Coordinate Algebra EOC (GSE) Quiz Answer Key

Functions - (MGSE9-12.F.LE.5) Interpret Parameters
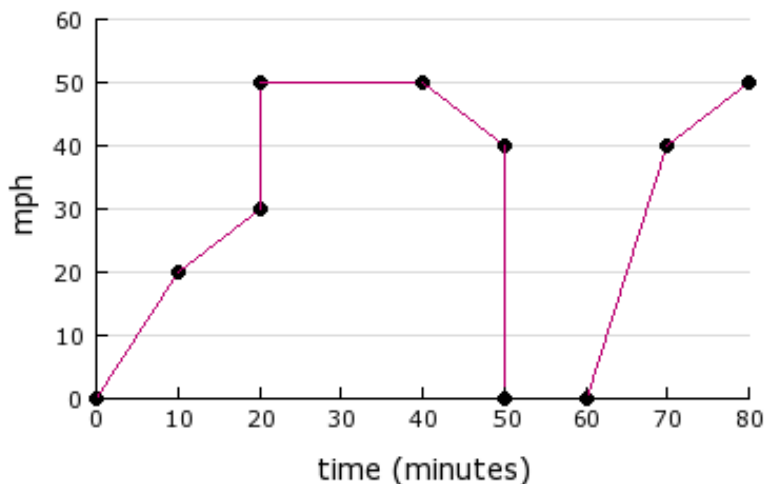
Student Name: _____   Date: _____

Teacher Name: THUYNGA DAO   Score: _____
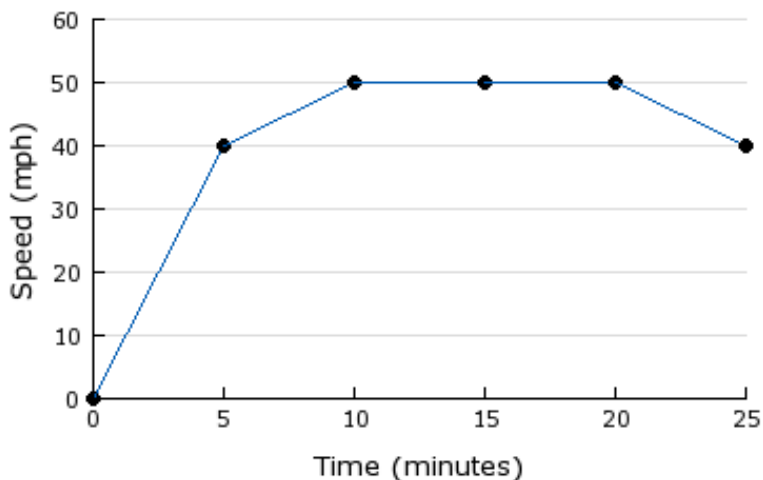
1)

The graph shown represents part of Sheri's trip to her sister's house. During what part of her trip was the car stopped?
- A)   between 40 and 50 minutes
- **B)   between 50 and 60 minutes**
- C)   between 60 and 70 minutes
- D)   between 30 and 40 minutes

Explanation:
The solution is **between 50 and 60 minutes**. The graph displays 0 mph during this time period.

2)

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.

3) Greg sells cars. He makes a base salary of $25,000, plus $1500 per car he sells. The function that models this situation is S = 1500x + 25000. After working at the car dealership for 2 years, he gets a raise. He now makes $1700 per car he sells. What is the new function that models this situation?
- A) S = 1700x + 1500
- B) S = 1500x + 1700
- **C) S = 1700x + 25000**
- D) S = 25000x + 1700

Explanation:
The base salary is the y-intercept and the money Greg makes per car is the slope. The correct answer is **S = 1700x + 25000**.

