Score: _____ NAME: Key

Algebra 1 Semester 1

Assessment Training Practice #2A

1.) Which of the following is a solution to the function $f(x) = -\frac{1}{2}x - 6$? Show work for each choice.

A.) (-2, -5)
$-5 = -\frac{1}{2}(-2) - 6$
$-5 = 1 - 6$
$-5 = -5$ True

~~B.)~~ (0, 6)
$6 = -\frac{1}{2}(0) - 6$
$6 = 0 - 6$
$6 = -6$ False

C.) (6, -9)
$-9 = -\frac{1}{2}(6) - 6$
$-9 = -3 - 6$
$-9 = -9$ True

~~D.)~~ (10, -1)
$-1 = -\frac{1}{2}(10) - 6$
$-1 = -5 - 6$
$-1 = -11$ False

2.) Which of the following is a solution to the function $f(x) = 3x + 4$? Show work for each choice.

~~A.)~~ (-2, 2)
$2 = 3(-2) + 4$
$2 = -6 + 4$
$2 = -2$ False

B.) (0, 4)
$4 = 3(0) + 4$
$4 = 0 + 4$
$4 = 4$ True

C.) (5, 19)
$19 = 3(5) + 4$
$19 = 15 + 4$
$19 = 19$ True

~~D.)~~ (-3, -4)
$-4 = 3(-3) + 4$
$-4 = -9 + 4$
$-4 = -5$ False

3.) List 5 of the infinite number of solutions to the graph. What is the slope of the line?

Solution 1: (0, 4)

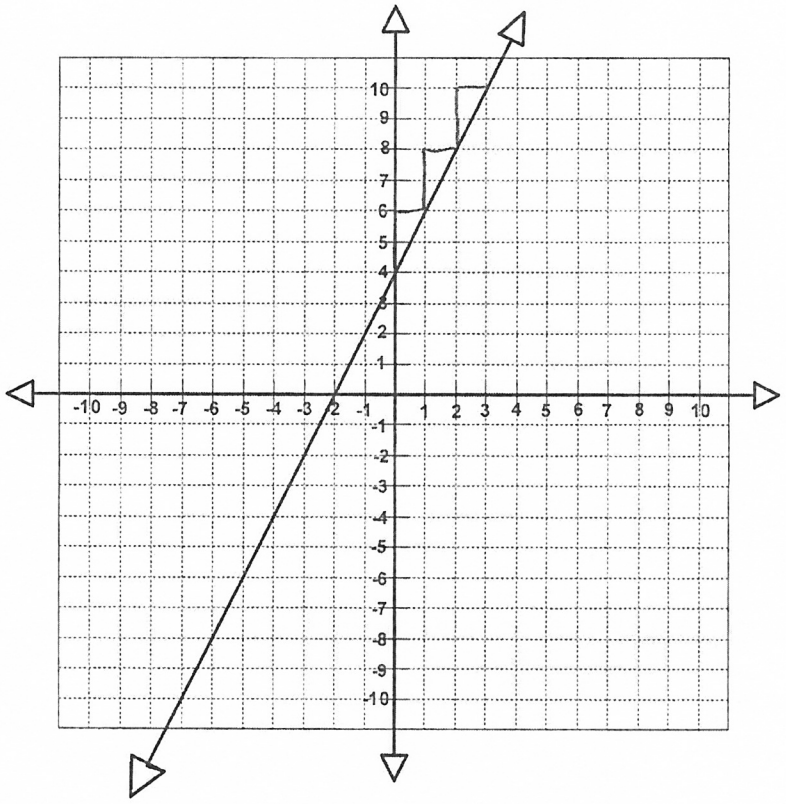
Solution 2: (1, 6)

Solution 3: (2, 8)

Solution 4: (-2, 0)

Solution 5: (-3, -2)

Slope: 2 $\frac{\text{rise } 2}{\text{run } 1}$



4.) List 5 of the infinite number of solutions to the graph. What is the slope of the line?

