Grade 8 Math

Learning Packet #1

April 20, 2020 to May 1, 2020

Additional Optional Resources and Activities are available on Math Grade 8 Google Classroom code: bipk7lw

Review #1

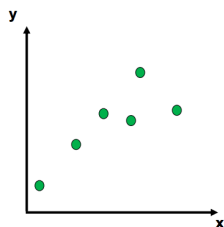| a. Combine like terms	b. Combine like terms	c. simplify the expression
$-8q + 12q - 13 + 9q + 2 - 8q$	-3 (2x – 8) + x	x = 4 and y = (-5) 4(x + y) – 2

New Learning

___I can identify a scatterplot with a positive relationship, negative relationship, or no relationship

A **scatterplot** illustrates the relationship of two sets of data.

Positive Linear Relationship	Negative Linear Relationship	No Linear Relationship
Pattern of points slopes from lower left to upper right.	Pattern of points slopes from upper left to lower right	no relationship exists between the x- and y-coordinates
(Generally, as the *x*-coordinates increase in value, the *y*-coordinates increase in value)	(Generally, as the *x*-coordinates increase in value, the *y*-coordinates decrease in value)	
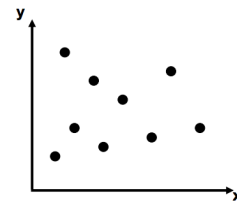
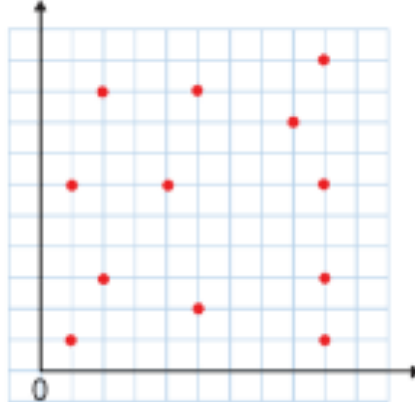Practice. Label each graph with positive, negative, or no linear relationship.

1. _____
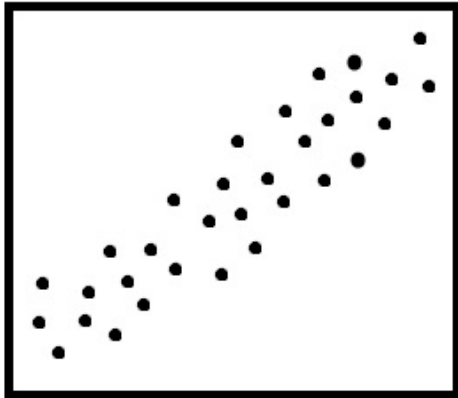
2. _____

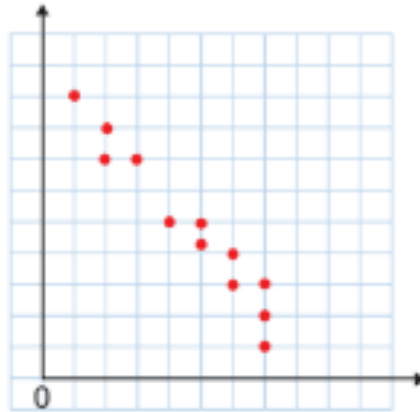3. _____
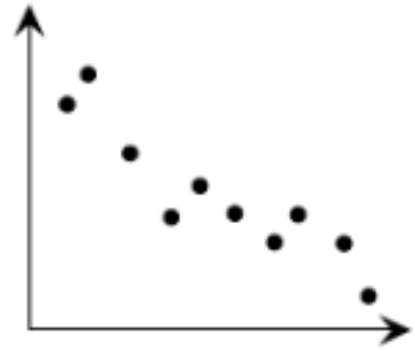
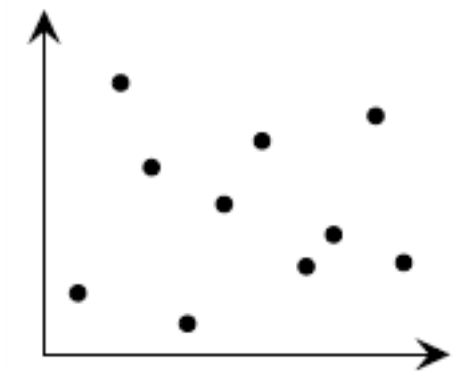4. _____
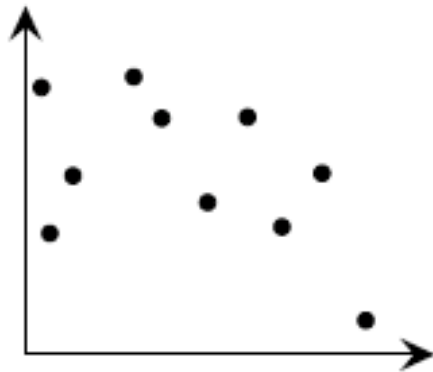
5. _____

