



My child has completed this entire assignment by Sunday night.

Guardian Signature _____

25

Part I. Answer 10 questions in this part. Each correct answer will receive 1 credit. No partial credit will be allowed. For each question, any work should be shown to the right side of the problem, when possible. All questions marked **W require appropriate work to be shown or no credit will be given - even if a correct answer is provided. [10]**

1. 3	2. 4	3. 2	4. 3	5. 3
6. 4	7. 1	8. 3	9. 2	10. 3

1. The value of the expression $-|x - y^2|$ when $y = -2$ and $x = -11$ is

(1) -7 (2) 7 (3) -15 (4) 15

$$-|-11 - (-2)^2|$$

$$-|-11 - 4|$$

$$-|-15|$$

$$-(15)$$

$$-15$$

W 2. Which equation represents a line parallel to the graph of $4y - 12x = 8$?

(1) $y = 3x + 2$ (2) $y = \frac{1}{3}x + \frac{2}{3}$ (3) $y = \frac{1}{3}x + 2$ (4) $y = 3x + \frac{1}{2}$

$$4y = 12x + 8$$

$$y = 3x + 2$$

← coinciding line ↗ parallel

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

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

F (3) $f(5) - f(3) = f(2)$ $12 - 6 = 3$

T (2) $f(-2) < h(-2)$ $-9 < -8$

F (4) $h(2) < f(2)$ $8 < 3$

(4) $h(2) = (2)^3 = 8$ $f(2) = 3(2) - 3 = 3$

(1) $h(-1) = (-1)^3 = -1$ $f(2) = 3(2) - 3 = 3$

(2) $f(-2) = 3(-2) - 3 = -9$ $h(-2) = (-2)^3 = -8$

(3) $f(5) = 3(5) - 3 = 12$ $f(3) = 3(3) - 3 = 6$ $f(2) = 3(2) - 3 = 3$

4. What is $\frac{1}{3}$ of 3^8 ?

(1) 3^8 (2) 3^6 (3) 3^7 (4) 3^9

$$(3^{-1})(3^8) = 3^7$$

W 5. 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) $y \leq -1.6x + 8$

W 6. If the domain of $f(x) = 2x + 1$ is $\{-3 \leq x \leq 2\}$, which integer is not in the range?

(1) -4

(2) -2

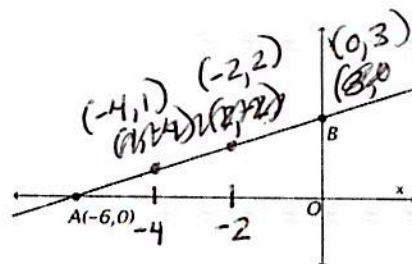
(3) 0

(4) 7

$$\begin{array}{c|c} x & y \\ \hline -3 & -5 \\ 2 & 5 \end{array}$$

W 7. The figure shows the graph of $f(x) = \frac{1}{2}x + c$.

Find the value of c .



(1) 3

(2) 1

~~(3) 0~~

~~(4) -4~~

8. Consider the graph of the equation $y = mx + b$ when $m \neq 0$. If m is multiplied by a **negative number**, what is true of the graph of the resulting line?

(1) The resulting graph will have a negative slope.

(2) The new line will cross the y-axis at a lower level.

(3) The resulting graph will go in the opposite direction compared to the original graph..

(4) There is no change.

9. The table below shows the number of grams of carbohydrates, x , and the number of calories, y , of six different foods.

Carbohydrates (x)	Calories (y)
8	120
9.5	138
10	147
6	88
7	108
4	62

Which equation **best** represents the line of best fit for this set of data?

(1) $y = 15x$

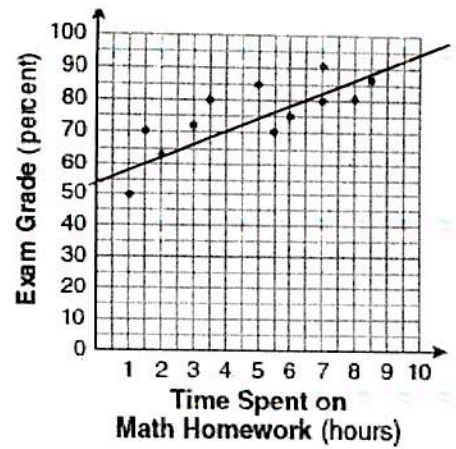
(2) $y = 14.1x + 5.8$

(3) $y = 0.1x - 0.4$

(4) $y = 14.2x + 5.6$

USE STAT EDIT

10. The number of hours spent on math homework each week and the final exam grades for twelve students in Ms. Fonseca's algebra class are plotted below.



