

**Linear Equation Review Packet**

The purpose of this assignment is to see what your strengths and weaknesses are before you are tested. Try your best so that you can focus on your weaknesses.

**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- C 1. Carlita goes jogging, and her GPS collects the data for her distance over time. What would the rate of change for that data represent?
- a. Carlita's distance from home
  - b. Carlita's starting point
  - c. Carlita's distance over time, or speed
  - d. Carlita's time since she left home

$$\frac{d}{t} = \text{rate}$$

- d 2. What equation could be written for this table?

x	0	1	2	3
y	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$

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

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

b.  $y = x + 3$

c.  $y = x + 2$

d.  $y = \frac{1}{2}x + 3$

- b 3. What equation could be written for this table?

x	0	1	2	3
y	-1	-5	-9	-13

a.  $y = -4x$

b.  $y = -4x - 1$

c.  $y = -2x - 1$

d.  $y = -1 + 6x$

- b 4. Which equation represents the values in the table?

x	-1	0	1	2	3
y	5	7	9	11	13

a.  $y = 2x + 8$

b.  $y = 2x + 7$

c.  $y = 3x + 7$

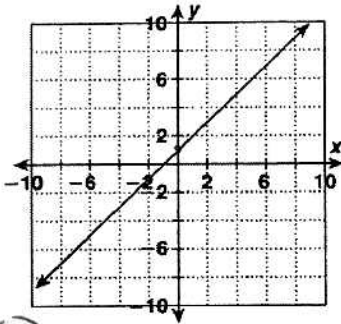
d.  $y = 2x - 7$

$$\text{slope } (m) = \frac{2}{1}$$

$$y \text{ int } (b) = (0, b) \rightarrow 7$$

a

5. Which equation is graphed?



- a.  $y = x + 1$   
 b.  $y = x - 1$

- c.  $y = -x + 1$   
 d.  $y = -x - 1$

a

6. What equation could be written for this table?

x	0	1	2	3
y	-1	0	1	2

(m) slope = 1  
 (b) = -1

- a.  $y = x - 1$   
 b.  $y = x + 1$

- c.  $y = -x$   
 d.  $y = \frac{1}{2}x$

c

7. Which equation represents the values in the table?

x	0	1	2	3
y	1	4	7	10

- a.  $y = 3x - 1$   
 b.  $y = x - 3$

- c.  $y = 3x + 1$   
 d.  $y = x + 3$

d

8. Which is the rule for the function table?

x	-1	0	1	2
y	4	7	10	13

$y = 3x + 7$

- a.  $y = x + 5$   
 b.  $y = 2x + 8$

- c.  $y = x + 11$   
 d.  $y = 3x + 7$

d

9. Choose the equation that is represented by the data in the table.

b	c
-1	5
0	6
1	7
2	8

- a.  $b = c + 4$   
 b.  $c = b - 6$

- c.  $c = b - 4$   
 d.  $c = b + 6$

d

doesn't matter

she was initially 52 inches tall

10. Mariana is 10 years old and has grown 7 inches in 2 years. When she was 8 years old, she was 52 inches tall. Mariana writes and graphs a function that models her height in inches over time in years. What is the initial value for this function?