6. _____

7. _____
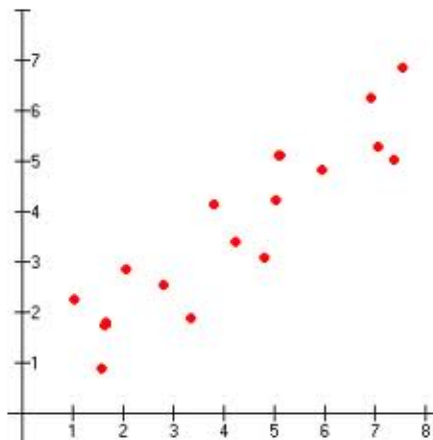
8. _____
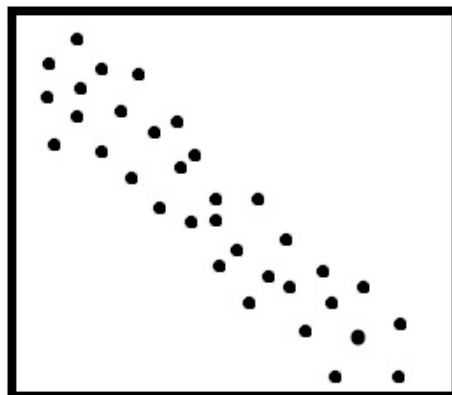
9. _____
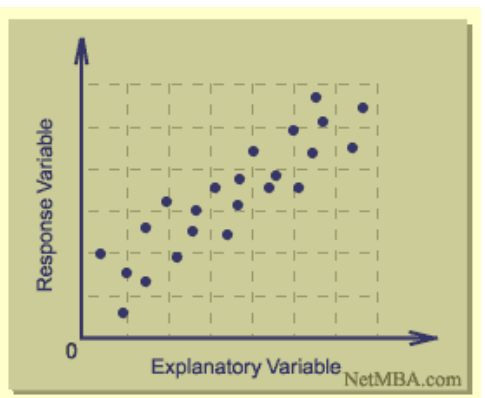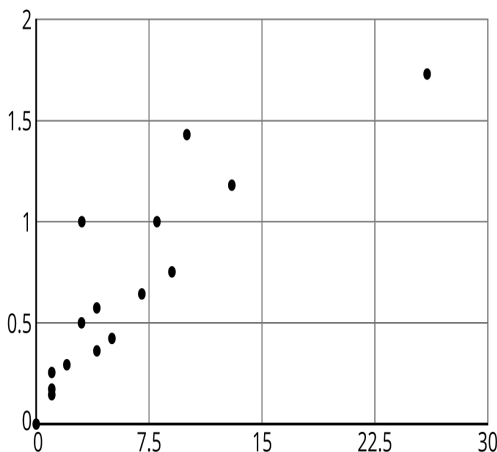
Review #2

a. Combine like terms	b. Simplify the expression	c. simplify the expression
5m + -2p + 4 –m -10m -15 +5p	2d(1 +d)² when d = -3	x = -5 and y = 10 $(x + 2)^2 – y$

Scatterplot Practice

In volleyball statistics, a block is recorded when a player deflects the ball hit from the opposing team. Additionally, scorekeepers often keep track of the average number of blocks a player records in a game. Here is part of a table that records the number of blocks and blocks per game for each player in a women's volleyball tournament. A scatter plot that goes with the table follows.

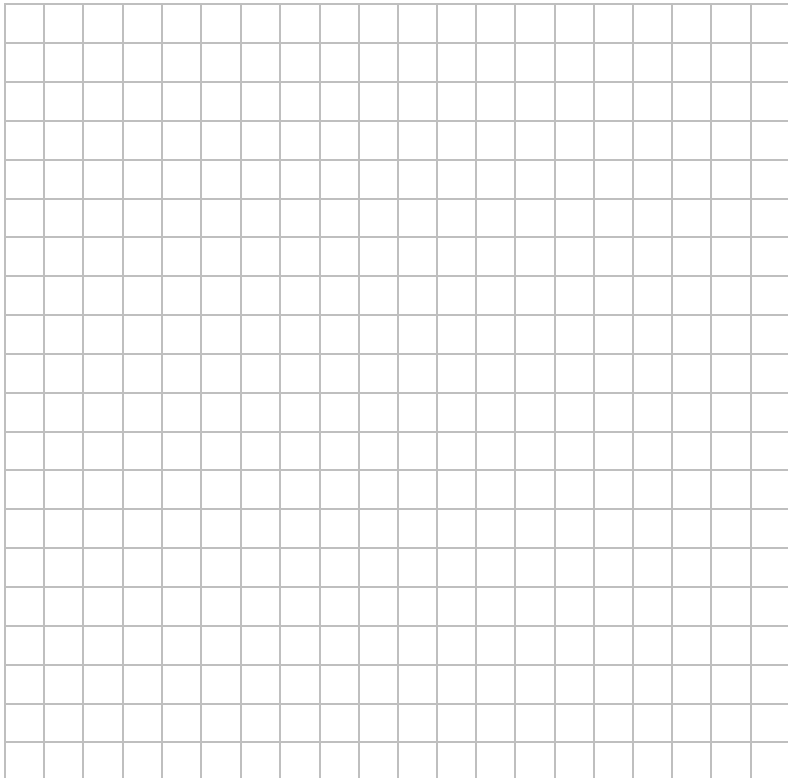| blocks	blocks per game
13	1.18
1	0.17
5	0.42
0	0
0	0
7	0.64

1. Label the x and y axis on the scatter plot.

2. Give the scatterplot a title.

3. Is this a positive, negative, or no relationship?

4. What would have to change in the volleyball game for this to be a negative relationship?

Review #3

a. Combine like terms	b. Simplify the expression	c. simplify the expression
-4w +3z -12 +19w -7 +10z	-2d(1 +d)² when d = -2	x = (-4) and y = (-3) $(x + 1)^2 - (2 - y)$

Scatterplot Practice. In hockey, a player gets credited with a "point" in their statistics when they get an assist or goal. The table shows the number of assists and number of points for 15 hockey players after a season.

Assists (input)	Points (output)
22	28
16	18
46	72
19	29
13	26
9	13
16	22
8	18
12	13
12	17
37	50
7	12
17	34
27	58
18	34

Make a scatter plot of this data.

