

Unit 2: Linear Functions - Assessment

Name Answer Key PER _____ DATE _____

| FIF6 | FLE2 | FLE5 |
|------|------|------|
| | | |

Computation

| 4 | 3 | 2 | 1 |
|---|--|--|--|
| Response has no recall errors, <i>minimal</i> procedural errors* and no conceptual errors** | Response has no recall errors, <i>minimal</i> procedural errors and <i>minimal</i> conceptual errors | Response has no recall errors, but has several procedural errors <u>OR</u> several conceptual errors | Recall errors exist <u>OR</u> Steps taken are not related to problem <u>OR</u> Response left blank |

Written Responses

| 4 | 3 | 2 | 1 |
|--|--|--|--|
| Response is written in a complete sentence and uses appropriate academic vocab | Response is written in a complete sentence, and <i>minimal</i> errors exist in use of academic vocab | Response is not written in a complete sentence <u>OR</u> no academic vocab | Concept of response is not related to problem <u>OR</u> Response is left blank |

*Procedural errors are mistakes made in the math

**Conceptual errors are mistakes made in the steps one take

1. (FIF6) For the problem below, show your work and box your answer.

During a rainy spring season, Darry notices that the lawn at her house is growing at a rapid pace. She measures its height and records her findings in the table below:

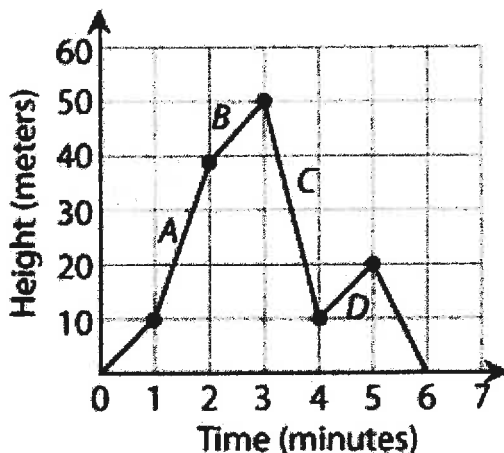
| Day | Height (cm) |
|-----|-------------|
| 1 | 5 |
| 2 | 6 |
| 3 | 8 |
| 4 | 13 |
| 5 | 15 |

What is the slope of the average rate of change, in centimeters (cm) per day, of the height of the lawn from day 3 to day 5?

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{15 - 8}{5 - 3} = \frac{7}{2} = \boxed{3.5 \text{ cm per day}}$$

2. (FIF6) For the problem below, circle your answer and explain in a complete sentence.

The graph shows the displacement of an elevator during a test as it moved between floors during a six-minute period.



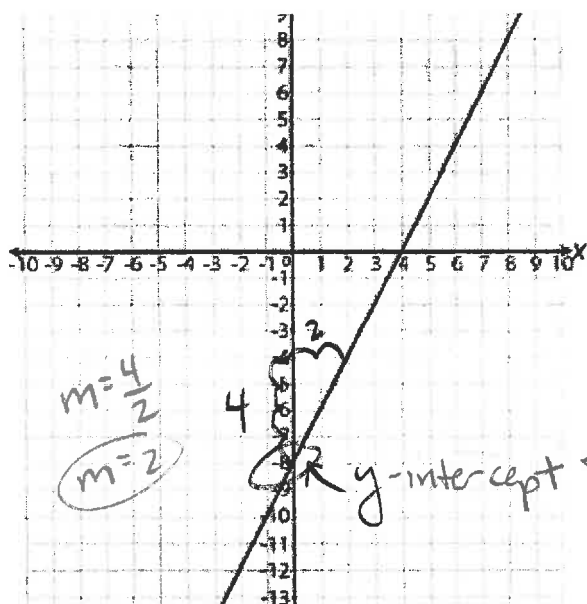
- A. Interval A Slope = 30 m/min
 B. Interval B Slope = 10 m/min
 C. Interval C Slope = -40 m/min
 D. Interval D Slope = 10 m/min

During which interval did it move at the greatest slope average speed?

The steepest slope occurs in Interval C. While the slope is negative, that only implies the elevator was going down.

3. (FLE2) For the problem below, circle your answer and explain in a complete sentence.

