



Coordinate Algebra EOC (GSE) Quiz Answer Key

Functions - (MGSE9-12.F.IF.5) Relate Domain

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Score: _____

1) Scientists believe there is a link between ambient temperature and damage to a head gasket on a car. They perform a study recording daily temperature and the damage index to a head gasket on a car.

What is the domain?

- A) **temperature**
- B) type of car
- C) damage index
- D) mileage on car

Explanation:

The correct answer is **temperature**. Scientists believe that the temperature can cause damage to a head gasket, so the independent variable is temperature.

2) Hailey has a summer job at the water slide park. She earns \$9.50 an hour as a lifeguard, but never works more than 25 hours in a week. She determines that her salary is modeled by the function $s = 9.5h$.

What is the domain of this function in this situation?

- A) $s \leq 237.50$
- B) all real numbers
- C) **$\{0 \leq h \leq 25\}$**
- D) $\{0 \geq h \geq 25\}$

Explanation:

$\{0 \leq h \leq 25\}$

The lower limit of the domain is zero because there can't be negative hours, and the upper limit is the maximum hours worked , 25.

3)

A youth group is planning a trip to a theme park. The bus holds up to 40 people. The cost for bus parking is \$60.00. Each person going on the trip will be paying \$36.00 for a ticket to enter the park.

The equation that models this trip is $T = 36x + 60$, where T represents the total cost for the group to take the trip and x equals the number of people going. What values are appropriate for the domain?

- A) $x = 40$
- B) $x = 60$
- C) **$0 \leq x \leq 40$**
- D) $0 \leq x \leq 39$

Explanation:

$0 \leq x \leq 40$

The number of people going can include zero. Since the bus can only hold 40 people, the number must also be less than or equal to 40.

4) Steven is starting a baseball hat printing business and plans on selling each hat for \$20 with his cost being \$8 per hat. The equipment will cost \$800. Steven orders 500 hats and determines that the profit for his new business is modeled by the function $P = 12x - 800$.

What is the domain of this function in this situation?

- A) $x \geq 20$
- B) all real numbers
- C) **$\{0 \leq x \leq 500\}$**
- D) $\{0 \geq x \geq 500\}$

Explanation:
 $\{0 \leq x \leq 500\}$

The lower limit of the domain is zero because there can't be negative hats, and the upper limit is the total hats available, 500.

5) An office building has 8 floors above the ground. On a line graph that models the average number of times the elevator stops on each floor each day, which values will be the x-coordinates?

- A) **$D = \{1, 2, 3, 4, 5, 6, 7, 8\}$**
- B) $D = \{0, 1, 2, 3, 4, 5, 6, 7, \}$
- C) $D = \{0, 1, 2, 3, 4, 5, 6, 7, 8\}$
- D) $D = \{-1, -2, -3, -4, -5, -6, -7, -8\}$

Explanation:
 $D = \{1, 2, 3, 4, 5, 6, 7, 8\}$

The x-coordinates are the domain values for the function.

There is no 0 floor. The floors are not negative.

The correct answer is $D = \{1, 2, 3, 4, 5, 6, 7, 8\}$.

6) The base rate to rent a car is \$75. Then, the customer is charged \$2.00 per mile for each mile driven over 200 miles. Joel rented a car and drove 250 miles. If $y = 2x + 75$ models the function, which domain value gives Joel's total rental cost?

- A) **$x = 50$**
- B) $x = 100$
- C) $x = 200$
- D) $x = 250$

Explanation:
 $x = 50$

Joel drove 50 miles over the allowed 200 miles. So, $x = 50$ is the domain value that will be multiplied by 2 in the function's equation.