1. Label the x and y axis on the scatter plot.

2. Give the scatterplot a title.

3. Is this a positive, negative, or no relationship?

Review #4

a. Combine like terms	b. Simplify the expression	c. simplify the expression
-12x -3y +3 +3y -1 -4y	$4x^2$ when x = -3	x = 2 and y = (-1) $\lvert 2x - y \rvert + 7$

Scatterplot Practice. The scatter plot shows the number of hits and home runs for 20 baseball players who had at least 10 hits last season. The table shows the values for 15 of those players. The model, represented by $y = 0.15x - 1.5$, is graphed with a scatter plot.

Hits (input)	home runs (output)	predicted home runs
12	2	0.3
22	1	1.8
154	26	21.6
145	11	20.3
110	16	15
57	3	7.1
149	17	20.9
29	2	2.9
13	1	0.5
18	1	1.2
86	15	11.4
163	31	23
115	13	15.8
57	16	7.1
96	10	12.9

1. Player A had 154 hits in 2015. How many home runs did he have? How many was he predicted to have?

2. Player B was the player who most outperformed the prediction. How many hits did Player B have last season?
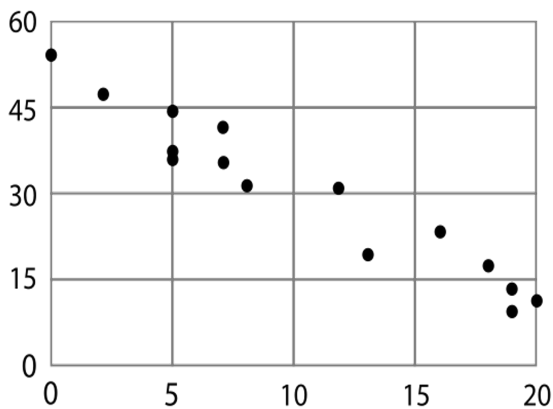
3. What would you expect to see in the graph for a player who hit many fewer home runs than the model predicted?

Review #5

a. Combine like terms	a. Simplify the expression	c. simplify the expression
8(-3 +4w) +8w -3	$(4x)^2$ when x = -3	x = (-4) and y = (-3) $$(x + 1)^2 - (2 - y)$$

Scatterplot practice.

| 1. Which of these statements is true about the data in the scatter plot?	2. Here is a scatter plot that compares hits to at bats for players on a baseball team.
A. As x increases, y tends to increase. B. As x increases, y tends to decrease. C. As x increases, y tends to stay unchanged. D. x and y are unrelated.	Describe the relationship between the number of at bats and the number of hits using the data in the scatter plot.
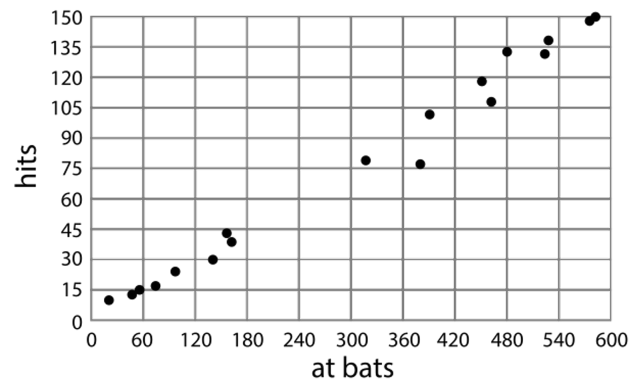
3. Here is a scatter plot:
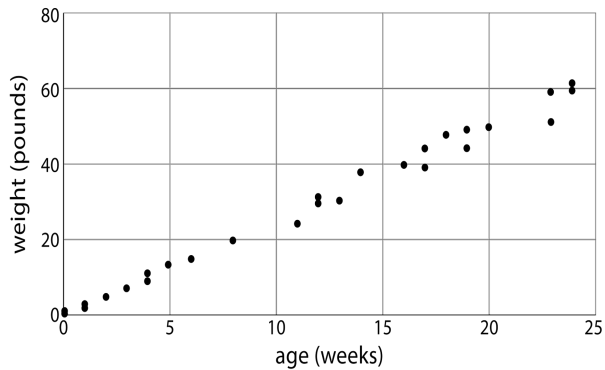

Select **all** the following that describe the association in the scatter plot:

    E.   Linear association

    F.   Non-linear association

    G.   Positive association

    H.   Negative association

4. The heights in meters and year of first recorded ascent is shown. Mount Everest is the tallest mountain in this set of data.

    a.   Estimate the height of Mount Everest.

    b.   Estimate the year of the first recorded ascent of Mount Everest.
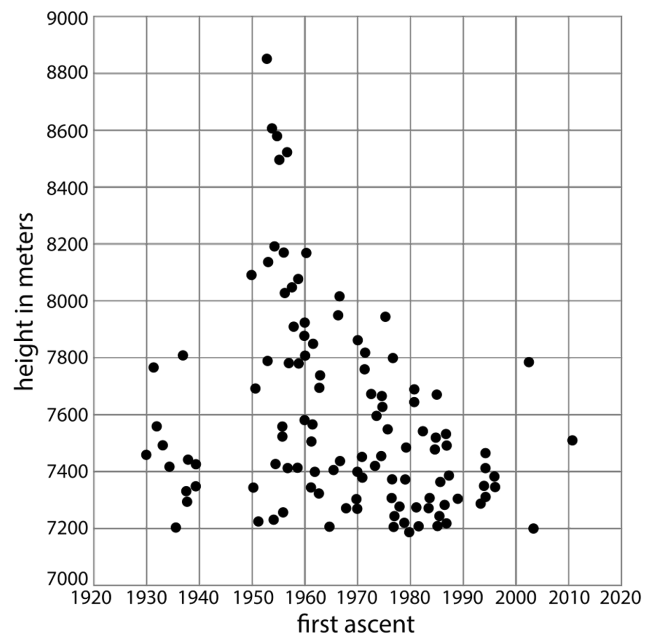
Review #6

a. Combine like terms 10a +3 + 5(2a – 6a)	a. Simplify the expression a^2 when a = -4	c. simplify the expression x = (-2) and y = 2 $(x + 4)^2 - y$