The graph below represents the function $y = f(x)$. Which equation correctly represents this graph

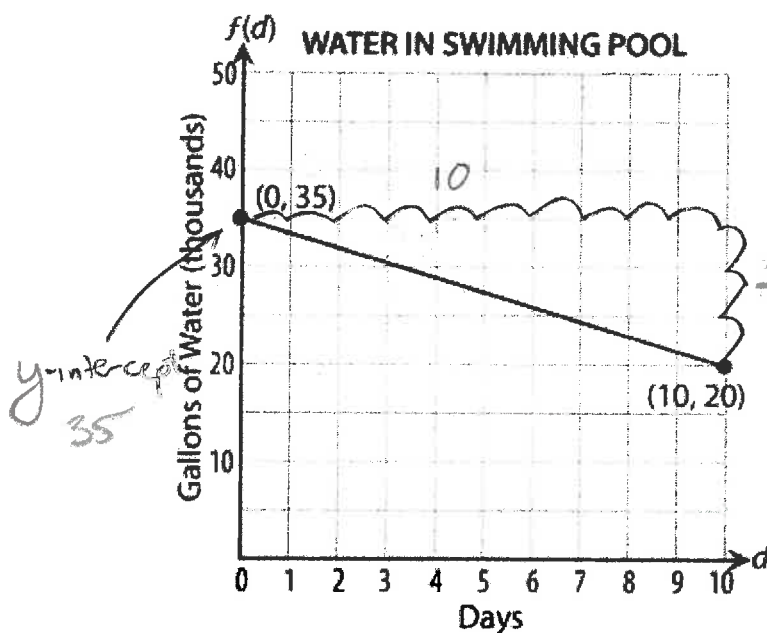


- A $y = 2x - 8$
- B $y = -8x + 2$
- C $y = -8x + 4$
- D $y = \frac{1}{2}x - 8$

Equation A matches the graph since the
y-intercept is -8 and the slope is 2.

4. (FLE2) For the problem below, circle your answer and explain in a complete sentence.

Water is leaking at a constant rate from a city swimming pool. The graph on the coordinate plane represents the functional relationship between d , the number of days the pool leaks, and $f(d)$, the amount of water (in thousands of gallons) in the pool. Which equation describes this relationship?



- A $f(d) = 35 - 1.5d$
- B $f(d) = 35 + 1.5d$
- C $f(d) = 1.5 + 35d$
- D $f(d) = 1.5 - 35d$

$$m = \frac{-15}{10} = -1.5$$

↑
negative

Since the graph has a slope of -1.5 and a y-intercept of 35 , the equation that describes this relationship is $f(d) = 35 - 1.5d$

5. (FLE2) A linear function passes through the points $(-12, -5)$ and $(6, -8)$. What is its equation? Show your math work and then write a CEEL paragraph defending your answer.

$$m = \frac{-8 - (-5)}{6 - (-12)} = \frac{-3}{18} \div 3 = \left(\frac{-1}{6}\right)$$

$$y = mx + b$$

$$-8 = \left(\frac{-1}{6}\right)(6) + b$$

$$-8 = \frac{-6}{6} + b$$

$$-8 = -1 + b$$

$$+1 \quad +1$$

$$\underline{-7 = b}$$

$$y = -\frac{1}{6}x - 7$$

The equation between $(-12, -5)$ and $(6, -8)$ is

① $y = -\frac{1}{6}x - 7$. This is true since the slope between those points is $-\frac{1}{6}$. This means ② that to get from one point to the other, the graph must go down one unit and right six units. I calculated the ③ slope using the slope formula. ③ The y-intercept ④ is found substituting the slope and coordinate into $y = mx + b$ and solving for b.

6. (FLE5) For the problem below, circle your answer and explain in a complete sentence

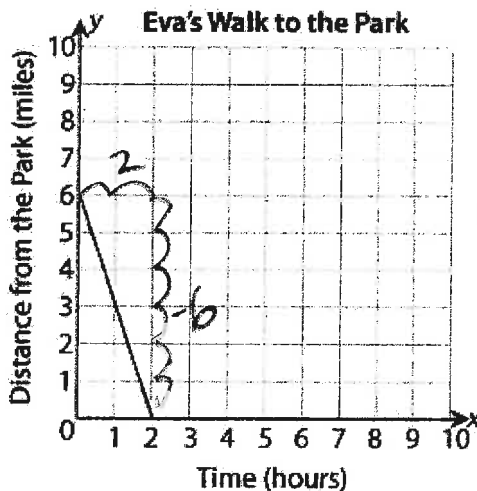
When a hot air balloon descends, its height above the ground over time can be modeled by the equation $h=980-4m$, where h is the balloon's height in feet after m minutes. What does the number 980 in the equation represent?

- A the height of the balloon before it begins its descent
- B the number of minutes it takes for the balloon to land
- C the number of feet the balloon drops each minute
- D the height of the balloon after 4 minutes

980 is the y-intercept of the equation,
thus it must represent the height at the start
of its descent.

7. (FLE5) Show your work, box your answer and explain it in one complete sentence.

Eva walks at a constant rate from her house to the park. The line on the coordinate grid below represents the distance she walked as a function of time. Calculate the slope and describe how it relates to Eva in a complete sentence.



The slope is -3 and this means that Eva
is walking at a rate of 3 miles per hour.
It's negative since the distance to the park
is getting shorter & shorter.