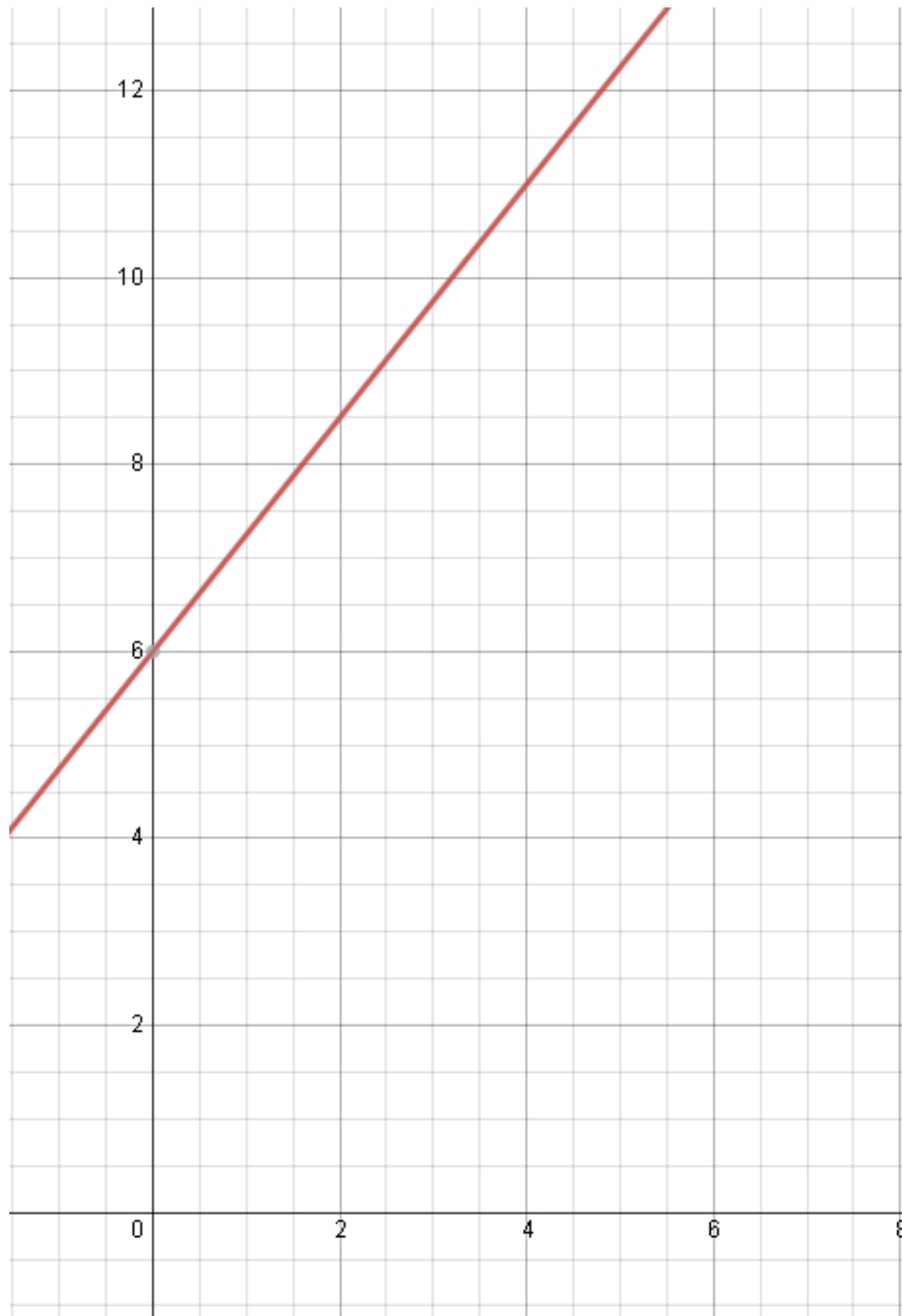
7) Jasmine works at the public library after school. She makes \$7.00 per hour. She cannot work more than 15 hours per week. If $y = 7x$ represents Jasmine's earning, what are the values in the domain?

- A) $x \leq 15$
- B) **$0 \leq x \leq 15$**
- C) $1 \leq x \leq 15$
- D) all real numbers

Explanation:
 $0 \leq x \leq 15$

Jasmine cannot work negative hours. She could work zero hours up to and including 15 hours.

8)



The graph represents the total charges for a taxi that gets \$6 to board and \$1.25 per mile. What information is represented on the x-axis? Which domain values are significant to the function?

- A) boarding charge; $x = 6$
- B) charge per mile; $x \geq 1.25$
- C) **distance the customer rides; $x \geq 0$**
- D) distance the customer rides; all real numbers

Explanation:

distance the customer rides; $x \geq 0$

The domain represents the number of miles a customer rides. Since distance cannot be negative, the only significant values on this graph are $x \geq 0$.

9) D(b) is a function that models the population of deer based on the number of bobcats in an area. What is an appropriate domain

for this function?

