| (!)	My child has completed this entire assignment by Sunday night. Guardian Signature_____	$\overline{\overline{25}}$

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 <u>no credit will be given- even if a correct answer is provided.</u>* **[11]**

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

1. Which ordered pair is in the solution set of the system of inequalities shown in the accompanying graph?

    (1) (0,0)   (2) (2,0)

    (3) (0, -1)   (4) (2, - 2)
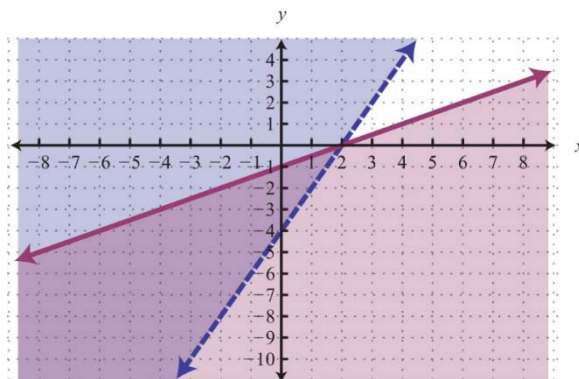
W 2. A coin appreciates in value each year by 4%. If the original value of the coin was $54, what is the closest estimate to how much the coin is worth after eight years?

    (1) $34   (2) $40

    (3) $57   (4) $74

3. Let f be a function such that $f(x) = 3x - 1$ is defined on the domain $5 \leq x \leq 8$. The range of this function is

    (1) $-\infty < y < \infty$ (2) $4 \leq y \leq 9$

    (3) $11 \leq y \leq 26$ (4) $14 \leq y \leq 23$

4. The owner of a small computer repair business has one employee who is paid an hourly rate of $25. The owner estimates his weekly profit using the function $P(x) = 6600 - 25x$. In this function, x represents the number of

    (1) computers repaired per week   (2) days worked per week

    (3) customers served per week   (4) hours worked per week

5. Which table represents a linear function?

(1) Table 1

(2) Table 2

x	0	1	2	3	4
f(x)	4	5	6	7	8

Table 1

x	0	1	2	3	4
f(x)	0	1	4	9	16

Table 2

(3) Table 3

(4) Table 4

x	0	1	2	3	4
f(x)	0	2	8	18	32

Table 3

x	0	1	2	3	4
f(x)	-1	0	3	8	15

Table 4

W 6. In a geometric sequence, $a_1 = 0.3$ and $r = 2.5$. Find a_{11}, to the *nearest integer*.

(1) 2,861   (2) 17,881

(3) 53,144   (4) 7,153

W 7. Which graph represents the solution set for $2x - 4 \geq 8 \text{ or } x + 5 \leq 7$?

(1)

(2)

(3)

(4)

W 8. The cost of a telephone call from a hotel in Wilson, NY to East Meadow, NY is $0.60 for the first three minutes plus $0.15 for each *additional* minute. What is the greatest number of whole minutes a person can talk on the phone if the charge does not exceed $3.25?

(1) 15   (2) 16

(3) 20   (4) 21

9. The formula for potential energy is $P = mgh$, where P is potential energy, m is mass, g is gravity, and h is height. Which expression can be used to represent gravity?

(1) $\dfrac{P}{mh}$ (2) $\dfrac{P}{m} - h$ (3) $P - mh$ (4) $P - m - h$

10. Jim purchased a Harley Davidson motorcycle for $17,399 in 2004. The value of the motorcycle depreciates at a rate of 13% each year. Which equation models the value of the motorcycle x years after 2004?

(1) $M(x)=17,399(13)^x$ (2) $M(x)=17,399(1.13)^x$

(3) $M(x)=17,399(0.87x)$ (4) $M(x)=17,399(0.87)^x$

11. A tree stands 5 feet tall and grows 1.5 feet per year. Which function(s) shown below can be used to determine the height, $f(n)$, of the tree in n years?

   I. $f(n) = 1.5n + 5$ **II.** $f(n) = f(n-1) + 1.5$ where $f(0) = 5$ **III.** $f(n) = 5 + 1.5(n-1)$

   (1) I, only   (2) II, only   (3) I and II   (4) II and III

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. Safe-Driving Taxi Service charges $6 per pickup and $0.65 per mile. We'll Get You There Cab charges $2 per pickup and $0.90 per mile.

A. Write an equation for each company that represents the amount of money charged, C, for driving m miles with one pickup.

   Safe-Driving Taxi _____ *We'll Get You There* _____

B. Find the number of miles a person can ride in which both companies will charge the same amount (*assume there is only one pick-up*).