New Learning

_____I can recognize a line with a positive slope, negative slope, and no slope.

_____I can identify slope and y intercept from a table, graph, and equation of a line.
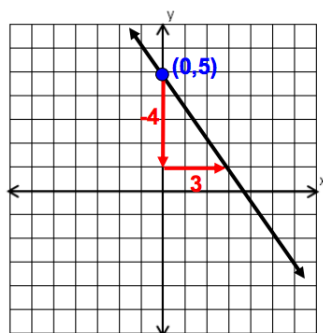
Lesson

Linear Function

A linear function can be written as $y = mx + b$ and its graph is a straight line. Its slope represents a constant rate of change.
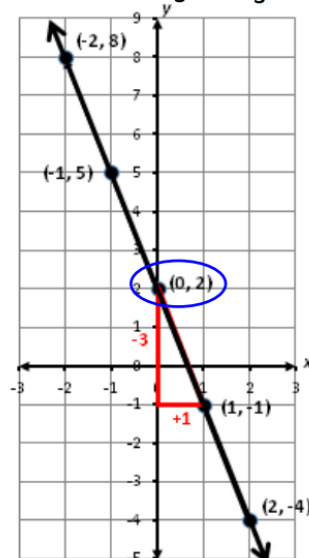
$$y = mx + b$$

(slope is m and y-intercept is b)

Example: $y = \dfrac{-4}{3}x + 5$

(0,5)

Identifying Slope and y-Intercept

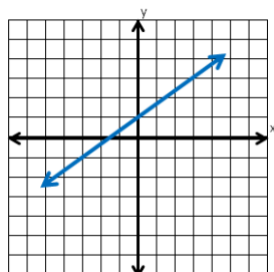| x	-2	-1	0	1	2
y	8	5	2	-1	-4

+1 +1 +1 +1
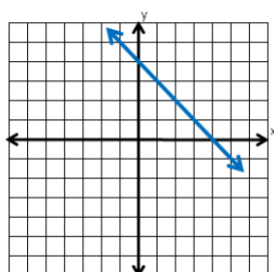-3 -3 -3 -3

y-intercept, b, is 2, located at (0,2).
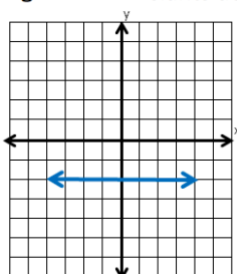
slope = $m = \dfrac{-3}{1}$ = -3

$y = -3x + 2$

Slope

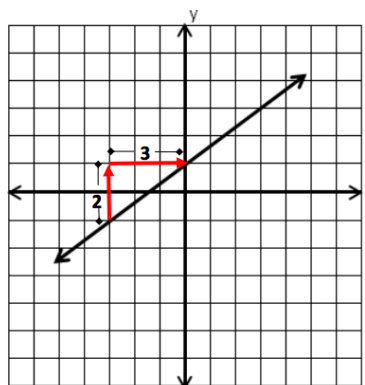A line with a positive slope slants up to the right.

A line with a negative slope slants down to the right.

A horizontal line has a slope of zero (0).

Slope

Represents the rate of change in a linear function or the "steepness" of the line.

$$\text{Slope} = \frac{2}{3}$$

$$\text{slope} = \frac{change\ in\ y}{change\ in\ x} = \frac{vertical\ change}{horizontal\ change}$$

Connecting Representations
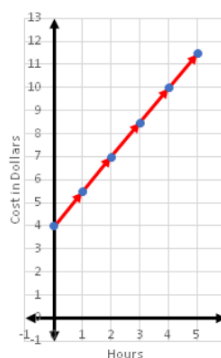
A bike rents for $4 plus $1.50 per hour.

$$c = 1.5h + 4$$
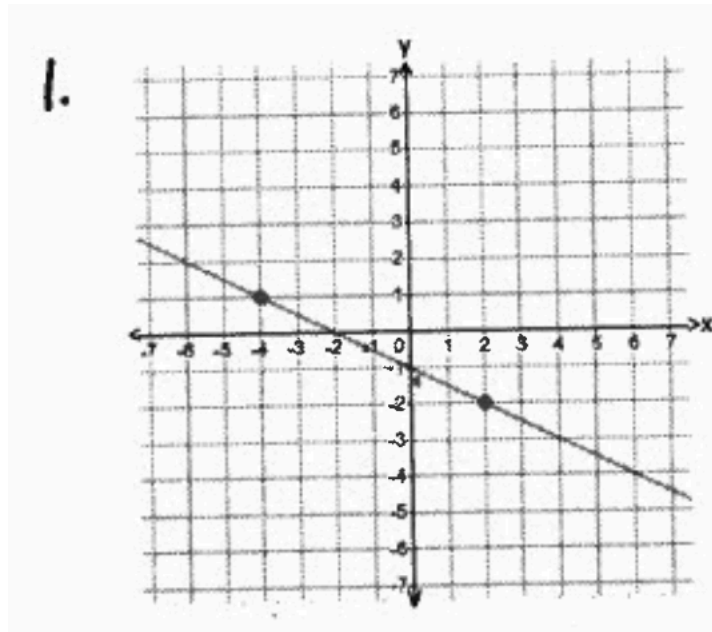
h	c
0	4
1	5.5
2	7
3	8.5
4	10
5	11.5

Cost to Rent a Bike by the Hour

Lesson Practice. Answer each question on the right of the graph.