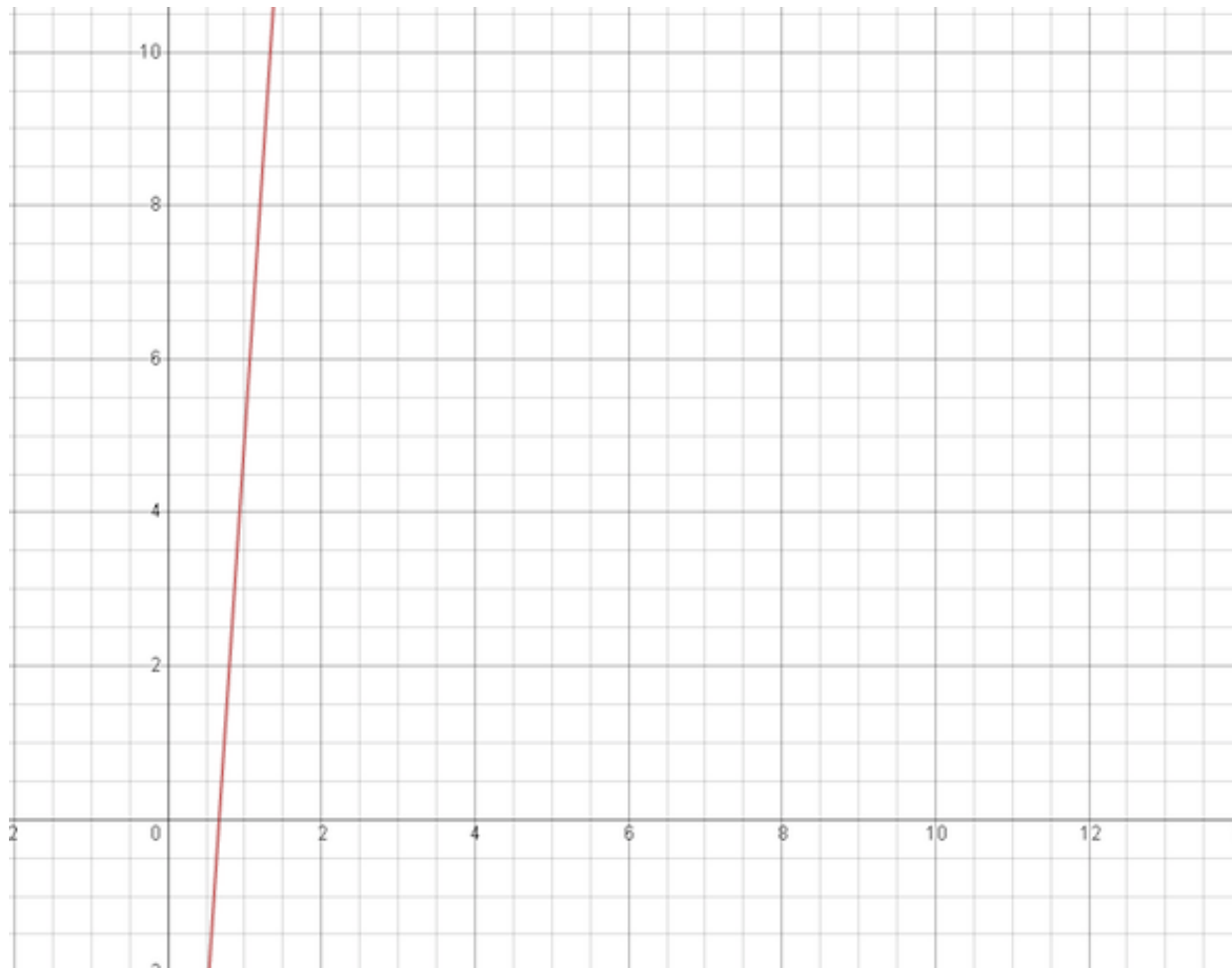
- A) $D = \{\text{all integers}\}$
- B) $D = \{\text{all real numbers}\}$
- C) $D = \{\text{rational numbers}\}$
- D) $D = \{\text{all whole numbers}\}$

Explanation:

$D = \{\text{all whole numbers}\}$

There cannot be a fraction of an animal or a negative animal.

10)



Jerry charges \$15 for each lawn that he cuts. His earnings vary from week to week. If he cuts at most 10 yards per week, his profit is represented by $y = 15x - 10$ because he allows \$10 for gas and oil for his equipment. What do the domain values represent on the graph? Which domain values are significant in this problem?

- A) profit on each yard; $x < 18$
- B) number of yards Jerry cuts; $x \geq 0$
- C) number of yards Jerry cuts; $x \geq 10$
- D) **number of yards Jerry cuts; $0 \leq x \leq 10$**

Explanation:

number of yards Jerry cuts; $0 \leq x \leq 10$

The x-values represent the number of yards Jerry cuts per week. Since he can't cut negative yards, the value must be greater than 0. He only has time to cut up to 10 yards. So, the only domain values that are relevant to this problem are greater than or equal to zero, but less than 10.

11) Pamela is selling cookies. She charges 75 cents for each cookie, with the ingredients costing \$2.00 per dozen. The cookies are

only sold by the dozen. Her profit is represented by the equation $P = 7d$. What does the domain of the function represent? Which values in the domain are relevant to the amount of profit?