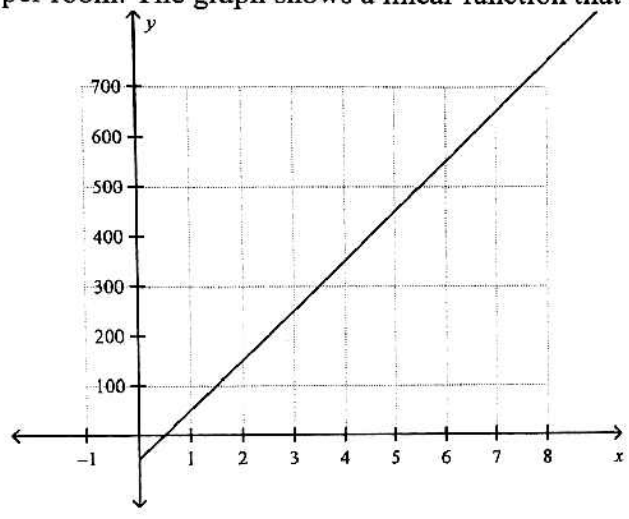
- a. 59
- b. 3.5
- c. 7
- d. 52

$$\frac{7}{2} = 3.5 \text{ inches per yr}$$

$$y = 3.5x + 52$$

C

11. Lamar starts his own painting business. He pays for some supplies to begin, and then charges a fixed amount per room. The graph shows a linear function that models Lamar's profit per room.

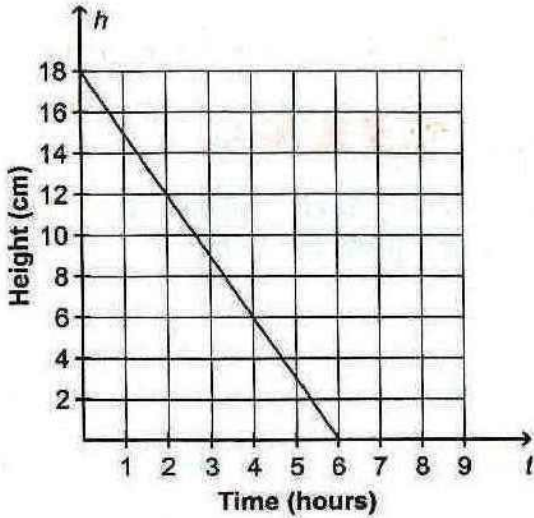


What does the initial value represent?

- a. The number of rooms he paints
- b. The amount he charges per room
- c. The amount he spends in supplies
- d. The amount of profit he makes per room

Because he starts below zero, he had to spend money!

- a 12. The graph shows the relationship between a candle's height  $h$ , in centimeters, and time  $t$ , in hours, as the candle burns. What function models this relationship?



- a.  $h = -3t + 18$   
 b.  $h = 3t + 18$   
 c.  $h = -3t + 6$   
 d.  $h = 3t + 6$

- c 13. A bathtub filled with 40 gallons of water drains at an average rate of 3 gallons per minute. What is the rate of change and initial value of the linear function that models the amount of water in the bathtub after it starts draining?
- a. The rate of change is 40 gallons per minute, and the initial value is 3 gallons.  
 b. The rate of change is 3 gallons per minute, and the initial value is 40 gallons.  
 c. The rate of change is -3 gallons per minute, and the initial value is 40 gallons.  
 d. The rate of change is -40 gallons per minute, and the initial value is 3 gallons.

- c 14. Vincent's savings over several weeks are shown in the table. If a linear function models Vincent's savings over time, how much money did he initially have? ( $y$  in  $t$ )

Time (weeks)	Savings (dollars)
2	75
4	115
6	155
8	195
10	235

-2  
2

-40  
40

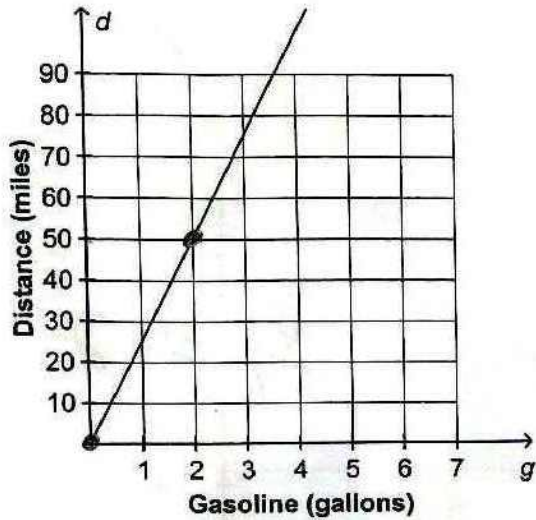
$$\begin{array}{r} 415 \\ 75 \\ \hline 40 \end{array}$$

$$\frac{40}{2} = 20$$

- a. \$0  
 b. \$20  
 c. \$35  
 d. \$75

$$\begin{array}{r} 75 \\ -40 \\ \hline 35 \end{array}$$

- b** 15. The graph shows the distance  $d$ , in miles, that Joe can drive his car using  $g$  gallons of gasoline. What is the rate of change in this situation?



