



Coordinate Algebra EOC (GSE) Quiz Answer Key

Creating Equations - (MGSE9-12.A.CED.3) Represent Constraints

Student Name: _____

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Score: _____

1) Cathy pays \$25 a month plus \$0.05 per text message. She models this with the function $C = 0.05x + 25$. If the text messaging fee increases to \$0.10, what is her new function?

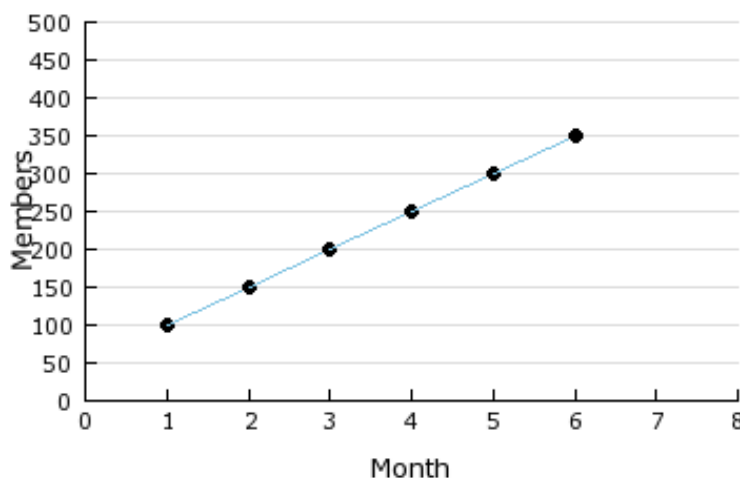
- A) $C = 10x + 25$
- B) $C = 0.10x + 25$**
- C) $C = 0.10x + 0.05$
- D) $C = 0.05x + 0.10$

Explanation:

The monthly fee is the y-intercept and the text messaging fee is the slope. The correct answer is $C = 0.10x + 25$.

2)

New Health Club Membership



Dreanna opened a new health club in January. The graph shows the membership in her club since she started it.

If the membership continues to grow at the same rate, what will the membership number be in August?

- A) 350
- B) 400
- C) 450**
- D) 500

Explanation:

The solution is **450**. The club has 350 members in June, therefore, in August there should be 450 members.

3) Danielle's basic cell phone rate each month is \$29.95. Add to that \$5.95 for voice mail and \$2.95 for text messaging. This past month Danielle spent an additional C dollars on long distance. Her total bill was \$77.70. How much did Danielle spend on long distance?

- A) \$23.50
- B) \$38.85**
- C) \$62.35
- D) \$8.90

Explanation:

The long distance portion of her bill = the total - (the sum of all the other portions of the bill) = $\$77.70 - (\$29.95 + \$5.95 + \$2.95) = \$38.50$.

4) Sarah is saving to buy a new phone. She needs \$150, and she has already saved \$63. Write an equation to model this situation. Let x represent the amount of money Sarah needs.

- A) $x - 63 = 150$
- B) $x + 63 = 150$**
- C) $x + 150 = 63$
- D) $x - 150 = 63$

Explanation:

Since she needs a total of \$150, you need to add what she needs to earn, x, to what she already has, \$63. So the equation is $x + 63 = 150$.

5) 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 $S = 1700x + 25000$.

6) The sum of two numbers is 27. One of the numbers is three more than the other. Find the numbers.

- A) 20 and 7
- B) 12 and 15**
- C) 13 and 14
- D) -12 and -15

Explanation:

The two numbers are **12 and 15**. Write two equations for the word problem, then solve them algebraically and check your answers with the conditions of the question.

7) Jerry is traveling 475 miles to his mother's house. If his average speed is 62 miles per hour, which is a reasonable estimate of the amount of time the trip will take?

- A) between 5 and 6 hours
- B) between 6 and 7 hours
- C) between 7 and 8 hours**
- D) between 8 and 9 hours

Explanation:

The solution is **between 7 and 8 hours**. Using the formula $D=rt$ gives us a result of 7.66 hours. Therefore, the reasonable estimate is between 7 and 8 hours.

8) Ragan is writing an 8-page essay. If she averages 1 page in 40 minutes, which is a reasonable estimate of the amount of time it will take her to write the paper?