4)
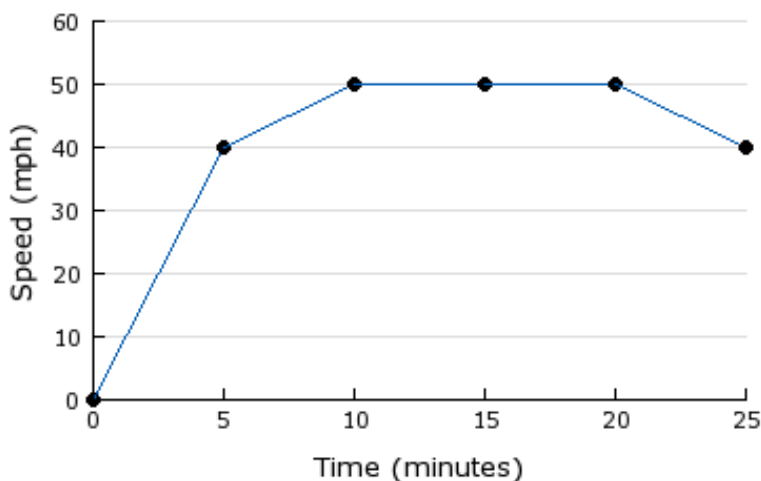
The graph represents part of Brooke's trip to work. During what time period is her speed increasing?
- **A) between 0 and 10 minutes**
- B) between 20 and 25 minutes
- C) between 15 and 20 minutes
- D) between 10 and 15 minutes

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

5) Jillian has $50 that she plans on investing in an account that will double her money every week. This can be represented by the equation $M = 50(2)^x$ where M represents the amount of money she has and x represents the number of weeks that have passed. Her uncle Charlie gives her a gift of $400 so she decides to start her investement with that money plus the $50 she already had. What should be changed in the equation $M = 50(2)^x$ to represent the new situation?

    A)   Replace the 50 with 400.
    B)   Replace the 2 with a 400.
    C)   Replace the 50 with a 450.
    D)   Switch the M and x

Explanation:
In $M = 50(2)^x$ the 50 represents the amount of money she started with and the 2 represents that it is doubling every week. So to write an equation where she started with $450 she would need to **Replace the 50 with a 450.**

6)
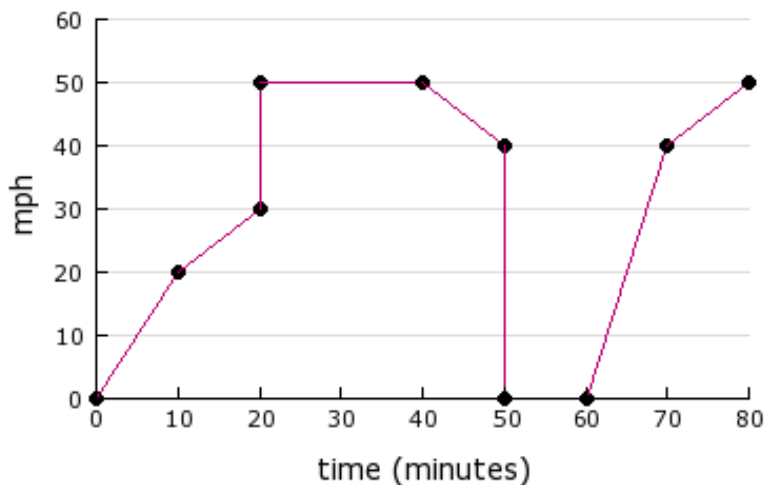
The graph shown represents part of Sheri's trip to her sister's house. During what part of her trip was the car traveling at 50 mph?

    A)   between 20 and 40 minutes
    B)   between 10 and 20 minutes
    C)   between 40 and 50 minutes
    D)   between 50 and 60 minutes

Explanation:
The solution is **between 20 and 40 minutes**. During this time period, Sheri is traveling at a constant speed of 50 mph.

7)

Rain Fall (x)	13.1	11.4	16.0	15.1	21.4	12.9	9.6	18.2	18.6
Yield (y)	48.5	44.2	56.8	80.4	47.2	29.9	74.0	74.0	76.8

In an area of the Midwest, records were kept on the relationship between the rainfall (in inches) and the yield of wheat (bushels per acre). The data for a 9 year period is given in the table. The equation of the line of best fit for this data is y = 47.3 + 0.78x. How many bushels of wheat per acre can be predicted if it is expected that there will be 17 inches of rain?