Based on a line of best fit, which exam grade is the best prediction for a student who spends about 6.5 hours on math homework each week?

- (1) 62 (2) 72
 (3) 82 (4) 92

Part II. Answer both questions in this part. Each correct answer will receive the credits shown. 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.

11. Write the equation of a line that passes through the point $(-4, 9)$ and is *perpendicular* to a line with the equation $3y = x + 6$ [2]

$$y = \frac{1}{3}x + 2$$

slope = $\frac{1}{3}$
 \perp slope = -3

$$y = mx + b$$

$$9 = -3(-4) + b$$

$$9 = 12 + b \quad b = -3$$

$$y - 9 = -3(x + 4) \quad \text{point slope form}$$

$$y - 9 = -3x - 12$$

$$y = -3x - 3 \quad \text{slope intercept form}$$

12. 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: [3] ≥ 4000

$a = \#$ of adult tickets
 $c = \#$ of children tickets

- (a) Write a system of inequalities that models this situation.

$$a + c \leq 420$$

$$12a + 9c \geq 4000$$

- (b) If half the tickets are sold to students, could this solve the system that you created? Justify your answer.

$$a + c = 420$$

$$c = 210$$

$$a = 210$$

$$12(210) + 9(210) \geq 4000$$

?

Part III. Answer both questions in this part. Each correct answer will receive 5 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. [10]

13. Solve the following system of inequalities graphically.

$$3y + 2x < 12 \rightarrow 3y < -2x + 12$$

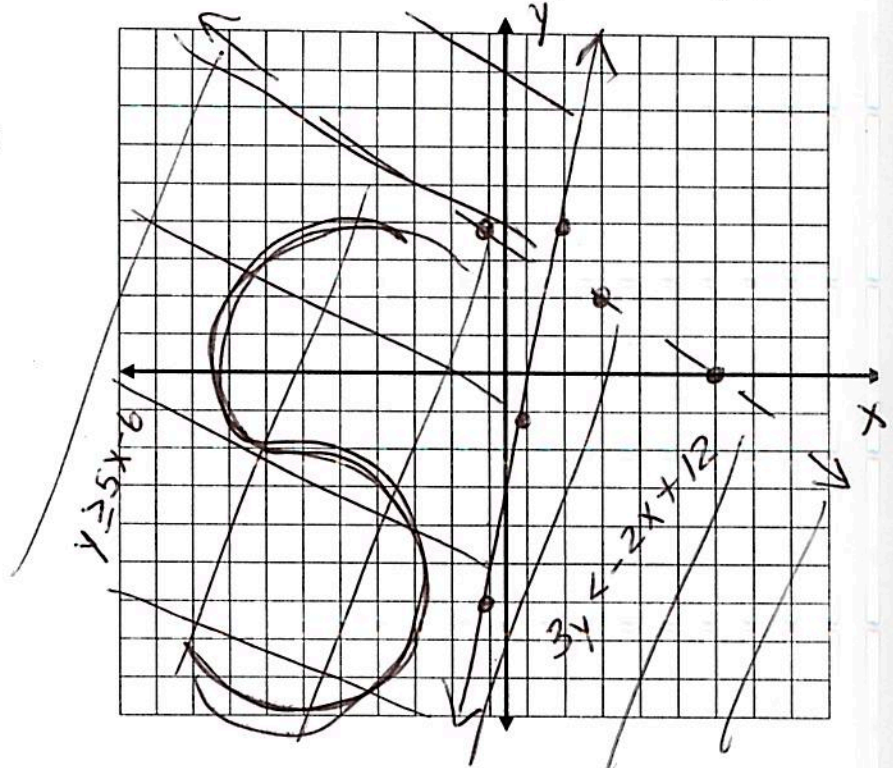
$$y \geq 5x - 6 \quad y < -\frac{2}{3}x + 4$$

$$m = 5$$

$$m = -\frac{2}{3}$$

$$b = -6$$

$$b = 4$$



14. Hannah took a trip to visit her cousin. She drove 160 miles to reach her cousin's house and the same distance back home.

- a. It took her 1.6 hours to get halfway to her cousin's house. What was her average speed, in miles per hour, for the first 1.6 hours of the trip?

$$\frac{\Delta y}{\Delta x} = \frac{80}{1.6} = 50 \text{ mph}$$

- b. Hannah's average speed for the remainder of the trip to her cousin's house was 40 miles per hour. How long, in hours, did it take her to drive the remaining distance?

$$\frac{80}{40} = 2 \text{ hours}$$

- c. Traveling home along the same route, Hannah drove at an average rate of 53 miles per hour. After 2 hours her car broke down. How many miles was she from home?

$$2(53) = 106$$

$$160 - 106 = 54 \text{ miles}$$