- A) **between 5 and 6 hours**
- B) between 6 and 7 hours
- C) between 7 and 8 hours
- D) between 8 and 9 hours

Explanation:

The solution is **between 5 and 6 hours**. If Ragan continues to write at the same rate, she will finish her paper in 320 minutes which is approximately 5.33 hours.

9)

Cupcake Pricing

Count	Price
12	\$6
24	\$12
36	\$18
48	\$24
60	\$30

Mrs. Miller is buying cupcakes for all of the honor students at Clarke High School. The prices for cupcakes are shown in the chart. Cupcakes are sold by the dozen and Mrs. Miller needs to buy 105 cupcakes. What will be the cost of the cupcakes before tax?

- A) \$66
- B) \$60
- C) **\$54**
- D) \$48

Explanation:

The solution is **\$54**. Since the cupcakes are sold by the dozen, Mrs. Miller will have to buy 108 (9 dozen) cupcakes for a total cost of \$54.

10) Mindy used the equation $3m^2 + 2 = 50$ to determine how many months (m) it would take her to finish a project. According to Mindy's equation, how long will it take her to finish the project?

- A) 3 months
- B) **4 months**
- C) 5 months
- D) 6 months

Explanation:

4 months

Subtract 2 from both sides of the equation.

$$3m^2 = 48$$

Divided both sides by 3.

$$m^2 = 16$$

Then find the square root of 16.

$$m = 4$$

11) Cindy deposited \$350 into a savings account. As long as the account balance remains at or above \$200, she does not have to pay a service fee for the account. For how long can she withdraw \$30 a month without having to pay service fees?

- A) **5 months**
- B) 6 months
- C) 7 months
- D) 8 months

Explanation:

Cindy can withdraw \$30 a month for **5 months** without paying a service fee. At that point, she will have withdrawn \$150, from the original \$350 leaving \$200.

12) Jenny wants a total of 12 barbie dolls by the time she is 9 years old. Right now she has 4 barbie dolls. How many more does she need?

Write an equation and solve.

- A) **$x + 4 = 12$; Jenny needs 8 more barbie dolls.**
- B) $4x = 12$; Jenny needs 3 more barbie dolls.
- C) $x - 4 = 12$; Jenny needs 16 more barbie dolls.
- D) $x + 12 = 4$; Jenny needs 8 more barbie dolls.

Explanation:

Let x represent the number of barbie dolls Jenny still needs. Then since she already has 4 and she wants a total of 12 your equation should be $x + 4 = 12$. Solving for x , you get 8. So the correct answer is **$x + 4 = 12$; Jenny needs 8 more barbie dolls.**

13) Raul bought a soft drink and a sandwich for \$9.90. What is the price of each if the sandwich cost 3.5 times as much as the soft drink?

- A) Sandwich costs \$5.94 and the soda costs \$3.96
- B) **Sandwich costs \$7.70 and the soda costs \$2.20**
- C) Sandwich costs \$5.40 and the soda costs \$4.50
- D) Sandwich costs \$2.83 and the soda costs \$9.90

Explanation:

Let x represent the cost of the soda, thus the sandwich would cost $3.5x$. The sum of those two quantities results in \$9.90, so $x + 3.5x = 9.90$. Solve.

14)

Month	Amount
April	\$500
May	\$1000
June	\$1500
July	\$2000
August	\$2500

Brody is paying back his father for an interest-free car loan. Brody owes his father \$6000 dollars. The chart shows the cumulative total he has paid his father at the end of each month. After what month will his loan be paid in full?

- A) December
- B) February
- C) January
- D) **March**

Explanation:

The solution is **March**. Since Brody is paying his father \$500 each month, it will take him 12 months to pay the loan in full.

15) What is the best estimate of a 20% tip on a \$48 haircut?

- A) \$10
- B) \$15
- C) \$20
- D) \$3

Explanation:

The solution is **\$10**. 20% of 48 is \$9.60. The best estimate for this amount is \$10.

16) When Stephanie was 13 years old she had 137 baseball cards. Each year for her birthday she got 25 more. Stephanie is now 28 years old. Assuming Stephanie has not lost or destroyed any cards, how many baseball cards does she have now?