    A)   5.96
    B)   52.06
    C)   60.56
    D)   65.34

Explanation:
60.56 is correct. Plugging in x = 17 yields 60.56 for y.

8) George plans to purchase a new scooter for $8000 and to keep it until it is worth a fourth of its original price. The value of the scooter is give by $V = 8000(\frac{1}{8})^t$, where V is the value of the scooter and t is the number of years that have passed.

If George finds that he can buy the scooter on sale for $6895, how should he change the value equation?

   A)   Replace the 8000 with 6895.

   B)   Replace the 8000 with $\frac{1}{6}$.

   C)   Replace the $\frac{1}{8}$ with 6895.

   D)   Replace the $\frac{1}{8}$ with -6895.

Explanation:

In $V = 8000(\frac{1}{8})^t$ the 8000 represents the price of the scooter and the $\frac{1}{8}$ represents the rate at which the scooter loses its value every year. So to write an equation where George's purchased the scooter for $6895 he would need to **Replace the 8000 with 6895.**

9)

x	0	3	4	5	12
y	8	2	6	9	12

For the data in the table, find the line of best fit, rounding values to three places if necessary.

   A)   y = 4.88 + 0.625x

   B)   y = 4.98 + 0.725x

   C)   y = 4.88 + 0.525x

   D)   y = 4.98 + 0.425x

Explanation:
y = 4.88 + 0.525x is correct. Use a stats calculator or software to do the computation.

10) The profit at a factory that makes CD's can be computed using the linear equation p = 2.5d - 1000 where p is the profit and d is the number of CD's sold. What is the slope and what does it represent?

   A)   The slope is 1000 and it represents how many CD's are sold per day.

   B)   The slope is -1000 and it represents start-up costs for the factory.

   C)   The slope is 2.5 and it represents how much money the company makes per CD.

   D)   The slope is 2.5 and it represents how much money the company makes per day.

Explanation:
The slope is 2.5 and it represents how much money the company makes per CD.

11) A school club is raising money for a trip, and needs to reach $10,000. Their fundraising progress is modeled by the function

f(x) = 435 + 1200x, where x is measured in weeks.

What is the meaning of the coefficient 1200?

   A)   It is the amount they started with.

   B)   It is the amount still to be raised.

   C)   It is the amount which is left over.

   D)   It is the amount they raise each week.

Explanation:
It is the amount they raise each week. This is the slope of the line (when the function is graphed), so it is the rate of change.

12) Which statement BEST describes the growth of bacteria modeled by the function $f(x) = 1.8^x$?

    A)   **Bacteria growth increases exponentially.**
    B)   Bacteria growth increases linearly.
    C)   Bacteria growth is constant.
    D)   Bacteria growth increases.

Explanation:
This is an exponential function. If you substitute values for x, you can see that **bacteria growth increases exponentially.**

13) The engine life for a certain brand of lawn mower is modeled by the function $f(h) = 50 - \frac{1}{3}h$ where h represents hours used.

What does the function mean?

    A)   Engine life remains constant.
    B)   Engine life increases steady with time.
    C)   **Engine life decreases steady with time.**
    D)   Engine life decreases more rapidly with time.

Explanation:
Engine life decreases steady with time

linear with a negative slope

14) After all of the start-up costs, a company starts with $100 and makes $0.75 on each unit sold. Write a linear equation in slope-intercept form that models this situation using p for profit and n for number of units sold.

    A)   p = 100n + 75
    B)   n = 100p + 75
    C)   **p = 0.75n + 100**
    D)   n = 0.75p + 100

Explanation:
The profit is equal to 0.75 times the number of units sold plus the $100. The correct equation is **p = 0.75n + 100.**