Solution 1: (0, -3)

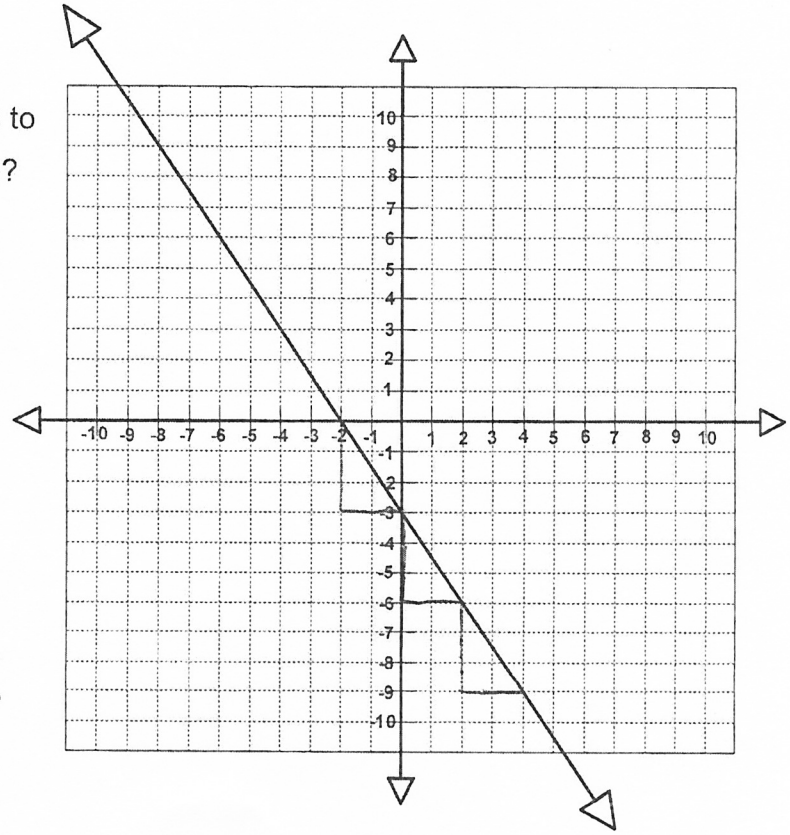
Solution 2: (2, -6)

Solution 3: (4, -9)

Solution 4: (-2, 0)

Solution 5: (-4, 3)

Slope: $\frac{-3}{2}$ $\frac{\text{rise down } 3}{\text{run } 2}$



Time (Hours)	Distance (Miles)	
4	168	
6	252	$252 - 168 = 84$
8	336	$336 - 252 = 84$
10	420	$420 - 336 = 84$

$6 - 4 = 2$

$8 - 6 = 2$

$10 - 8 = 2$

5a.) The rate of change is constant in the table above. Find the rate of change and show your work.

$\frac{rise}{run} = \frac{84}{2}$

$= 42$

The rate of change is 42 miles per hour

5b.) Explain what the rate of change means for the situation.

The 42 miles per hour means that someone travels a distance of 42 miles for each hour.

5c.) What is the y-intercept for this data? Show how you determined the y-intercept.

$y = mx + b$ $(4, 168)$ $m = 42$

$168 = 42(4) + b$

$168 = 168 + b$

$-168 \quad -168$

$0 = b$

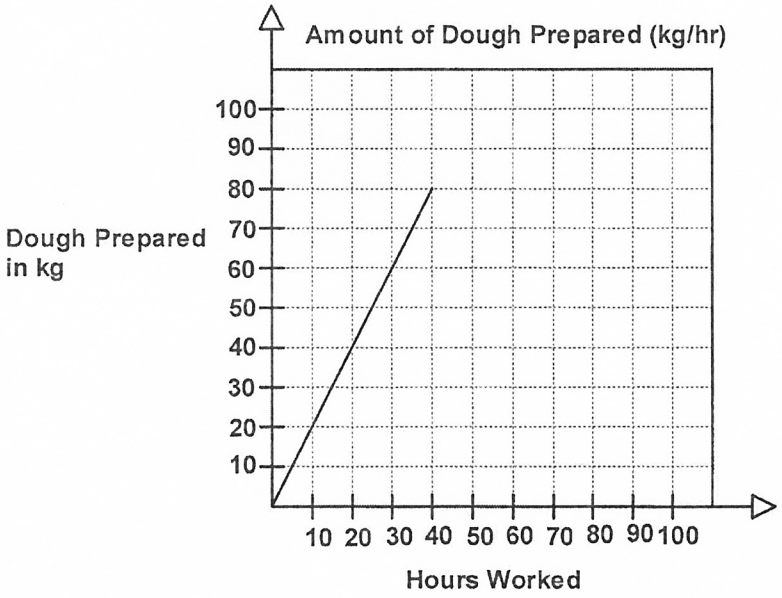
The y-intercept is 0.