- A) 300
- B) 473
- C) 512
- D) 623

Explanation:

512

15 years have passed since Stephanie had 137 cards. Each year she gets 25 more.

$$15 * 25 = 375$$

$$375 + 137 = 512$$

The situation can also be modeled with an equation: total number of cards = $25(x - 13) + 137$

17) A software company sells an education version (e) and a commercial version (c) of its popular image editing software. During the month of January 500 copies of the software are sold with sales totaling \$180,000. If the price of the education version is \$150 and the price of the commercial version is \$600 how many of each version were sold?

Which system of equations matches the situation?

- A)
$$\begin{cases} e + c = 500 \\ 150e + 600c = 1,800 \end{cases}$$
- B)
$$\begin{cases} e + c = 500 \\ 150e + 600c = 180,000 \end{cases}$$
- C)
$$\begin{cases} e + c = 180,000 \\ 15e + 60c = 5,000 \end{cases}$$
- D)
$$\begin{cases} e + c = 500 \\ 600e + 150c = 180,000 \end{cases}$$

Explanation:

The solution is **B**. Since 500 copies of the software were sold, we can set up one equation $e + c = 500$. The other equation reflects the cost: $150e + 600c = 180,000$.

18) Carlos wants to mix granola and cranberries together to make trail mix. Granola costs \$3 per pound and cranberries cost \$5.50 per pound. Carlos is willing to spend \$29 and wants to make 8 pounds of trail mix. Which system of equations could Carlos use to figure out how many pounds of granola (g) and cranberries (c) she should buy?

- A)
$$\begin{cases} g + c = 29 \\ 2g + 4.5c = 8 \end{cases}$$
- B)
$$\begin{cases} g + c = 8 \\ 5.5g + 3c = 29 \end{cases}$$

$$\text{C) } \begin{cases} g + c = 8 \\ 3g + 5.5c = 29 \end{cases}$$

$$\text{D) } \begin{cases} 8(g + c) = 8.5 \\ 2g + 4.5c = 37 \end{cases}$$

Explanation:

The solution is C. The total pounds of granola and cranberries is 8. The total cost of granola (\$3) and cranberries (\$5.50) is 29.

19) Casey is making a flower arrangement with roses(r) and carnations(c). The cost of each rose is \$0.50 and the cost of each carnation is \$0.10. The arrangement has a total of 80 flowers and the flower cost was \$20. How many of each flower did Casey put in her arrangement?

Which system of equations matches the situation?

A)
$$\begin{cases} r + c = 20 \\ .50r + .10c = 80 \end{cases}$$

B)
$$\begin{cases} r + c = 80 \\ .50r + .10c = 20 \end{cases}$$

C)
$$\begin{cases} r + c = .60 \\ .10r + .50c = 80 \end{cases}$$

D)
$$\begin{cases} r + c = 80 \\ 10r + 50c = 20 \end{cases}$$

Explanation:

The solution is **B**. Since there are a total of 80 flowers, we can set up one equation as $r + c = 80$. The other equation reflects the cost: $.50r + .10c = 20$.

20) Jeremy wants to save \$130 to buy a bird bath. He has already saved \$89, how much more does he need to save?

Write an equation and solve.

A) $x + 130 = 89$; Jeremy needs to save an additional -\$41.

B) $130x = 89$; Jeremy needs to save an additional \$0.68.

C) $89x = 130$; Jeremy needs to save an additional \$1.46

D) $x + 89 = 130$; **Jeremy needs to save an additional \$41.**

Explanation:

Let x represent how much he still needs to save. Then since he already has \$81 and he needs a total of \$130 your equation should be $x + 89 = 130$. Solving for x , you get \$41. So the correct answer is **$x + 89 = 130$; Jeremy needs to save an additional \$41.**

21) Solve.

$$\frac{x}{4} = 7$$

A) 11

B) 24

C) **28**

D) $\frac{4}{7}$

Explanation:

Multiply both sides by 4 and you get the correct answer of **28**.

22) When solving an inequality, when do you reverse the inequality sign?

A) never

B) always

C) when there is a negative in the answer

D) **when you multiply or divide both sides by a negative**

Explanation:

When you multiply or divide both sides by a negative. This is because if the coefficient of x is negative, you could add it to the other side of the inequality and move the constant to the other side, which would change both of the signs.

23) Kasi is making a scrapbook of her trip to Europe. If she creates 7 pages in 2 hours, which is a reasonable estimate of the amount of time it will take her to create a 50-page scrapbook?