15) The amount of money the athletic booster club raised for the year is modeled by the function $f(x) = 250x + 750$. How much money did the booster club have at the start?
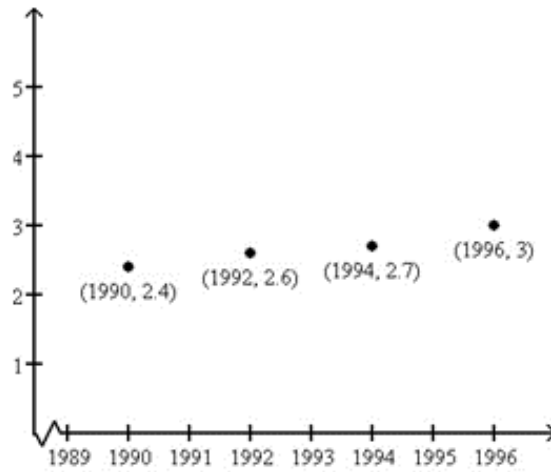
    A)   The booster club had $250 at the start.
    B)   **The booster club had $750 at the start.**
    C)   The booster club had $1,000 at the start.
    D)   The booster club had no money at the start.

Explanation:
The booster club had $750 at the start.

750 is the constant in the function.

16)

The graph shows the number of annual dental visits per person (y) during the years (x) 1990 to 1996.

For the data in the graph find the line of best fit, and use it to predict the number of dental visits per person in 2009.
- A)   2.1
- B)   3.6
- C)   3.8
- **D)   4.2**

Explanation:
4.2 is correct. The line of best fit has equation y = 0.095x - 186.7. Plugging in 2009 for x gives y=0.095(2009) - 186.7 = 4.155.

17) Mrs. Mitchell decided to grade her projects by giving each student 50 points if they turned in a project and then an additional 5 points for each part they got correct. After looking through some of the projects, she decided to give the students 7 points for each correct section. If Mrs. Mitchell wrote a function to describe the situation, what would change?

- A)   the slope
- B)   the y-intercept
- C)   both the slope and y-intercept
- D)   the function would remain the same