5d.) Explain what the y-intercept means for this situation.

The y-intercept of 0 means that at 0 hours, the distance traveled was 0 miles.

5e.) Write an equation to model this situation: $y = 42x$

This graph shows how the amount of dough Jessica has prepared is related to the number of hours she has spent working at the bakery in a 40 hour week.



6a.) Find the rate of change and show your work.

$\frac{rise}{run} = \frac{20}{10}$

$= 2$

2 Kg per hour

6b.) Explain what the rate of change means for the situation.

Each hour, the bakers prepared 2 Kg of dough.

6c.) What is the y-intercept for this data? Show how you determined the y-intercept.

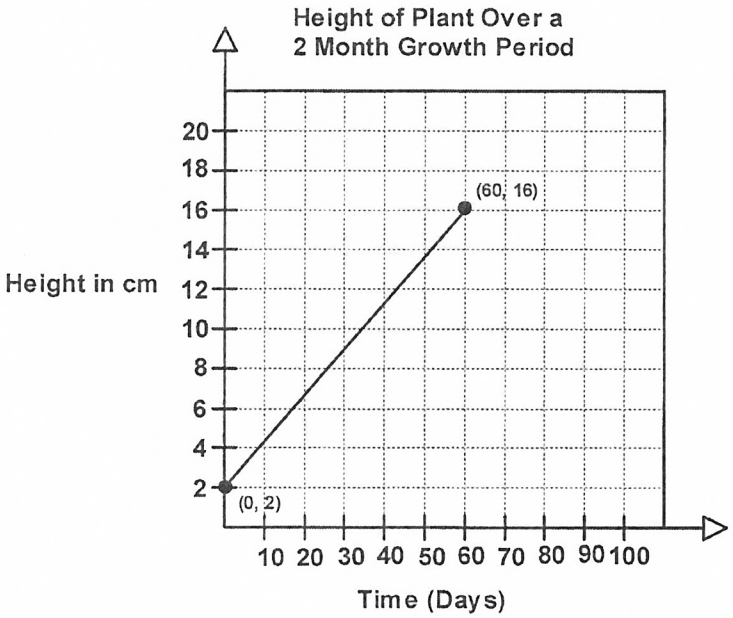
$b = 0$ The graph intersects the y-axis at 0.

6d.) Explain what the y-intercept means for this situation.

The y-intercept of (0,0) means at 0 hours, 0 Kg of dough was prepared.

6e.) Write an equation to model this situation: $y = 2x$

The graph shows the height of a plant over a 2-month growth period.



7a.) Find the rate of change and show your work.

$(0,2)$ $(60,16)$

x_1, y_1 x_2 y_2

$m = \frac{16-2}{60-0}$

$m = \frac{14}{60}$

$m = \frac{7}{30}$

$\frac{7}{30}$ of a cm per day

7b.) Explain what the rate of change means for the situation.

The plant grew at a rate of change of $\frac{7}{30}$ of a cm per day.

7c.) What is the y-intercept for this data? Show how you determined the y-intercept.

