

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Section 1** ( 30 Minutes)

**DIRECTIONS:** Read each question and determine the best answer. Fill in the bubble or write the answer in the correct place on your answer sheet.

N 1. Which best describes  $\begin{cases} y = 2x - 5 \\ y = 2x - 13 \end{cases}$

- No solution since the slopes are equal and the y-intercepts are unequal
- One solution because the slopes are unequal and the y-intercepts are unequal
- Two solutions since the slopes are equal and the y-intercepts are unequal
- The system cannot be solved.

2.

Set Q: {10, 2, 3, 5, 1, 7, 5, 2}

If the smallest and largest numbers in Set Q are removed, what is the median of Set Q?

- 3.5
- 4
- 5
- 6

3. Which equation could NOT represent a line perpendicular to the graph of

$$2x + y = 8?$$

- $y = \frac{1}{2}x + 6$
- $-\frac{1}{2}x + y = 8$
- $-2x + 4y = 32$
- $2x + y = -8$

4. Which equation represents this situation?

A collection of dimes and quarters has a value of \$4.60. The number of dimes is  $d$  and the number of quarters is  $q$ .

- $10d + 25q = 460$
- $25d + 10q = 460$
- $1.0d + 2.5q = 46$
- $0.1d + 0.25q = 460$

5. If  $\frac{3x}{5} = \frac{x+2}{3}$ , what is the value of  $x$ ?

- $\frac{1}{2}$
- 1
- 2
- $2\frac{1}{2}$

6. Which property is illustrated below:

$$6(x + 3) = 6(x) + 6(3)$$

- Associative Property
- Identity Property
- Commutative Property
- Distributive Property

7. Which set of data represents a function?

- $\{(1,-2), (2,-4), (3,-6), (4,-8)\}$
- $\{(2,7), (2,8), (3,8), (4,10)\}$
- $\{(3,-7), (4,-7), (5,6), (5,2)\}$
- $\{(8,0), (10,-8), (12,-12), (12,-20)\}$

8. Find the ordered pair that is the solution to the following system:

$$\begin{cases} x + 3y = -2 \\ 2x + y = 6 \end{cases}$$

9. Solve graphically:

$$\begin{cases} 3x - y = 9 \\ y = x + 1 \end{cases}$$

10. Write an equation in slope-intercept form for the line that passes through the point  $(0, 4)$  that is perpendicular to the graph of  $2y = x - 3$ .

11. Solve  $P = 2l + 2w$  for  $l$ .

12. Put the following in order from least to greatest:  $\sqrt{64}, -1.5, |-9|, \frac{17}{4}, 3.5\%$

Open Ended

13. Bank X charges 2% interest on the first \$2,000 that a person borrows, 4% on the next \$2,000, and 6% on any loan amount borrowed beyond the first \$4,000.

Bank Y simply charges 5% interest on all loans.

A) If a person with a loan from Bank Y paid \$126 in interest, how much did that person borrow? Show your work.

B) If a person with a loan from Bank X borrowed \$6,000 how much interest must be paid?

C) If a person with a loan from Bank X paid \$126 in interest, how much money did that person borrow? Show your work.

14. A movie theatre recently opened. Let  $x$  represent the number of children who attended the theatre on opening day and let  $y$

represent the number of adults attending the theatre on opening day.

- A) While checking the opening day attendance, theatre ushers noted the number of adults plus three equaled one-fourth the number of children. Write an algebraic equation to represent this statement.
- B) Using the equation in part A), if 56 adults attended opening day, how many children also attended that day? Show your work.
- C) The admission price per child is one-half the admission price per adult. The total ticket sales at the end of opening day totaled \$1,740.00. Using your answer from part B), calculate the ticket price for both children and adults.
- D) Suppose that on day 2, the total receipts doubled from day 1. Does this necessarily mean that that number of children and adults attending the theatre also doubled? Justify your answer by explaining in detail or showing an example.

STOP! End of Section 1.  
Do not go on to Section 2.

Section 2 (30 min)

DIRECTIONS: Read each question and determine the best answer. Fill in the bubble or write the answer in the correct place on your answer sheet.

15. At a restaurant, two orders of pancakes and one order of bacon costs \$4.92. If two orders of bacon cost \$3.96, what does one order of pancakes cost?