Explanation:
The base 50 points for a completed project is the y-intercept and the points given for correct sections is the slope. Since it was the points given for each correct section that changed, it was **the slope** that changed.
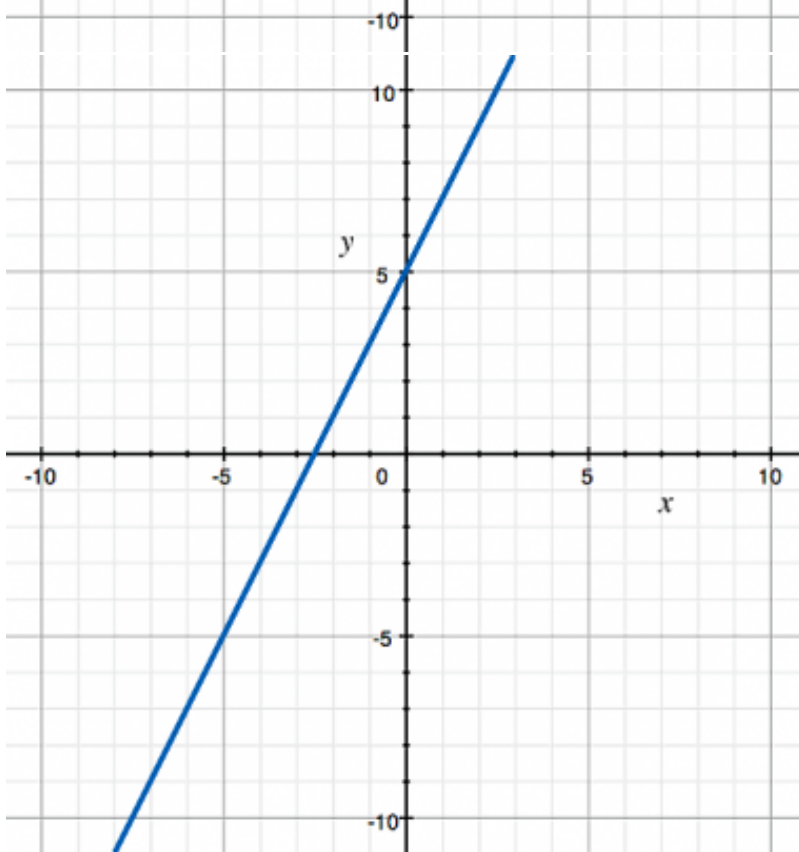
18) The tooth fairy brings Jack $5 plus $1 for each tooth that he loses. After Jack loses a few teeth, the tooth fairy decides that he is paying too much money for teeth. He now gives Jack $5 plus $0.50 for each tooth lost. Which graph shows the new function?
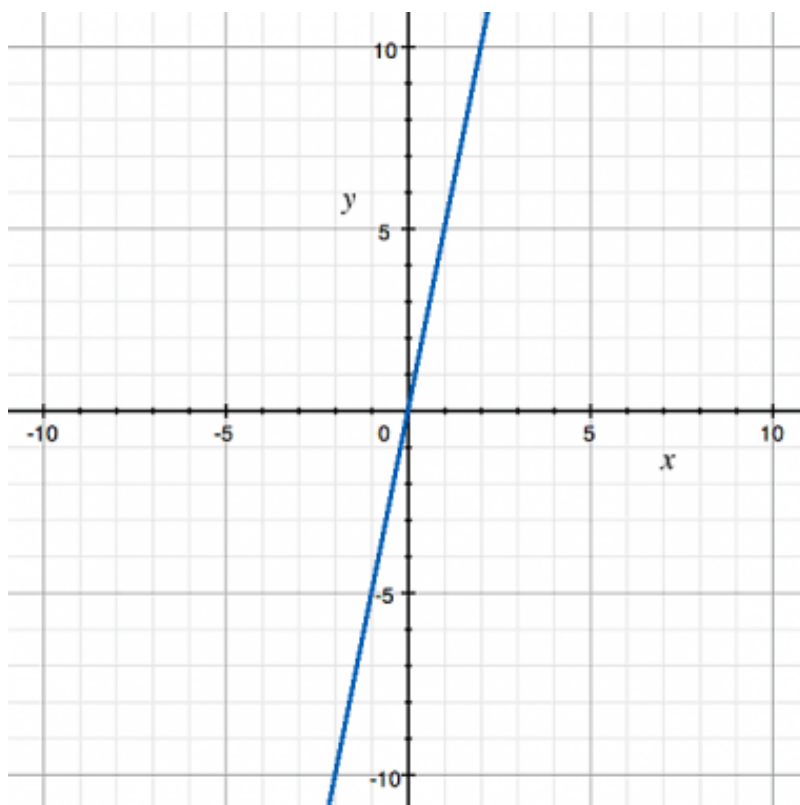
A)
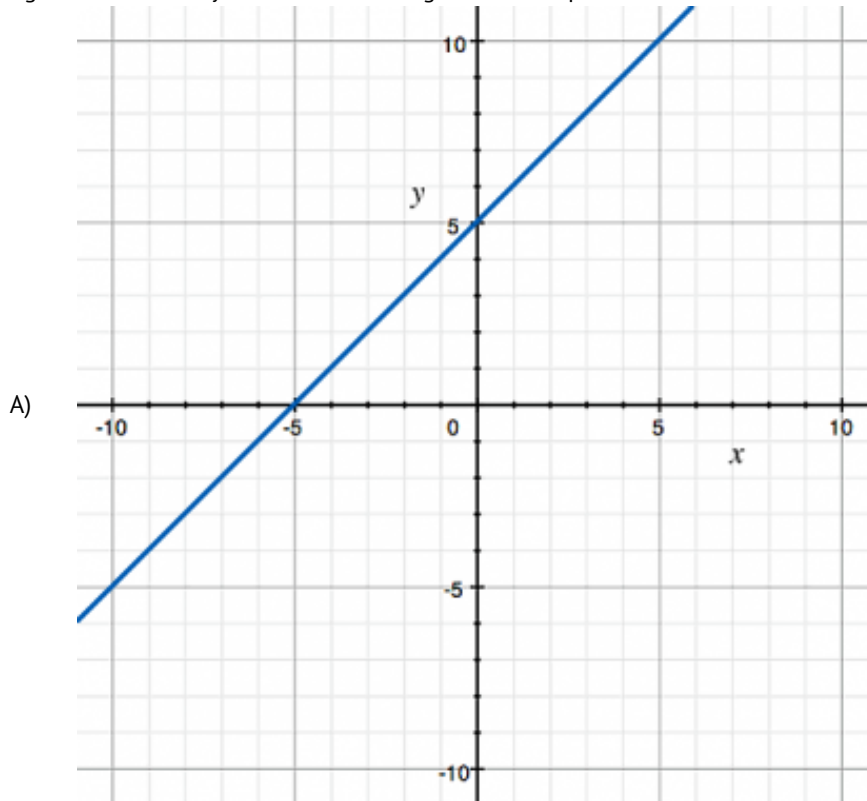
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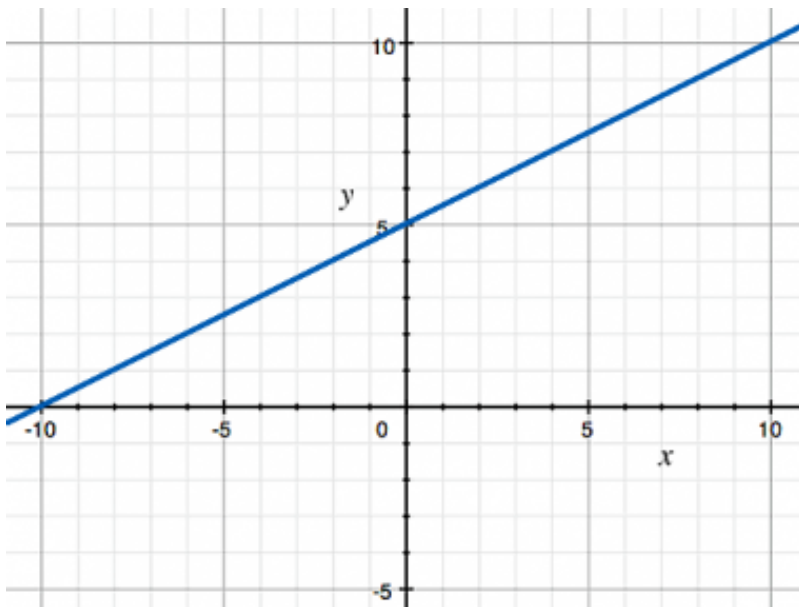
C)

