



My child has completed this entire assignment by Sunday night.

Guardian Signature _____

25

Part I. Answer 11 questions in this part. Each correct answer will receive 1 credit. For each question, all necessary work should be shown to the right side of the problem. All questions marked *W* require appropriate work to be shown or no credit will be given- even if a correct answer is provided. [11]

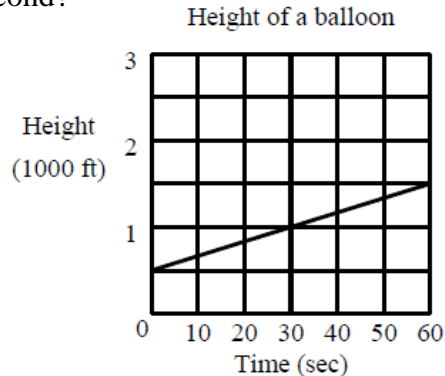
| | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|-----|
| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|----|----|----|----|----|----|----|----|----|-----|-----|

1. Given $c(1 + b) = m - r$, which expression represents b in terms of r , c and m ?

(1) $m - r - c - 1$ (2) $\frac{m-r}{c} - 1$

(3) $m - r - b$ (4) $\frac{m-r}{c}$

W2. The graph below shows the height of a balloon over a period of time. What is the balloon's approximate rate of speed in feet per second?



(1) 33 ft/sec (2) 17 ft/sec

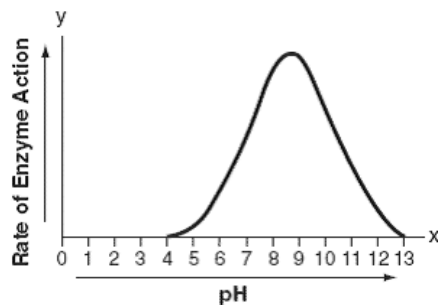
(3) 8 ft/sec (4) 0.3 ft/sec

3. The effect of pH on the action of a certain enzyme is shown on the accompanying graph.

What is the domain of the function?

(1) $4 \leq x \leq 13$ (2) $y \geq 0$

(3) $4 \leq y \leq 13$ (4) $x \geq 0$



W4. Ernie and his family are on vacation at Topsail Island. He has \$80 to purchase shrimp and grouper for dinner. If Ernie buys x pounds of shrimp at \$10 per pound, which inequality represents how many pounds of grouper, y , he can buy at \$16 per pound without spending more than his budget?

- (1) $10x + 16y \geq 80$ (2) $y \geq 1.6x - 8$
(3) $16y \leq 80 - 10x$ (4) $y \leq -1.6x + 8$

W5. Consider the functions $f(x) = 3x - 3$ and $h(x) = x^3$. Which of the following statements is **true**?

- (1) $h(-1) + f(2) = 4$ (2) $f(-2) < h(-2)$
(3) $f(5) - f(3) = f(2)$ (4) $h(2) < f(2)$

W6. Which ordered pair is **not** in the solution set of $y \leq 2x + 4$ and $y < -\frac{1}{2}x - 1$?

- (1) (0, -2) (2) (-3, -2)
(3) (-2, 0) (4) (-2, -2)

W7. When $3a^2 - 5$ is subtracted from $a^2 + a - 3$ the difference is:

- (1) $2a^2 - a - 2$ (2) $-2a^2 + a + 2$
(3) $2a^2 - a + 2$ (4) $4a^2 + a - 8$

8. In a linear function, the independent variable increases at a constant rate while the dependent variable decreases at a constant rate. The slope of the corresponding line is:

- (1) zero (2) positive
(3) negative (4) undefined

9. Between what lines was an error made?

- (1) Line 1 and Line 2 Line 1 $2x - 3y \leq 12$
(2) Line 2 and Line 3 Line 2 $-3y \leq 12 - 2x$
(3) Line 3 and Line 4 Line 3 $y \leq -4 + \frac{2}{3}x$
(4) No error was made Line 4 $y \leq \frac{2}{3}x - 4$

10. Which system of equations has *infinitely* many solutions?

(1) $y = -x$
 $8y = -8x$

(2) $y = 3x + 1$
 $y = -4$

(3) $x + y = 4$
 $3x + 3y = 1$

(4) $y = 5 - x$
 $x = 5$

11. Let a represent a non-zero rational number and let b represent an irrational number. Which expression could represent a rational number?