- A) **between 14 and 15 hours**
- B) between 15 and 16 hours
- C) between 16 and 17 hours
- D) between 17 and 18 hours

Explanation:

The solution is **between 14 and 15 hours**. This problem can be solved by dividing 50 by 7 and then multiplying the result by 2.

24) Randy is on a diet. If Randy loses approximately 3 pounds a week, which of the choices is a reasonable estimate of the amount of time it will take her to lose 17 pounds?

- A) between 2 and 3 weeks
- B) between 3 and 4 weeks
- C) between 4 and 5 weeks
- D) **between 5 and 6 weeks**

Explanation:

The solution is **between 5 and 6 weeks**. At 5 weeks Randy will have lost 15 pounds, and at 6 weeks she will have lost 18 pounds. Therefore the timeframe for her to lose 17 pounds is between 5 and 6 weeks.

25) What is the best approximation of a 15% tip on a \$38 car wash?

- A) \$10
- B) **\$6**
- C) \$7
- D) \$8

Explanation:

The solution is **\$6**. 15% of \$38 is \$5.70 which is best approximated by \$6.

26) A store is having a sale on 200 DVD movies. Some of the movies are being sold for \$10 and some of them are being sold for \$12. If the store made \$2200 after selling all 200 DVDs, how many \$12 DVDs were sold?

- A) 50
- B) 75
- C) **100**
- D) 150

Explanation:

The correct answer is **100**. You can use the following equations:

$$x + y = 200 \text{ and } 12x + 10y = 2200.$$

$$y = 200 - x. \text{ Now, substitute: } 12x + 10(200 - x) = 2200.$$

$$\text{Simplify, } 12x + 2000 - 10x = 2200. \text{ } 2x + 2000 = 2200.$$

$$2x = 200, \text{ so } x = 100.$$

27) At a high school football game Jamie buys 6 hot dogs and 4 soft drinks for \$13. Amy buys 3 hot dogs and 4 soft drinks for \$8.50. What is the price of a hot dog?

- A) \$0.75
- B) \$1.00
- C) \$1.25
- D) **\$1.50**

Explanation:

The correct answer is **\$1.50**. The following equations can be used to solve this problem:

$$6h + 4s = 13 \text{ and } 3h + 4s = 8.50. \text{ The elimination method can then be used to solve for } h.$$

28) Brandon is baking cookies for a school bake sale. If he can make 2 dozen cookies in 23 minutes which is a reasonable estimate of the amount of time it will take him to make 12 dozen cookies?

- A) between 4 and 5 hours
- B) between 3 and 4 hours
- C) **between 2 and 3 hours**
- D) between 1 and 2 hours

Explanation:

The solution is **between 2 and 3 hours**. Since Brandon makes 2 dozen in 23 minutes we can multiply 6 and 23 to get the total time for 12 dozen. This results in 138 minutes which is 2.3 hours.

29) Not including tax, 14 pieces of clothing cost \$107. Pants cost \$12.50 and shirts cost \$4.00. No other types of clothes were purchased. Which system of equations could be used to solve for the number of pants (p) and the number of shirts (s) bought?

- A)
$$\begin{cases} p + s = 107 \\ 12.5p + 4s = 14 \end{cases}$$
- B)
$$\begin{cases} p + s = 14 \\ 12.5p + 4s = 107 \end{cases}$$
- C)
$$\begin{cases} p + s = 16.5 \\ 12.5p + 4s = 14 \end{cases}$$
- D)
$$\begin{cases} 16.5(p + s) = 14 \\ 12.5p + 4s = 107 \end{cases}$$

Explanation:

The solution is **B**. The total number of pants and shirts equals 14. The cost of all the pants and shirts equals 107.

30) A high school basketball team scores 85 points in a playoff game. The team leaders are Greg and Tremaine who scored a total of 38 points. If Tremaine scored 8 more points than Greg, how many points did Greg and Tremaine score individually?

- A) Greg: 23 points, Tremaine: 15 points
- B) Greg: 30 points, Tremaine: 38 points
- C) Greg: 20 points, Tremaine: 28 points
- D) **Greg: 15 points, Tremaine: 23 points**

Explanation:

The correct answer is **Greg: 15 points, Tremaine: 23 points**. You can use the following equations:

$g + t = 38$, and $t = g + 8$. So substituting, $g + (g + 8) = 38$; this means $2g + 8 = 38$, $2g = 30$ and $g = 15$. This means $t = 23$.