D)

Explanation:
The $5 is the y-intercept and the $0.50 per tooth is the slope. The correct answer is graph **B**.

19) Adam earns a base pay plus a commission for each car he sales at Crazy Carl's Cool Cars. His monthly salary is modeled by the function f(c) = 250c + 500. If Adam doesn't sale a car, how much money does he earn for the month?

- A) $0
- B) $250
- **C) $500**
- D) $750

Explanation:
$500

$500 is the constant in the function.

20) George just bought a new scooter for $8000. He plans on keeping it until it is worth a fourth of it's original price. He believes that every year the scooter loses an eighth of its value. He can represent the value of the scooter by the equation $V = 8000(\frac{7}{8})^t$, where V is the value of the scooter and t is the number of years that have passed. As he was leaving the dealership he was told that the scooter really loses a sixth of it's value every year. What should George change in the equation $V = 8000(\frac{7}{8})^t$ to represent this new situation?

- A) Replace the $\frac{7}{8}$ with a 6.
- B) Replace the 8000 with $\frac{5}{6}$.
- C) Switch the V and t
- **D) Replace the $\frac{7}{8}$ with a $\frac{5}{6}$.**

Explanation:

In $V = 8000(\frac{7}{8})^t$ the 8000 represents the price of the scooter and the $\frac{1}{8}$ represents the rate at which the scooter loses its value every

year. So to write an equation where George's scooter loses $\frac{1}{6}$ of it's value every year he would need to **Replace the** $\frac{1}{8}$ **with a** $\frac{5}{6}$**.**

21) The light intensity of a certain brand of light bulb is modeled by the function $f(w) = 1.1^w$ where w represents watts. Which statement BEST describes the function?

- **A)** **light intensity increases exponentially**
- B) light intensity increases linearly
- C) light intensity is constant
- D) light intensity increases

Explanation:
This is an exponential function. If you substitute values for x, you can see that **light intensity increases exponentially**.

22) Adam earns a base pay plus a commission for each car he sells at Crazy Carl's Cool Cars. His monthly salary is modeled by the function $f(c) = 250c + 500$. How much does he earn for each car sold?