rate of change  
is  
slope!

$$\frac{50}{2} = 25/1$$

- a. 20 miles per gallon of gasoline  
 b. 25 miles per gallon of gasoline  
 c. 30 miles per gallon of gasoline  
 d. 35 miles per gallon of gasoline

- b** 16. Lynn is walking from her house to the grocery store. The table shows the distance she has left to walk. What is the rate of change for the linear function represented by the table?

Time (minutes)	Distance (blocks)
2	9
4	8
6	7
8	6

slope

$$-\frac{1}{2} = -0.5$$

- a. -2 blocks per minute  
 b. -0.5 block per minute  
 c. 0.5 block per minute  
 d. 2 blocks per minute

Name: \_\_\_\_\_

- d 17. George is selling sandwiches at a deli. The table shows the average number  $s$  of sandwiches he sells over time  $t$ , in minutes. What linear function is represented by the table?

Time (minutes)	Sandwiches sold
3	19
6	25
9	31
12	37

3 {  
3 {

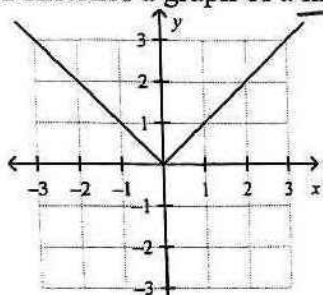
} 6  
} 6

- a.  $s = -2t + 13$   
~~b.~~  $s = 13t + 2$   
 c.  $s = 2t$   
 (d.)  $s = 2t + 13$

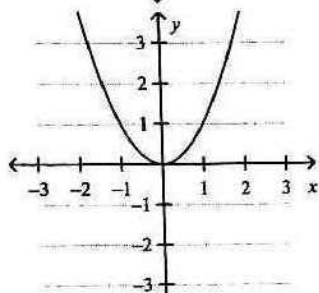


$$\frac{6}{3} = 2$$

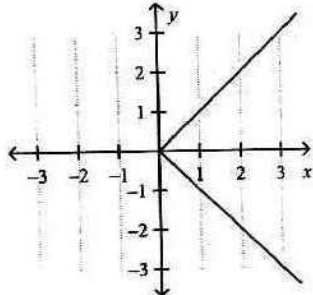
18. Maya sketches a graph of a linear function. Which graph might she have sketched?



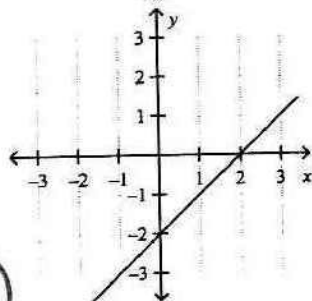
a.



b.



c.



d.

Linear = line

19. Speedeez Go Carts charges \$10 plus \$2.50 per lap. Which best describes the relationship between total cost and the number of laps?
- a. linear and proportional relationship      c. non-linear relationship  
 b. linear, non-proportional relationship

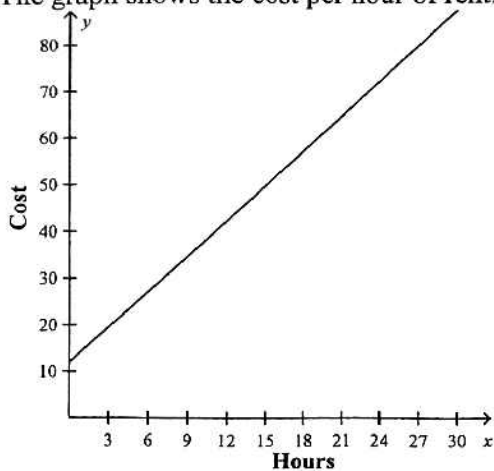
constant  
rate  
and

does not pass through origin (0,0)