- a. \$.96  
b. \$1.47  
c. \$1.98  
d. \$2.94

16. What is the y-intercept of the line  $5x - 8y = 15$ ?

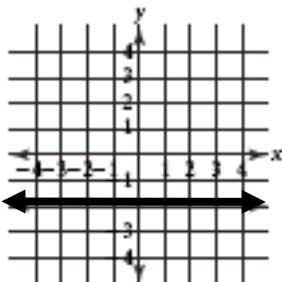
- a.  $(0, -\frac{15}{8})$
- b.  $(0, \frac{8}{15})$
- c.  $(0, -15)$
- d.  $(-8, 0)$

17. On the first test of the semester, Barbara scored a 60. On the last test of the semester, Barbara scored a 75. By what percent did Barbara's score improve?

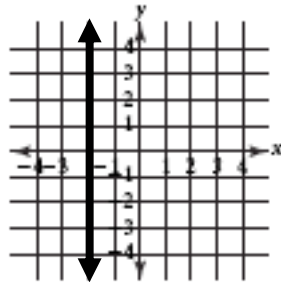
- a. 12%
- b. 15%
- c. 18%
- d. 25%

18. Identify the graph of the equation  $x = -2$

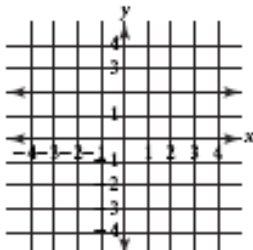
a.



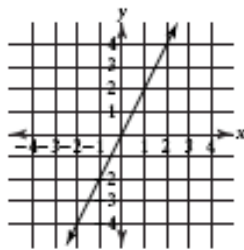
b.



c.



d.



19. The expression  $\frac{8}{x-2} - 4$  will equal 0 when x equals which of the following?

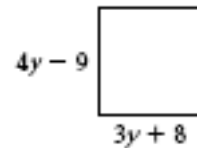
- a.  $\frac{5}{2}$

- b.  $\frac{2}{5}$
- c. 4
- d. 10

20. Caroline scored 85, 88, and 89 on three of her four history tests. If her average score for all four tests was 90, what did she score on the fourth test?

- a. 89
- b. 98
- c. 93
- d. 96

21. If the figure below is a square, what is the value of y?



- a. 1
- b. 5
- c. 11
- d. 17

Short answer

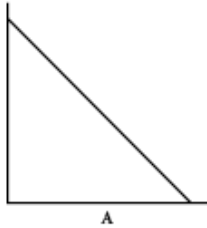
22. Write an equation in slope-intercept form that contains points  $(0, 4)$  and  $(5, 19)$ .

23. Use a graph to explain the relationship between the lines  $3y = x - 3$  and

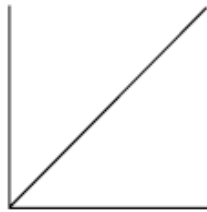
$$2y = -6x - 2.$$

24. Given the scatter plot shown at the left below, which line better fits the data?

Explain the reason for your choice.



A



B

25. In a coin bank there are 35 quarters and dimes all together. The coins are worth a total of \$6.50. How many quarters are in the bank?

26. What is the value of  $x$  when  $\begin{cases} 2x + y = 1 \\ x - y = 7 \end{cases}$  ?

Open Ended

27. Michael is investigating the benefits of becoming a member of a discount book club. Libro’s Discount Books offers two types of membership plans. In Plan A, the member pays an annual membership fee of \$25 and gets a 5% discount on purchases. In Plan B, the member pays an annual membership fee of \$100 and gets a 10% discount on purchases.

A) Set up an equation for Plan A showing the yearly cost of the plan.

- Let  $x$  equal the amount of the yearly purchases before the discount.
- B) Set up an equation for Plan B showing the yearly cost of the plan. Let  $x$  equal the amount of the yearly purchases before the discount.
- C) For what dollar amount of purchases would Plan A and Plan B cost the same? Show your work.

28. The table below lists the ages (in years) of collectable dolls that Christina most recently purchased to start her collection.

Name	Age
Scuba Sue	1
Career Kelly	1
Evening Elegance	40
Traveling Tanya	1
Motorcycle Marie	1
Frannie Fitness	7

- A) What is the mean and median age of the collectable dolls she purchased? Show your work.
- B) Which of the two measures from part A is more appropriate for her to use in describing the age of the dolls she purchased? Explain your answer.
- C) If she trades her Frannie Fitness doll for one that is 22 years old, how would the trade affect the mean and median of her new collection? Show your work to justify your answer.