- A) $0
- **B)** **$250**
- C) $500
- D) $750

Explanation:
$250

$250 is the unit rate earned for each car sold.

23) Marty opened a savings account to deposit a portion of his monthly salary. Without considering interest earned, his savings account is modeled by the function $f(x) = 300x + 500$. How much money did Marty initially deposit?

- A) Marty's initial deposit was $0.
- B) Marty's initial deposit was $300.
- **C)** **Marty's initial deposit was $500.**
- D) Marty's initial deposit was $800.

Explanation:
Marty's initial deposit was $500.

500 is the constant in the function.

24)

x	-5	-3	4	1	-1	-2	0	2	3	-4
y	-10	-8	9	1	-2	-6	-1	3	6	-8

For the data in the table, find the line of best fit and use it to predict the value of y when x = -3.8.

- **A)** **-8.53**
- B) -7.42
- C) -0.01
- D) 4.20

Explanation:
-8.53 is correct. The line of best fit has equation y = 2.1x - 0.55, so plugging in x = -3.8 yields -8.53 for y.

25) To enter a local fair, one must pay an entrance fee and pay for the number of ride tickets he/she wants. Admission to the fair is given by the equation $f(x) = .50x + 10$, where x represents the number of tickets purchased and f(x) represents the total price. How much does each ride ticket cost?

- A) $10
- **B)** **$0.50**
- C) $10.50
- D) Not enough information.

Explanation:
For the linear function f(x) = mx + b, m is the rate of change. Here, the rate of change is the ticket price, so m = **$0.50**

26) To enter a local fair, one must pay an entrance fee and pay for the number of ride tickets he/she wants. Admission to the fair is given by the equation f(x) = .50x + 10, where x represents the number of tickets purchased and f(x) represents the total price. How much is the entrance fee?

- A) $10
- B) $0.50
- C) $10.50
- D)   Not enough information.

Explanation:
For the linear function f(x) = mx + b, b is the fixed cost. Here, the fixed cost is the entrance fee, so b = **$10**

27) Which situation would most likely be represented with a linear function?

- A)   the speed of a car in a race
- **B)   the speed of a car on a highway**
- C)   the speed of a car driving around town
- D)   the speed of a car driving across the country

Explanation:
The speed of a car on a highway could most likely be represented with a linear function. This is the best option. The is most likely going a constant speed.

28) A cross-country skier traveled at a rate of 40 miles per hour on downhills and 20 miles per hour on flat terrain while skiing a total 54 miles. If he skied for 2 hours, how many miles of downhills did he ski?

- A)   14 miles
- B)   26 miles
- **C)   28 miles**
- D)   30 miles

Explanation:
Let h equal the number of hours the skier spent on downhills and 2 − h equal the number of hours he spent on flat terrain. Then set up the equation 40h + 20(2 − h) = 54 and solve for h to get h = 0.7. This means that the skier skied **28 miles** on downhills.

29) To enter a local fair, one must pay an entrance fee and pay for the number of ride tickets he/she wants. Admission to the fair is given by the equation f(x) = .50x + 10, where x represents the number of tickets purchased and f(x) represents the total price. On opening weekend, they have a discount night where they decrease the ticket price to 5 cents each. How does this change the equation?

- **A)   f(x) = .05x + 10**
- B)   f(x) = .55x + 10
- C)   f(x) = .45x + 10
- D)   Not enough information.

Explanation:
In the equation f(x) = .50x + 10, $0.50 is the regular ticket price. On discount day, the tickets decrease to $0.05, so now, m = 0.05. Therefore, the new equation is **f(x) = .05x + 10**

30) Sammy bought a new car. The depreciation equation is given by $f(x) = 30,000(.85)^x$, where x represents the number of years since the purchase of the car, and f(x) represents the value of the car. By what percent does Sammy's car depreciate each year?

- A)   85%
- **B)   15%**
- C)   25%
- D)   The percentage varies each year.

Explanation:
For the exponential function $f(x) = a(b)^x$, b is the decay factor. Here, the decay factor, b = .85. The percent Sammy's car depreciates each year is 1 - .85 = **15%**