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USA TEST PREP

Grade 8 Mathematics EOG (GSE) Quiz Answer Key

Functions - (MGSE8.F.5) Describe The Functional Relationship

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1)





Between which months is the bird population increasing the fastest?

- A) March to April
- B) January to February
- C) August to September
- D) September to October

Explanation:

During September to October bird population is increasing the most. The graph has the steepest upward slope during this period.

2)



The graph shown represents part of Sheri's trip to her sister's house. During what part of her trip was the car's speed decreasing?

- A) between 0 and 20 minutes
- B) between 20 and 40 minutes
- C) between 40 and 50 minutes
- D) between 60 and 80 minutes

Explanation:

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The speed of the car is decreasing **between 40 and 50 minutes**. The speed of the car decreases between 40 and 50 minutes and then comes to a stop.

3)



The graph shows the cost per day for renting a car. Which statement is true?

- A) The rental cost is \$150 per day.
- B) The slope of the graph is zero.
- C) The graph has a positive rate of change.
- D) The graph has a negative rate of change.

Explanation:

The graph has a positive rate of change. You can see from the graph that the slope, or rate of change is 30. This is the cost per day.

4)



The graph represents part of Brooke's trip to work. During what time period is her speed decreasing?

- A) between 0 and 10 minutes
- B) between 20 and 25 minutes
- C) between 10 and 15 minutes
- D) between 15 and 20 minutes

Explanation:

Brooke's speed is decreasing between 20 and 25 minutes. The graph shows a negative rate of change during this time period.





The graph represents part of Brooke's trip to work. During what time period is her speed increasing?

- A) between 0 and 10 minutes
- B) between 20 and 25 minutes
- C) between 15 and 20 minutes
- D) between 10 and 15 minutes

Explanation:

Brooke's speed is increasing between 0 and 10 minutes. According to the graph, Brooke's speed is increasing during this time period.

6) You are going to model the population size of a species of bird that is gradually becoming extinct. Which graph is the BEST choice for doing this?





D is best, since it is decreasing from left to right at a slower and slower rate.

7)

Sam is 4 times as old as Allie.

Write an equation to model this situation.

- A) S = 4A
- B) A = 4S
- C) S = 4 + A
- D) A = 4 + S

Explanation:

Sam is 4 times as old as Allie can be written as **S = 4A**.



Which of the sets of points lies on the line graphed here?

- A) {(0, 0), (1, 1), and (2, 2)}
- B) {(1, 1), (1, 2), and (2, 3)}
- C) {(0, 0), (-1, 1), and (1, 2)}
- D) {(0, 0), (-1, 1), and (1, -1)}

Explanation:

Solution: **{(0, 0), (-1, 1), and (1, -1)}**. To determine the correct answer, plot the sets of points and determine which set lies on the line.

9)

Growth of Plant Sample A	Growth of Plant Sample B

Time (days)	Height (in.)	Time (days)	Height (in.)
1	6	1	2
2	12	2	5
3	18	3	10
4	24	4	17
5	30	5	26

Compare the data for the growth of two plant samples. How can you determine which data set is linear?

A) Sample B has linear data because it increases as a slower rate.

- B) Sample A has linear data because it has a constant rate of change.
- C) Neither sample has linear data because the samples start at different heights.
- D) Both samples have linear data because as *x* increases, *y* increases.

Explanation:

Linear data shows a constant increase in the output in reference to the input. The rate of change, called slope for linear functions, is constant. Therefore, **Sample A has linear data because it has a constant rate of change**.

10)



Daniel biked to the park. On the way, he stopped for a soda, then continued to the park. After playing a game of catch, Daniel biked home. Between which two points did Daniel more than likely stop for a soda?

A) between points B and C

- B) between points C and D
- C) between points D and E
- D) between points E and F

Explanation:

between points B and C

The shorter horizontal line between points B and C indicates that Daniel stopped for a short length of time to get a soda.

11)



Input	ut Output	
1	х	
5	3	
13	у	

Use the graph to complete the input-output table. List the answer in the format of x,y.

- A) 1,4
- B) 2, 2
- C) 2, 3
- D) 2, 5

Explanation:

The answer is **2**, **5**. The point (1, 2) is on the graph; when the Input is 1, the Output is 2. Also, the point (13, 5) is on the graph; when the Input is 13, the Output is 5.



On Carol's morning commute, her car tire was punctured by a nail. Carol was able to drive slowly to the garage. Before the tire could

be repaired, the air remaining in the tire had to be let out. More than likely, between which points on the graph was this occurring?

- A) between points D and E
- B) between points C and D
- C) between points B and C
- D) between points A and B

Explanation:

between points C and D

The line is steeper between C and D, so the air is escaping at a faster rate. More than likely, this was because someone was forcing the remaining air out.





Input	Output	
2	1	
х	8	
11	10	
14	у	

Use the graph to complete the input-output table. List the answer in the format of x,y.

- A) 7,13
- B) 7,16
- C) 8,13
- D) 9,13

Explanation:

The answer is **9**, **13**. The point (9, 8) is on the graph; when the Output is 8, the Input is 9. Also, the point (14, 13) is on the graph; when the Input is 14, the Output is 13.