- A) profit per dozen; $x \geq 0.75$
- B) number of dozen sold; $x \geq 0$**
- C) number of dozen sold; $x \geq 1$
- D) profit per cookie; $x \geq 0.75$

Explanation:

number of dozen sold; $x \geq 0$

\$7.00 is her profit per dozen. So, x represents the number of dozens she sell. She can't sell negative dozens.

12) $T(p)$ is a function that models the average yearly temperature based on the degree latitude(p) of the location on earth. The lines of latitude run from East to West, but they are measured in terms of North and South, extending from -90° to $+90^\circ$. Which domain is appropriate for this function?

- A) $D =$ all whole numbers
- B) $D =$ all positive real numbers
- C) $D =$ integers between 0 and 100
- D) $D =$ all real numbers between ± 90 , inclusive**

Explanation:

$D =$ all real numbers between ± 90 , inclusive

Degrees of latitude can be fractional units, positive units, or negative units.

13) A plumber charges \$110 per hour. If h represents the number of hours that he works, which domain values are relevant on a graph that shows his earnings?

- A) $h \geq 0$**
- B) $h \geq 1$
- C) $h \geq 110$
- D) all real numbers

Explanation:

$h \geq 0$

The equation of his earnings is $\$110h$. He can't work negative hours.

14) $R(a)$ is the change in the population of rats based on the whole number of acres(a) of pasture. What is an appropriate domain for this function?

- A) all integers
- B) all real numbers
- C) all positive integers**
- D) all irrational numbers

Explanation:

all positive integers

The domain is the whole number of acres.

The appropriate domain values are **all positive integers**.

15) The homeowner's association is sponsoring a spaghetti supper. Tickets to the event cost \$10.50 per person. Sixty-two people have already purchased tickets. The total number of tickets available is 245. If $y = 10.50x$ represents the amount of money that can be received from the number of tickets that REMAIN to be sold, what values are appropriate for the domain of the function?

- A) $x > 62$
- B) $1 < x \leq 183$
- C) $0 \leq x \leq 183$**
- D) $62 \leq x \leq 245$

Explanation:

$0 \leq x \leq 183$

Originally there were 245 tickets available. After the sale of 62 tickets, 183 are left to sell. There cannot be a negative number of tickets sold; but, there could be from zero up to and including 183 sold in the future.

16) The distance between Bay Town and Oak Glen is 175 miles. If the equation $y = -x + 175$ represents the distance left to travel to Oak Glen, what does the domain represent? What is the domain?

- A) time left to reach Oak Glen; $x \geq 0$
- B) distance left to reach Oak Glen; $x \geq 0$
- C) time it takes to travel to Oak Glen; $x \geq 0$
- D) **distance traveled since leaving Bay Town; $x \geq 0$**

Explanation:

distance traveled since leaving Bay Town

The x-values in the equation represent the distance already traveled.

17) If the function $f(n)$ models the amount of man-hours it takes to construct (n) televisions that are ready to ship from a electronic manufacturing facility, which describes an appropriate domain for the function?

- A) **all integers where $n \geq 0$**
- B) all real numbers where $n \geq 0$
- C) all rational numbers where $n > 0$
- D) all rational numbers where $n \geq 0$

Explanation:

all integers where $n \geq 0$

The manufacturer can only ship whole televisions.

18) If the function $f(y)$ models the number of inches a tree grows in a (y) year, which describes an appropriate domain for the function?

- A) all integers where $n > 0$
- B) all integers where $n \geq 0$
- C) all rational numbers where $n > 0$
- D) **all rational numbers where $n \geq 0$**

Explanation:

all rational numbers where $n \geq 0$

The number of inches a tree grows can be calculated from any fraction of a year or years.

19) If the function $f(n)$ models the size of a jar that holds n marbles to be sold in a toy store, which describes an appropriate domain for the function?

- A) **all integers where $n \geq 0$**
- B) all real numbers where $n \geq 0$
- C) all rational numbers where $n > 0$
- D) all rational numbers where $n \geq 0$

Explanation:

all integers where $n \geq 0$

The toy store can only sell whole marbles.

20) If the function $f(m)$ models the number of hours it take to hike (m) miles through the jungle, which describes an appropriate domain for the function?

- A) all integers where $n > 0$
- B) all integers where $n \geq 0$
- C) all rational numbers where $n > 0$
- D) **all rational numbers where $n \geq 0$**

Explanation:

all rational numbers where $n \geq 0$

The number of hours it takes to hike through the jungle can be calculated from any fraction of a mile or miles.