$$y = 2.50x + 10$$

Name: \_\_\_\_\_

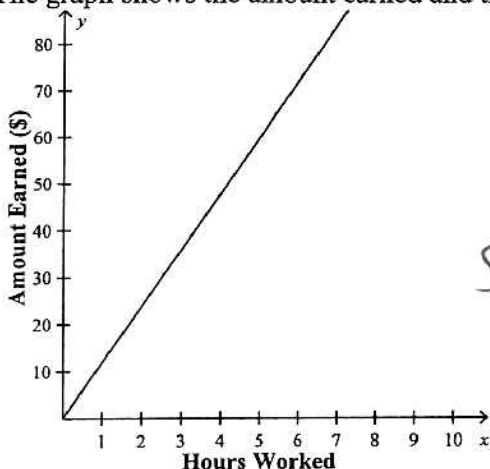
b 20. The graph shows the cost per hour of renting a power tool.



Which of the following best describes the relationship between cost and the number of hours?

- a. linear and proportional relationship
- b. linear, non-proportional relationship
- c. non-linear relationship

a 21. The graph shows the amount earned and the hours worked.



*Starts at (0,0)  
sooo...  
proportional*

Which of the following best describes the relationship between the amount earned and the number of hours worked?

- a. linear and proportional relationship
- b. linear, non-proportional relationship
- c. non-linear relationship

**Written Answers:**

1. Find the slope of the line that passes through the points (5, 4) and (3, 1).

$$-2 \left( \frac{5}{3} \mid \frac{4}{1} \right) -3 \quad -\frac{-3}{2} = \frac{3}{2}$$

2. Find the point-slope form equation for the line that passes through the point (-2, 1) and has a slope of -3.

*?*  
 $y = mx + b$

$y = -3x - 5$

$b = -5$

$$y = mx + b$$

$$y = mx + b$$

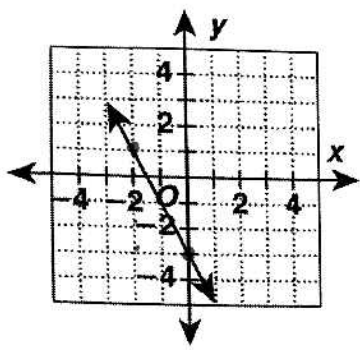
$$1 = (-3)(-2) + b$$

$$1 = +6 + b$$

$$-5 = -6 + b$$



3. Write an equation for the linear function graphed below.



$b = -3$   
 $m = \frac{-4}{2} = -2$

$y = -2x - 3$

4. The distance  $d$ , in miles, a car travels on the highway over time  $t$ , in hours, is modeled by the linear function  $d = 60t + 20$ . Identify the rate of change and explain what it means in this situation.

60 miles per hour!

5. The table shows a hot air balloon's height  $h$ , in feet, during a descent at various times  $t$ , in seconds.

- a. Use the table's first two ordered pairs to find the hot air balloon's rate of change.
- b. Is the rate of change constant? Explain.
- c. What was the hot air balloon's height at the time the descent began? *initial value*
- d. Write  $h$  as a linear function of  $t$ .

Time (seconds)	Height (feet)
5	1150
10	1090
15	1030
20	970
25	910

5 ↙ ↘ -60

$$\begin{array}{r} 1150 \\ -1090 \\ \hline 60 \end{array}$$

a.  $-\frac{60}{5} = -12 \text{ ft/sec}$

b. Yes. Dropping 60 ft every 5 sec or 12 ft per sec is a constant rate.

c.  $\begin{array}{r} 1150 \\ + 60 \\ \hline 1210 \end{array}$        $1210 \text{ ft}$