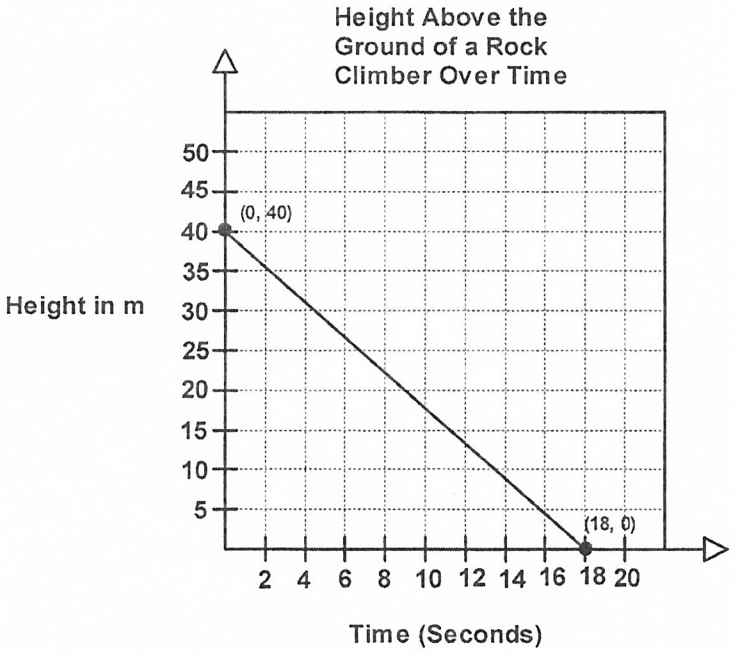
$(0,2)$ The graph begins at 2 cm before the growth was recorded.

7d.) Explain what the y-intercept means for this situation.

The plant's initial height was 2 cm before the growth was recorded.

7e.) Write an equation to model this situation: $y = \frac{7}{30}x + 2$

The graph shows the height above the ground of a rock climber over time.



8a.) Find the rate of change and show your work.

$(0, 40)$ $(18, 0)$
x_1, y_1 x_2, y_2

$m = \frac{0 - 40}{18 - 0}$

$m = \frac{-40}{18}$

$m = \frac{-20}{9}$

$= -2\frac{2}{9}$ m per second

8b.) Explain what the rate of change means for the situation.

The rock climber climbed down at a rate of change of $2\frac{2}{9}$ m per second

8c.) What is the y-intercept for this data? Show how you determined the y-intercept.

(0, 40) The graph begins at (0, 40)

8d.) Explain what the y-intercept means for this situation.

The rock climber started at 40 meters above the ground before he/she started to climb down.

8e.) Write an equation to model this situation: $y = \frac{-20}{9}x + 40$

9.) The population of Dearborn in 2000 was 97,842. By 2010, the population had decreased to 84,962. Assume that the population of the city has decreased linearly since 2000 and will continue to decrease linearly. Using 2000 as year zero, write an equation to model this situation.

9a.) What is the y-intercept? Show how you determined the y-intercept.

Since the problem says to use the year 2000 as year zero, then the y-intercept is (0, 97,842)

9b.) What does the y-intercept mean in this situation?

In the initial year of 2000 when the data collection began, the population was 97,842. So at year 0, the graph began at 97,842.

9c.) What is the slope? Show how you determined the slope.

$(\underset{x_1}{0}, \underset{y_1}{97842})(\underset{x_2}{10}, \underset{y_2}{84,962})$

$$\frac{84962 - 97842}{10 - 0} = \frac{-12880}{10} = -1288$$

There was a loss of 1288 people per year.

9d.) What does the slope mean in this situation?

Each year the population decreased by 1288 per year.

9e.) Write an equation to model this situation: $y = -1288x + 97842$

10.) Mr. Crabs is counting his money after a week's worth of business at the Crusty Crab. He found after having a sale on Crabby Patties he had 5 visitors and had $99.00 in his vault and on another day he had 8 visitors and had $129.00 in his vault. Create a linear equation that represents this situation.

10a.) What is the slope? Show how you determined the slope.

(5, 99) (8, 129)
x_1, y_1 x_2, y_2

$\frac{129 - 99}{8 - 5} = \frac{30}{3}$

$= 10$

$10 per visitor

10b.) What does the slope mean in this situation?

Each visitor spends $10 at Crusty Crab

10c.) What is the y-intercept? Show how you determined the y-intercept.

$m = 10$ (5, 99)

$y = mx + b$

$99 = 10 \cdot 5 + b$

$99 = 50 + b$

$-50 \quad -50$

$49 = b$

$b = 49$

The graph would start at $49 before any visitors arrived

10d.) What does the y-intercept mean in this situation?

The y-intercept of $49 means that the vault had $49 in it before any visitors arrived.

10e.) Create a linear equation that represents this situation: $y = 10x + 49$