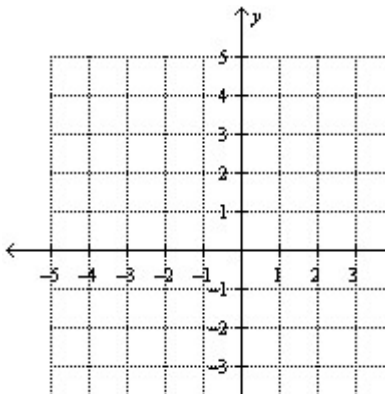y-intercept = _____   y-intercept = _____

equation: equation:
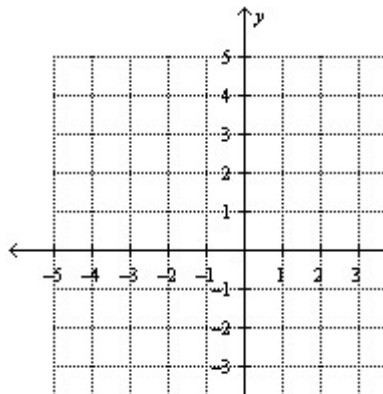
6. Graph each of the following lines...
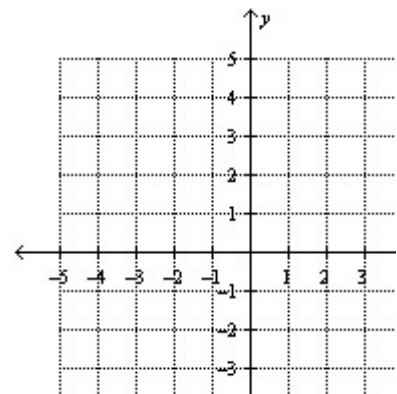
    a. $y = 3x - 5$ b. $y = \frac{1}{4}x + 2$ c. $y = 4 - \frac{2}{3}x$

7. The golf club is looking for new members. There are currently 6 students in the club, but every day three more people sign up.

    a. Identify the input and the output for the situation and create a table.

    Input: _____   Output: _____

Input:					
Output:					

    b. Draw a graph of the situation. Be sure to label each axis.

    c. Write a linear equation that represents the situation.   _____

    d. **Use the equation** you wrote in part c to answer each of the following…

        i.   How many students are in the club after 14 days?

        ii.   If there are 27 people in the club, how many days have gone by?

    e. What is the *slope* of this situation? What is the *y-intercept* of this situation?

8. Write the *equation* for the line that goes through each pair of points listed below…
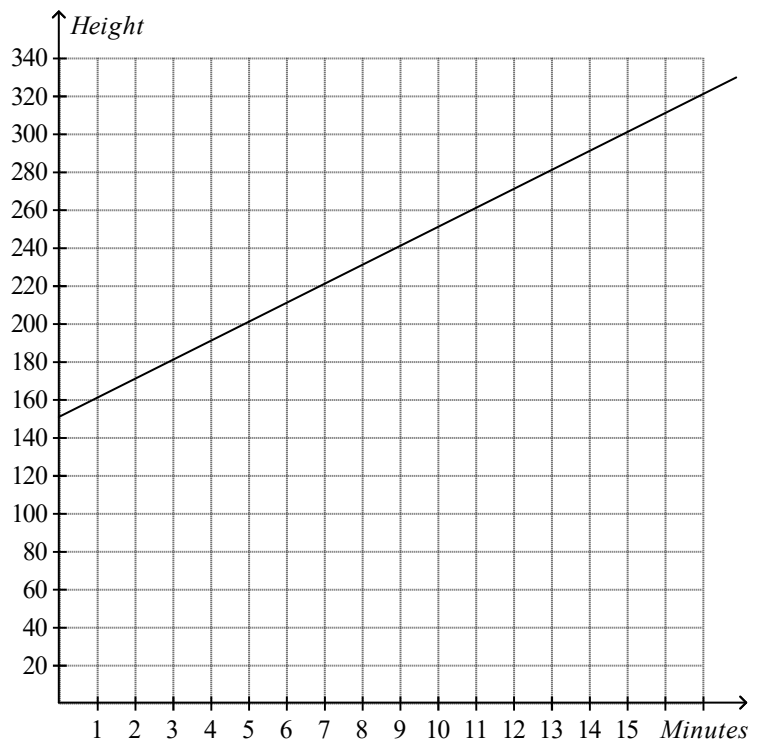
    a. (9, 10) and (3, -2)   b. (-1, -5) and (6, -10)

9. Two men are climbing a mountain.

    Ted: Ross:

Minutes	Height (ft)
0	200
5	240
10	280
15	320

a. Who is climbing faster?