1.

x	y

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1. Is the slope positive, negative, or no slope?

$y = mx + b$

Range
Output
Dependent Variable
y

Domain
Input
X
independent Variable

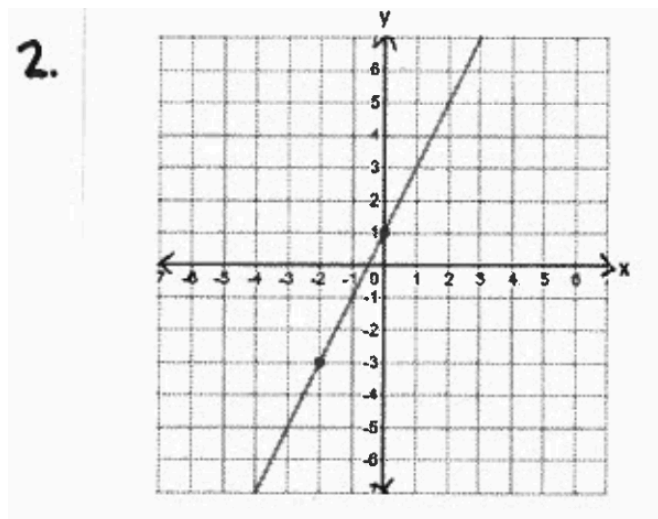$y = mx + b$ b = the y intercept

m = slope
Slope is the change in y
change in x
We also say Rise over run

x	y
0	b

(0, b)

2. Write the equation of the line.

2.

1. Is the slope positive, negative, or no slope?

2. Write the equation of the line.

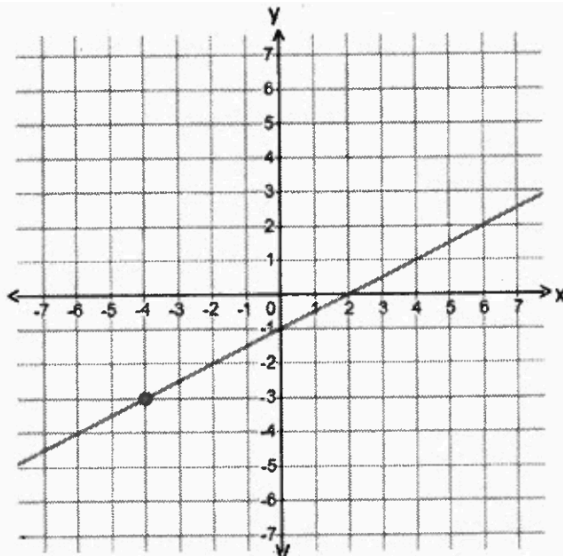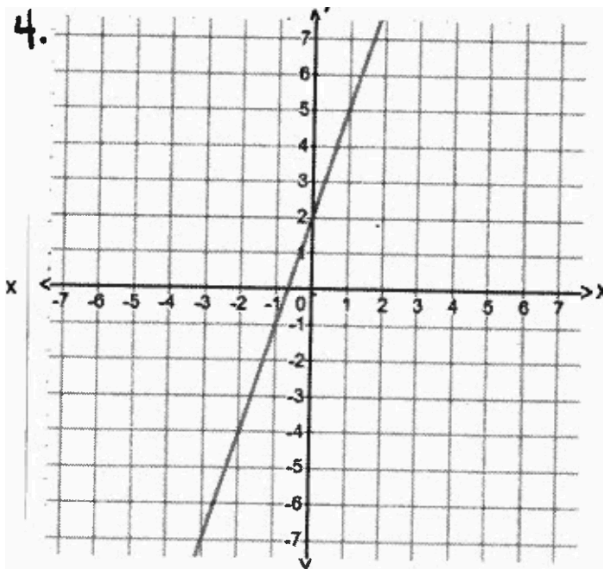|	
3.	1. Is the slope positive, negative, or no slope? 2. Write the equation of the line.
4.	1. Is the slope positive, negative, or no slope? 2. Write the equation of the line.
5.	1. Is the slope positive, negative, or no slope? 2. Write the equation of the line.

6.

1. Is the slope positive, negative, or no slope?

2. Write the equation of the line.

7.