13. Write an **equation** that defines $t(x)$ as a trinomial where $t(x) = (3x - 2)(3x + 2) - (5x^2 - 7x + 8)$.

14. Given the functions **f(x)** and **g(x)**. State which function has the greater *average rate of change* over the interval $1 \le x \le 3$. Justify your response.

x	f(x)
0	1
1	2
2	5
3	7

Points on graph: $g(x)$, (2, 4), (1, 2), (0, 1), (−1, 0.5), (−2, 0.25)
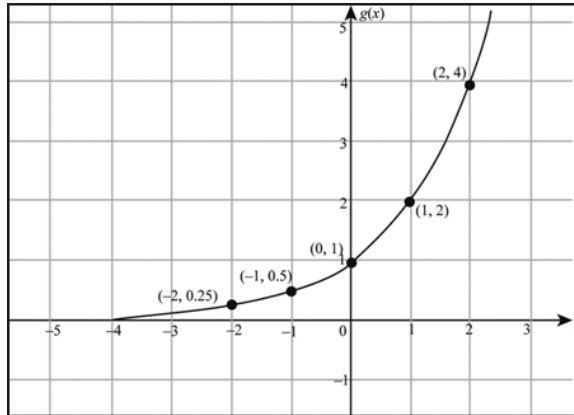
Part III. Answer both questions in this part. Each correct answer will receive 4 credits. Clearly indicate all necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [8]

15. Since 1990, fireworks usage nationwide has grown, as shown in the accompanying table, where *t* represents the number of years since 1990, and *p* represents the fireworks usage per year, in millions of pounds.

Number of Years Since 1990 (t)	0	2	4	6	7	8	9	11
Fireworks Usage per Year, in Millions of Pounds (p)	67.6	88.8	119.0	120.1	132.5	118.3	159.2	161.6

A. Find the equation of the linear regression model for this set of data, where *t* is the independent variable. Round values to *the nearest tenth*.

B. Write the correlation coefficient for the line of best fit. Round your answer to the *nearest thousandth*. Explain what the correlation coefficient suggests in the context of this problem.

C. Based on this linear model, how many millions of pounds of fireworks would be used in the year 2008? Round your answer to the *nearest hundredth*.

16. Terry tutors at a homework center for *x* hours a week after school and gets paid $5 an hour. She also works part time at a grocery store that pays $10 an hour working *y* hours per week. Terry works both jobs each week but is unable to work more than 15 hours due to school commitments. Terry's goal is to earn a minimum of $100 a week working both jobs.

    A. Write a system of inequalities that can be used to represent the situation.

    B. Graph the inequalities on the set of axes below.
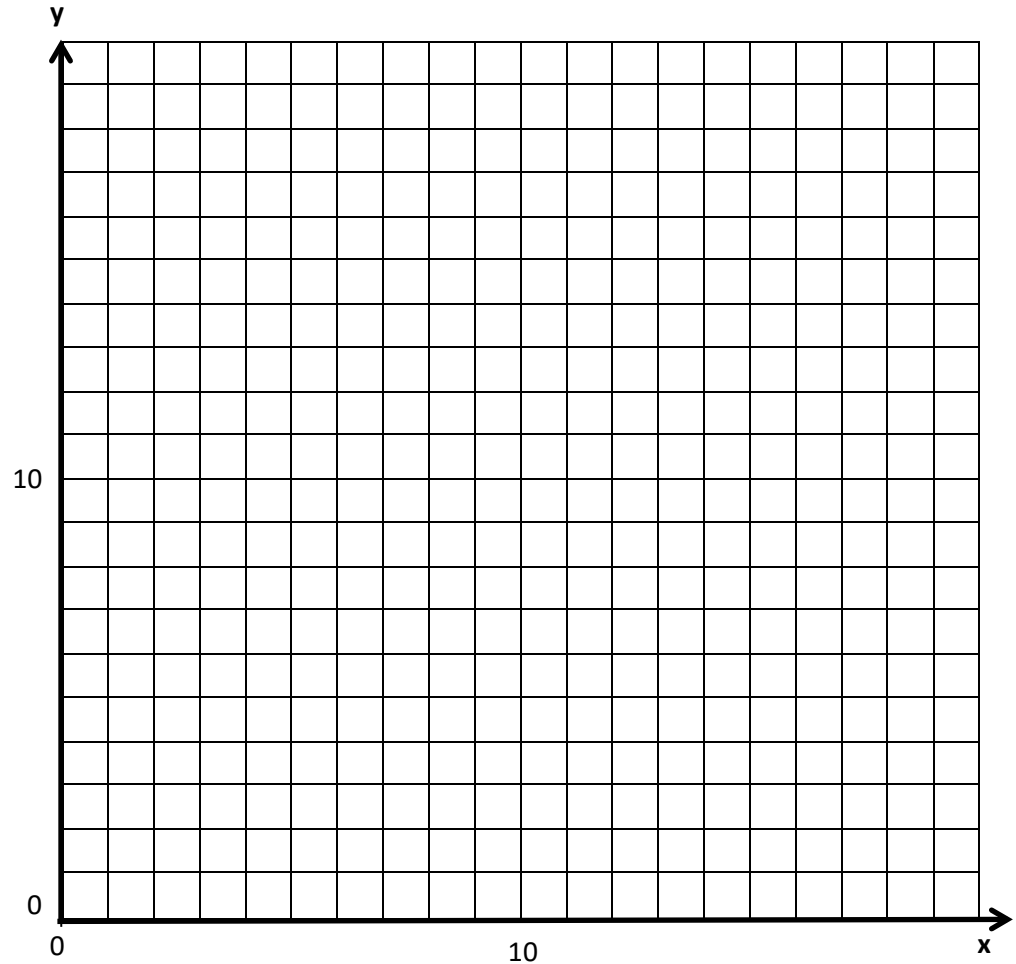
    C. State one combination of hours that will allow Terry to earn a *minimum* of $100 per week while working *no more than* 15 hours.