Time (minutes)

The graphs represent Daniel's ride to the ballpark. Describe Daniel's speed as he gets closer to the park. Justify.

- A) constant; the slope of the line between points B and C is 0
- B) decreasing; the slope of the line between points D and E is negative
- C) increasing; the slope of the line between points D and E is positive
- D) decreasing; the slope of the line between points D and E is undefined

Explanation:

decreasing; the slope of the line between points D and E is negative

Daniel's ride home is represented by the line between points D and E. The line is falling from left to right; therefore, the slope is negative, indicating a decrease in speed.



Which graph shows a line with positive slope that passes through the point (r, s)?

- A) A
- B) B
- C) C
- D) B and D

Explanation:

The point is (r, s) so you want to find r on the x axis and s on the y-axis. Then find the line that is increasing from left to right. Therefore the correct line is **B**









B The given slope is negative, so the line must slope downward from left to right. This rules out two of the graphs.

The point (-2, -5) lies on the graph. Read off one other point on the line, say (0, -11) to check if the value of the slope matches the given value.



17)



Where is the function decreasing?

A)	-2 < x < 0.5
B)	-2 ≤ x < 0.5

- B) $-2 \le x < 0.5$ C) $-\infty < x < 0.5$
- D) 1.75 < x < ∞

When reading a graph from left to right, a graph is decreasing where the y-values are getting smaller, or the graph is going down. This graph is decreasing on the interval -2 < x < 0.5.





Where is the function increasing?

- A) 1 < x < ∞
- B) 3 < x < ∞
- C) -∞ < x < 1
- D) -∞ < x < 3

Explanation:

When reading a graph from left to right, a graph is increasing where the y-values are getting larger, or the graph is going up. This graph is increasing on the interval $1 < x < \infty$.

19)



The two graphs represent Daniel's bike ride to the ballpark. The horizontal line between points C and D on the distance/time graph represents the time Daniel spent at the park playing catch. What does the same line represent on the speed/time graph?

- A) The time Daniel spent at the ballpark.
- B) The time Daniel spent gradually slowing down.
- C) The time Daniel spent speeding up at a steady pace.

D) The time Daniel spent traveling at a constant speed.

Explanation:

The time Daniel spent traveling at a constant speed.

In the distance/time graph, the distance remains constant between points C and D over a period of time. Therefore, Daniel has stopped.

In the speed/time graph, Daniel keeps biking at a constant speed over a period of time.

20)



On Carol's morning commute, her car tire was punctured by a nail. The graph represents the tire pressure/time function from before the leak until Carol was back on the road again after having the tire repaired. Between which points on the graph was the tire most likely re-inflated at the garage?

- A) between points D and E
- B) between points C and D
- C) between points B and C
- D) between points A and B

Explanation:

between points D and E

The air pressure reached zero at point D. Then, it started to increase between D and E. You know it's increasing because the line is rising between those points. The slope is positive.



Where is the function decreasing?

- A) 1 < x < ∞
- B) 3 < x < ∞
- C) -∞ < x < 1
- D) -1 < x < ∞

Explanation:

When reading a graph from left to right, a graph is decreasing where the y-values are getting smaller, or the graph is going down. This graph is decreasing on the interval $-\infty < x < 1$.



The two graphs represent Daniel's bike ride to the ballpark. On the distance/time graph, point C indicates when Daniel arrives at the park. Which point on the speed/time graph indicates when Daniel arrives at his destination?

- A) point C
- B) point B
- C) point D
- D) point E

Explanation:

Е

When Daniel reaches the ballpark, his speed will be at zero.

23)





Time (minutes)

The graphs represent Daniel's ride to the ballpark. Considering both graphs, which statement is FALSE?

- A) Daniel's speed decreased as he got closer to the park.
- B) Daniel's ride to the park took 9 minutes.
- C) On the speed/time graph, Daniel's speed increases between points C and D.
- D) Daniel made two additional stops on his way to the ballpark.

On the speed/time graph, Daniel's speed increases between points C and D. The horizontal line between points C and D indicate a constant speed.





Time (minutes)

The graph represents Daniel's bike ride to the ball park. Determine the slope from point D to point E. What does the slope indicate about Daniel's speed between points D and E?

- A) 1; The slope indicates that Daniel's speed is 1 meter per minute.
- B) undefined; The slope indicates that Daniel's speed varies from minute to minute.
- C) 0; The slope indicates that Daniel is not moving.
- D) -1 The slope indicates that Daniel's speed is less than 1 meter per minute..

Explanation:

0; The slope indicates that Daniel is not moving.

The slope of a horizontal line is 0. The distance from home is represented by the y-coordinate. Since the distance remains constant at 4 between points D and E, Daniel is not moving.



Where is the function increasing?

- A) -2 < x < 0.5
- B) -∞ < x < 0.5
- C) 1.75 < x < ∞
- D) $-\infty < x < -2$ and $0.5 < x < \infty$

Explanation:

When reading a graph from left to right, a graph is increasing where the y-values are getting bigger, or the graph is going up. This graph is increasing on the intervals $-\infty < x < -2$ and $0.5 < x < \infty$.