1. Is the slope positive, negative, or no slope?
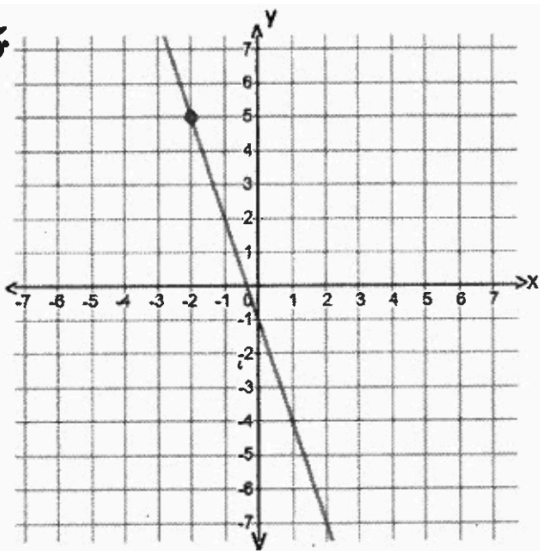
2. Write the equation of the line.
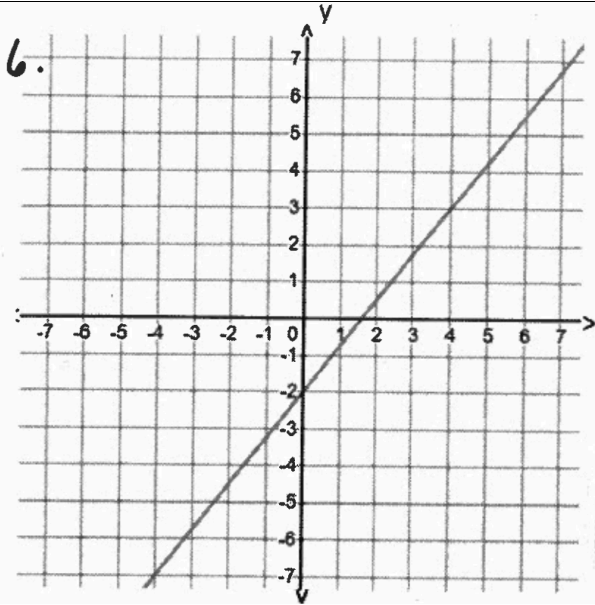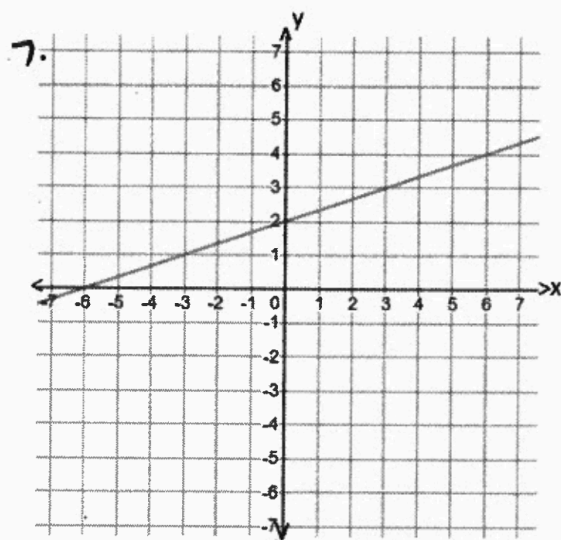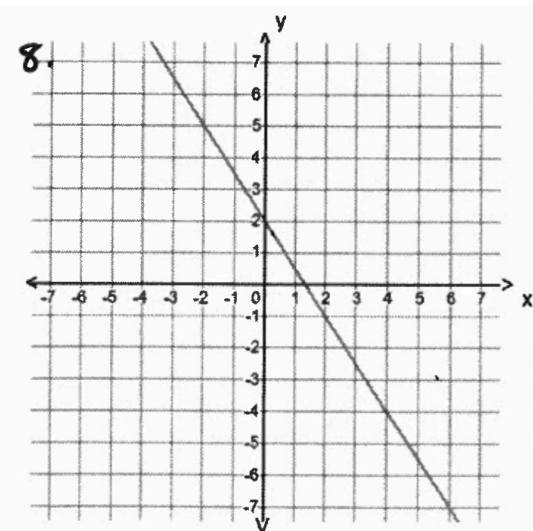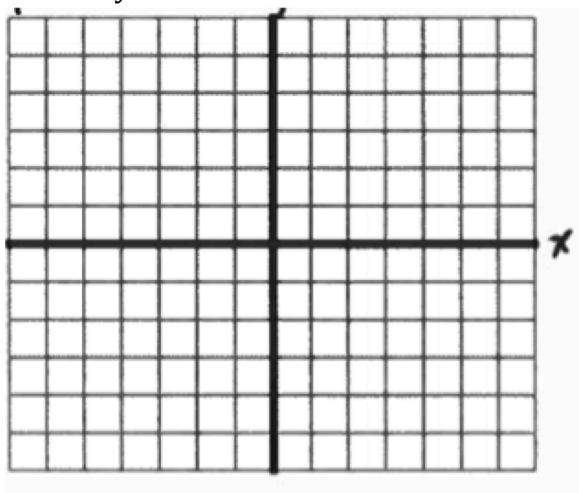
8.

1. Is the slope positive, negative, or no slope?

2. Write the equation of the line.

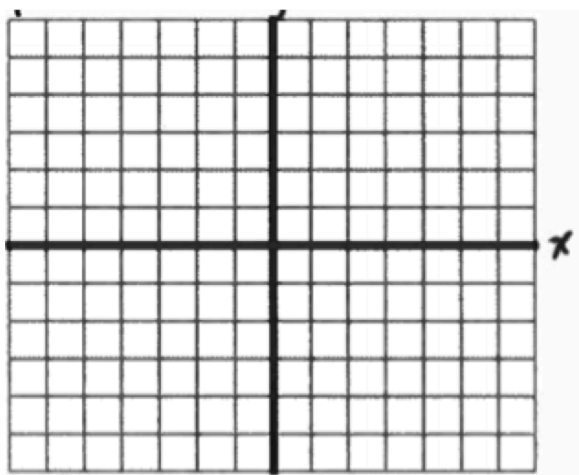9. Complete the table on the right and then draw the line y = -3

1.

x	y

2. What is the slope of the line?

10. Complete the table on the right and then draw the line *x* = 1

1.