(1) $-b$

(2) $a + b$

(3) ab

(4) b^2

Part II. Answer all questions in this part. Each correct answer will receive 2 credits. Clearly indicate all necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [6]

12. The table below shows the attendance at a museum in select years from 2005 to 2013.

| Year | 2005 | 2007 | 2008 | 2011 | 2013 |
|--------------------------|------|------|------|------|------|
| Attendance (in millions) | 8.1 | 8.4 | 8.7 | 8.9 | 9.3 |

State the linear regression equation represented by the data table when $x = 0$ is used to represent the year 2005 and y is used to represent the attendance. Round all values to the *nearest thousandth*.

13. Joan is given a rectangular piece of paper. The length of the paper is represented by $5x - 4$. The width of the paper is half the length. Represent the area of the rectangle as a simplified polynomial expression written in standard form.

14. One mile running times (*in minutes*) were recorded for a sample of 100 runners, ages 16 – 66 years. The least squares regression line calculated from the data was $y = 0.25x + 5.35$ where y represents the running time (*in minutes*) and x represents the runner's age (*in years*).

Identify the **y-intercept** in the equation. Explain its meaning in the context of the situation.

Part III. Answer both questions in this part. Each correct answer will receive 4 credits. Clearly indicate all necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [8]

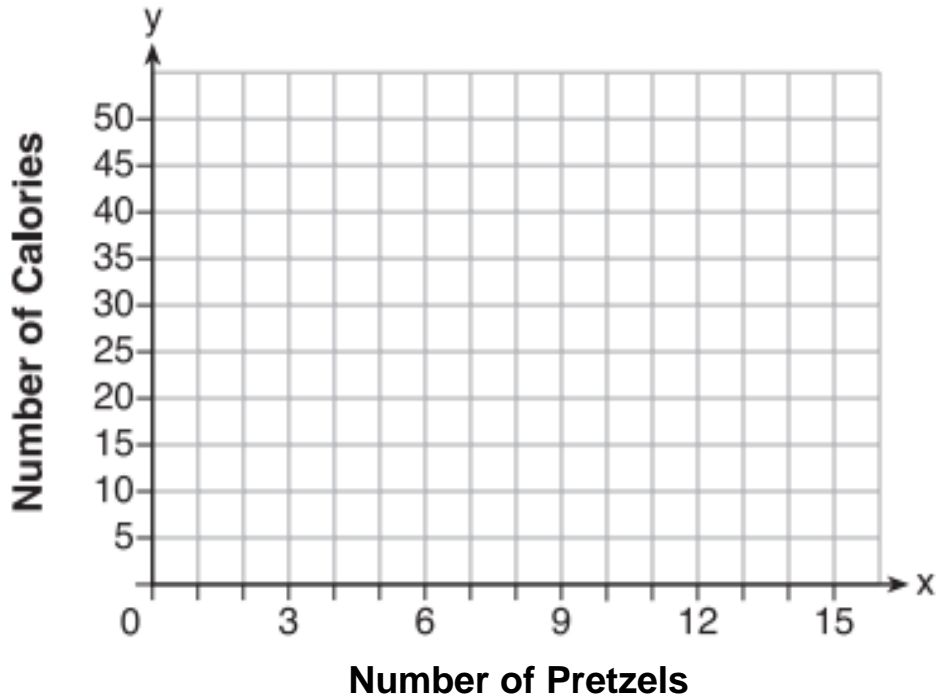
15. Spotlight is selling tickets to the Friday performance of Cinderella. Due to fire regulations, at most 420 tickets can be sold. It is decided to sell adult tickets for \$12 and children tickets for \$9. The cast would like to raise at least \$4000. If “a” represents the number of adult tickets and “c” represents the number of children tickets:

a) Write a system of inequalities that represents the scenario described above.

b) If half the number of tickets are sold to children, could this solve the system you created? Justify your response.

16. Gary purchased a bag of pretzels. The nutrition label on the bag stated that a serving of 6 pretzels contained a total of 15 calories.

- a) On the axes below, graph the function C , where $C(p)$ represents the number of calories in p pretzels.



- b) Write an equation that represents $C(p)$.

- c) A full bag of pretzels contains 190 calories. Using your equation, determine the number of pretzels in the bag.