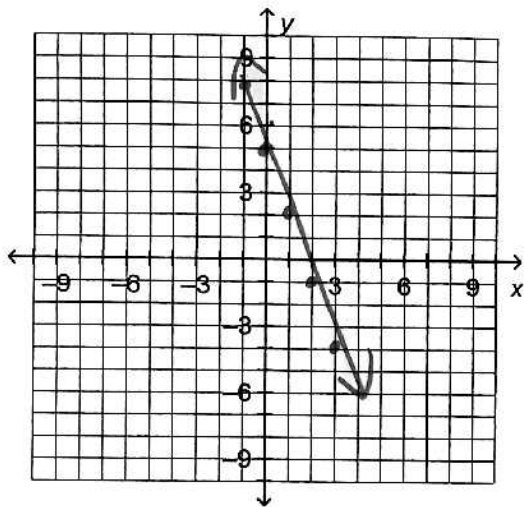
d.  $h = -12t + 1210$

**Extended Response Problems**

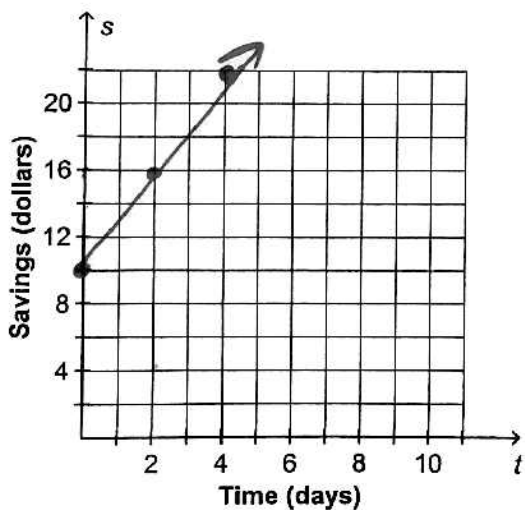
1. a. Plot the ordered pairs given in the table on the coordinate plane.
- b. Find the slope of the graph  $-3$
- c. Using the slope from part b and the fact that the second point lies on the  $y$ -axis, write an equation of the line.

$$y = -3x + 5$$

$x$	-1	0	1	2	3	4
$y$	8	5	2	-1	-4	-7

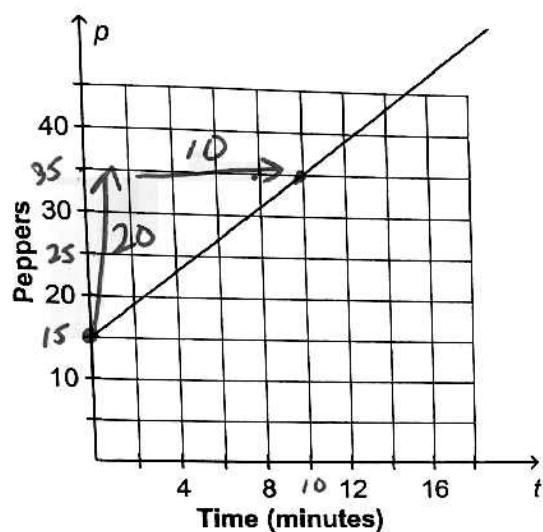


2. Roberta is saving to buy a bicycle. She starts her savings with \$10, and she saves \$3 every day.
  - a. Write an equation to show Roberta's savings  $s$  over time  $t$ , in days. ✓  $y = 3x + 10$
  - b. Graph the equation from part a on the coordinate plane. ✓
  - c. Does the equation from part a represent a linear function? Explain.



yes. The rate of change is constant.  
\$3 everyday

3. A gardener is planting peppers. He planted 15 seeds on the first day of planting. The graph shows the number of peppers,  $p$ , planted over time  $t$ , in minutes, on the second day.



$$\frac{20}{10} = 2 \text{ peppers per min.}$$

- What is the rate of change? Explain the meaning of the rate of change.
- What is the initial value? Explain the meaning of the initial value.
- Write the linear function represented by the graph.

(a) 2 pepper seeds are planted per minute

(b) 15. He had already planted 15 seeds.

(c)  $p = 2t + 15$