x	y

2. What is the slope of the line?

11. Complete the table on the right and then draw the line y = 1
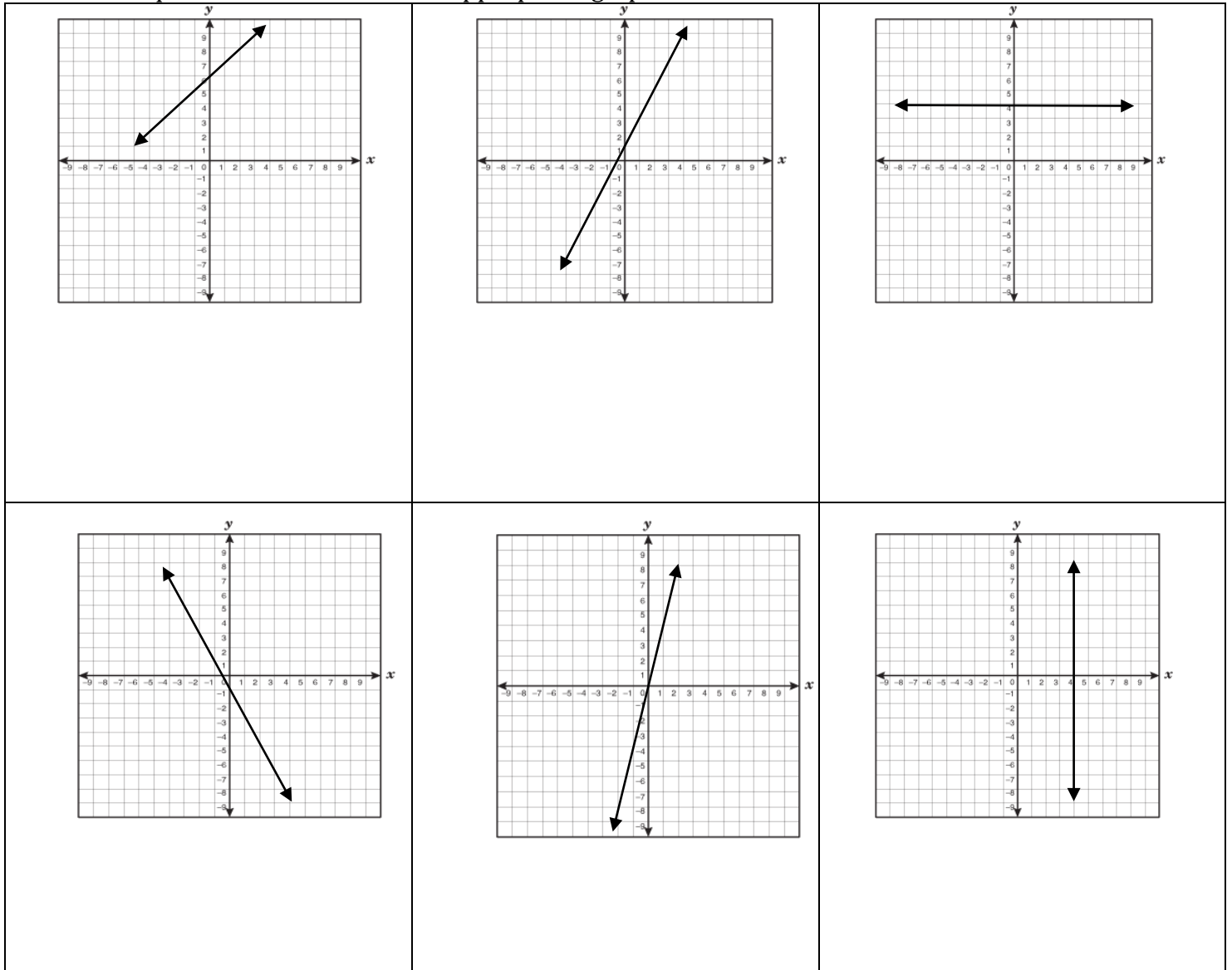
1.

x	y
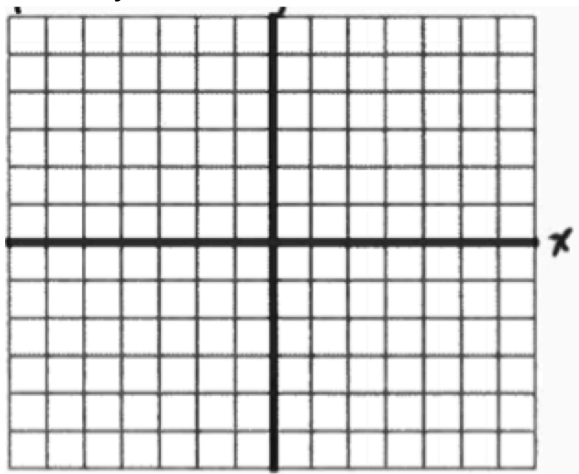
2. What is the slope of the line?

Match the equations and charts to the appropriate graph.

a.
$y = 4x$

b.
$y = -2x - 1$

c.
$y = 2x + 1$

d.
$y = 4$

e.
$x = 4$

f.
$y = x + 6$

g.

x	y
−3	−5
0	1
3	7

h.

x	y
−2	4
−1	5
2	8

i.

x	y
2	4
3	4
4	4

j.

x	y
4	2
4	3
4	4

k.

x	y
−2	3
−1	1
0	−1

m.