b. Who starts out higher on the mountain?

c. Write an equation for each climber.
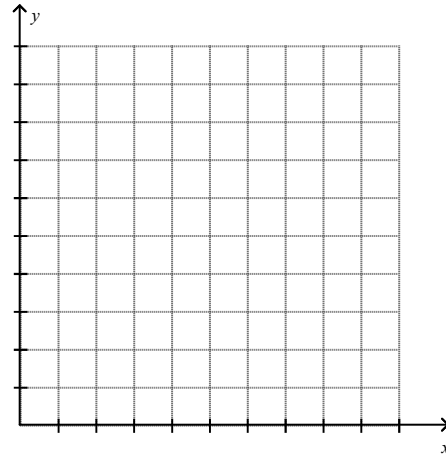
    i.   Ted: _____

    ii.   Ross: _____

10. The data shows the comparison of the number of hours spent studying compared to recent test scores.

a. Plot the data from the table. Make sure that you label the x–axis and the y–axis.

Hours	Recent Score
3	80
5	90
2	75
6	80
7	90
1	50
2	65
7	85
1	40
7	100

Label:

_____

Label: _____

b. Draw a trend line that best fits the scatter plot.

c. Write an equation for the line of best fit in Slope–Intercept form (y = mx + b). Show your work for full credit.

d. In the equation you wrote in #3, the slope, or m = _____.
In the context of the studying/test score situation, this means that...

e. In the equation you wrote in #3, the y-intercept, or b = _____.
In the context of the studying/test score situation, this means that...

f. If a student earned a score of 72, how many hours did that student study? Use your equation and show your work for full credit.

g. If a student studies for four hours, what score will they earn? Use your equation and show your work for full credit.

11. For a-f, identify if the scatter plot has a positive association, negative association, or no association.
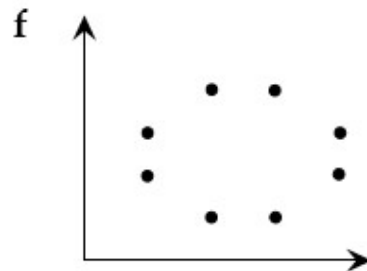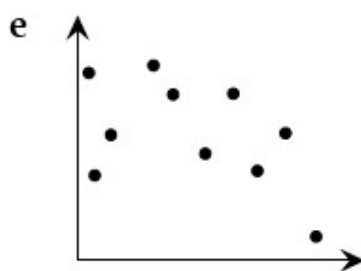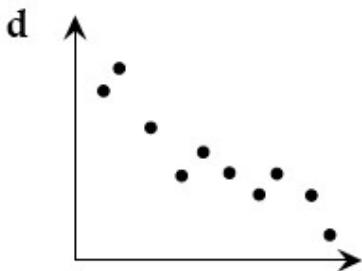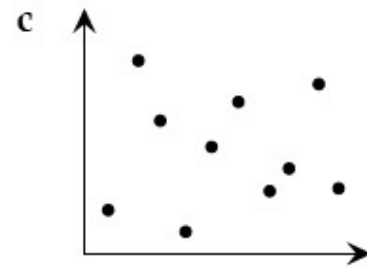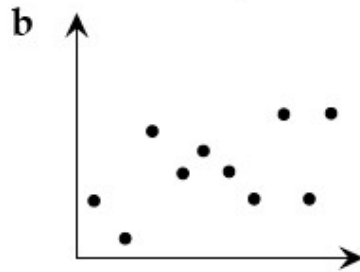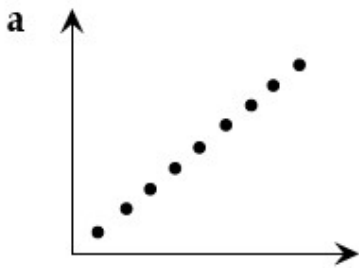
12. What is an outlier? Include a sketch of a graph to help illustrate your explanation.

Answers:

2)	a. 2	4)	a. y = 2x + 1		b. y = -5/7 x – 5.71
	b. -2/3		b. y = -1/4 x + 3	9)	a. Ross: 10 ft/min
	c. -1	5)	a. y = 4x + 24		b. Ted: 200 ft
	d. -3		b. y = -4x + 24		c. i. y = 8x + 200
	e. ½	7)	c. y = 3x + 6		c. ii. Y = 10x + 150
	f. -4		d. i. 48 students	10)	See website – answers can
	g. 5/6		d. ii. 7 days		vary
	h. 1/3		e. m = 3, b = 6		
	i. 5/12	8)	a. y = 2x – 8		