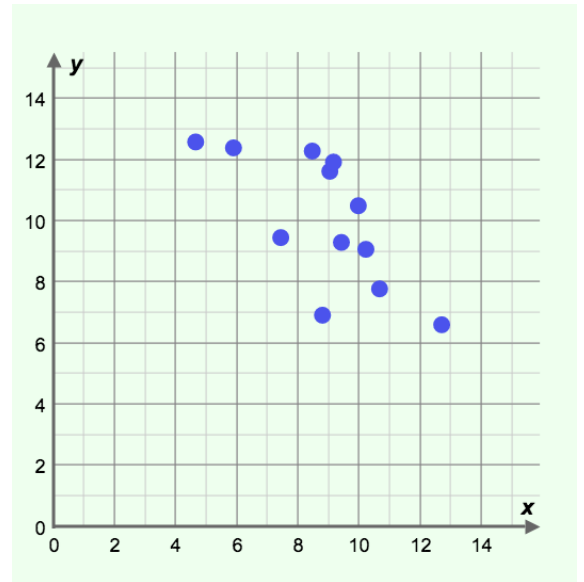| x	y
−2	−8
0	0
1	4

Which graph below has the stronger negative relationship?
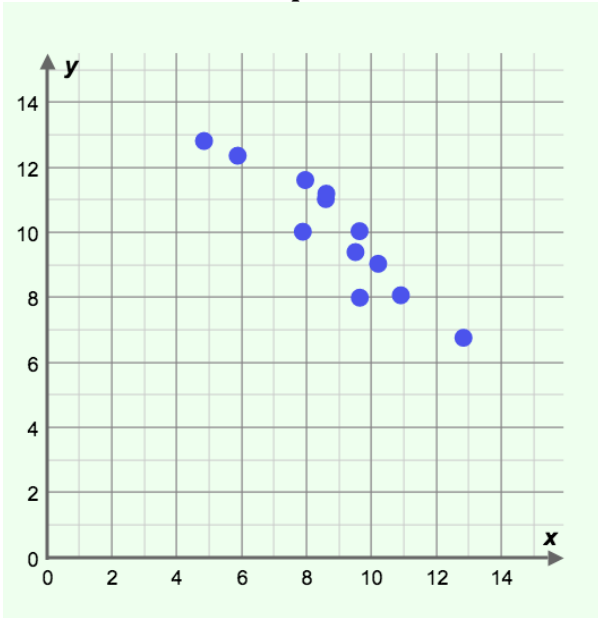
Graph A   OR   Graph B?
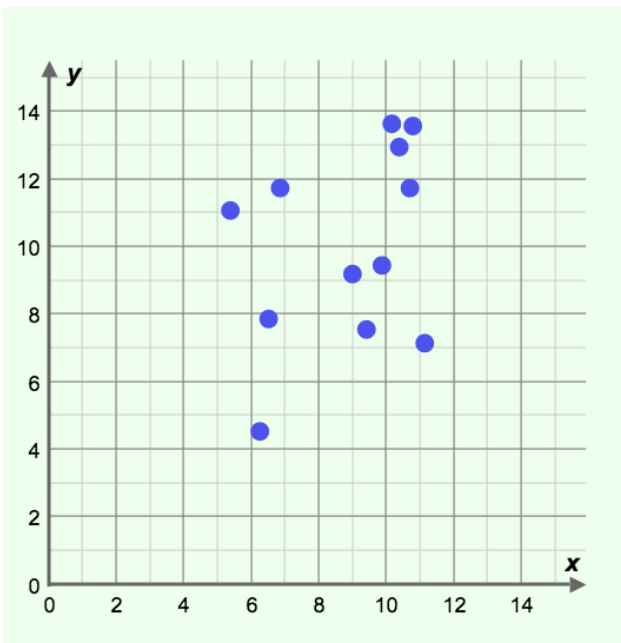

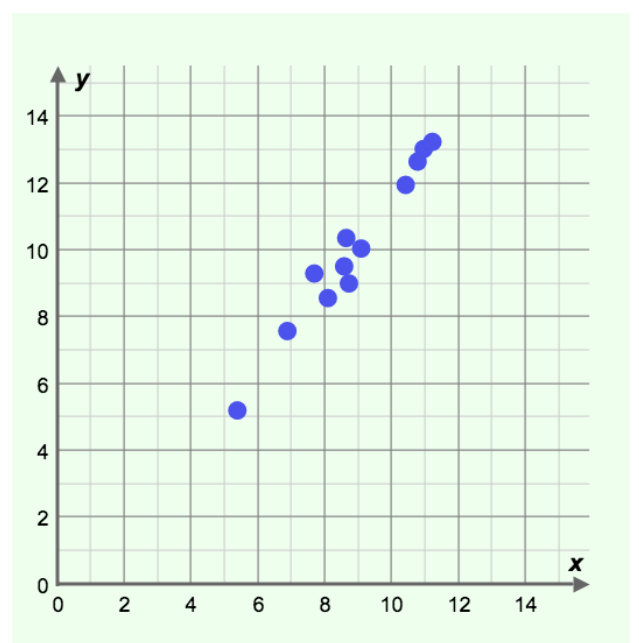Graph A

Graph B

Which graph below has the stronger positive relationship?

Graph C   OR   Graph D?

Graph C

Graph D

Complete the graph below to determine if the relationship is positive, negative, or none. A checking account is set up with an initial balance of $4800, and $400 is removed from the account each month for rent (no other transactions occur on the account). How long will the tenant be able to pay rent?

SPICY!!!!!

Using the integers -9 to 9 at most one time each, fill in the boxes to create two sets of six points; one that has a positive association and one that has a negative association.

([ ] , [ ])

([ ] , [ ])

([ ] , [ ])

([ ] , [ ])

([ ] , [ ])

([ ] , [ ])