	My child has completed this entire assignment by Sunday night. Guardian Signature _____	$\overline{25}$
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Part I. Answer 11 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. [11]**

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

W 1. Perform the following operation: $\frac{6\sqrt{60} - 8\sqrt{18}}{4\sqrt{3}}$

- (1) $\frac{3\sqrt{20} - 2\sqrt{9}}{2}$ (2) $\frac{3\sqrt{20} - 6}{2}$ (3) $\frac{3\sqrt{5} - 6}{2}$ (4) $3\sqrt{5} - 2\sqrt{6}$

W 2. If a sequence is defined recursively as $f(0) = 3$ and $f(n + 1) = -4/(n) + 1$, then $f(2)$ is equal to

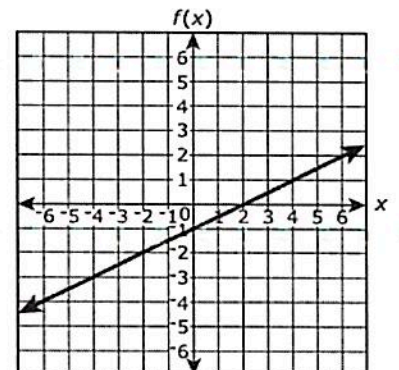
- (1) -11 (2) 45 (3) 1 (4) -7

3. A new business purchased a fax machine for \$12,000. Each year it depreciates at a rate of 4%. What will the fax machine's approximate value be at the end of three years?

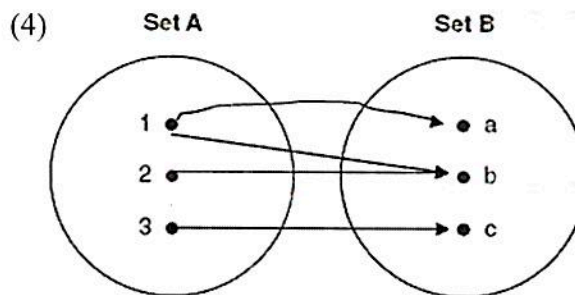
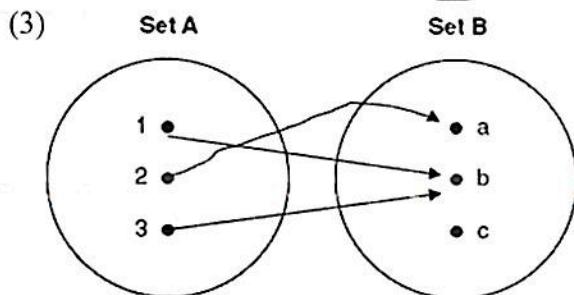
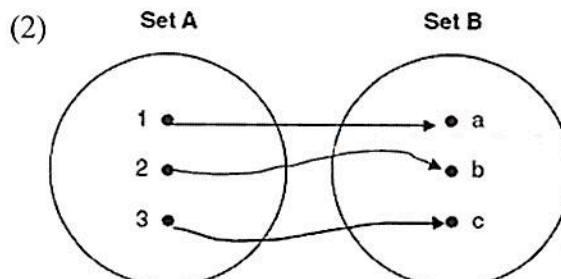
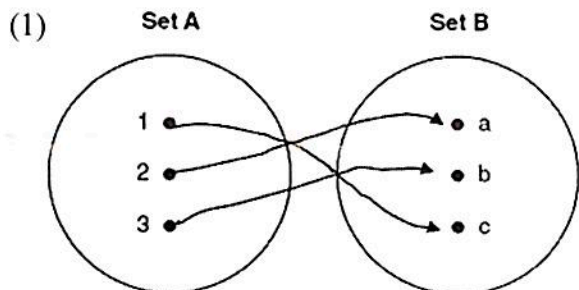
- (1) \$11,059.20 (2) \$10,616.83
 (3) \$10,560.00 (4) \$10,192.16

4. The graph of the function $f(x) = -1 + 0.5x$ is shown on the coordinate plane. For what value of x does $f(x) = 0$?

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



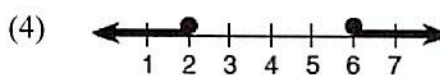
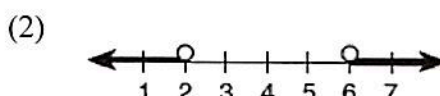
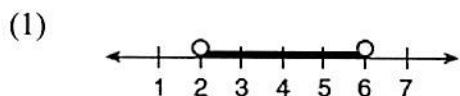
5. Which of the following diagrams shows a mapping of a relation from Set A to set B that is *not* a function?



W 6. A mouse population starts with 2,000 mice and grows at a rate of 5% each year. The number of mice after t years can be modeled by the equation $P(t) = 2000(1.05)^t$. What is the **average rate of change** in the number of mice between the second year and the fifth year, rounded to the *nearest whole number*?

- (1) 116 (2) 348 (3) 2205 (4) 2553

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



W 8. Solve for b given the formula for the area of a triangle, $A = \frac{1}{2}bh$.

- (1) $b = \frac{h}{2A}$ (2) $b = \frac{Ah}{2}$ (3) $b = \frac{2A}{h}$ (4) $b = \frac{A}{2h}$

9. Which domain would be the most appropriate set for a function that predicts the average monthly snowfall at Rochester's Airport?

- (1) whole numbers (2) integers (3) all rational numbers (4) positive rational numbers

10. The data shown in the table below represents either a linear or an exponential function. Which of the equations below best models this data set?

(1) $y = 5(2)^x$

(3) $y = 2x + 10$

x	1	2	3	4
y	10	20	40	80

(2) $y = 10(2)^x$

(4) $y = 10x + 5$

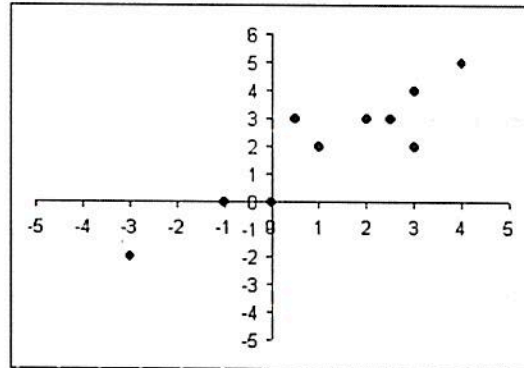
11. The graph shows a scatter plot of data in the x - y coordinate plane. Which of the following *best* represents the equation of the line of best fit for the data in the graph?

(1) $y = x + 2$

(2) $y = -x + 1$

(3) $y = 2x + 1$

(4) $y = x + 1$



Part II. Answer all questions in this part. Each correct answer will receive 3 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. Given the following pattern: $a, 2a + 1, 3a + 2, 4a + 3, \dots$,

a. Explain what type of sequence it is and justify your reasoning.

b. Write the explicit formula for this sequence.

13. Let f and g be the functions given by $f(x) = x^2$ and $g(x) = x(15 - x)$.

a. True/False: $f(-2) > g(-2)$ Justify your response.

b. Evaluate $f(5) + g(-1) - f(g(16))$

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]

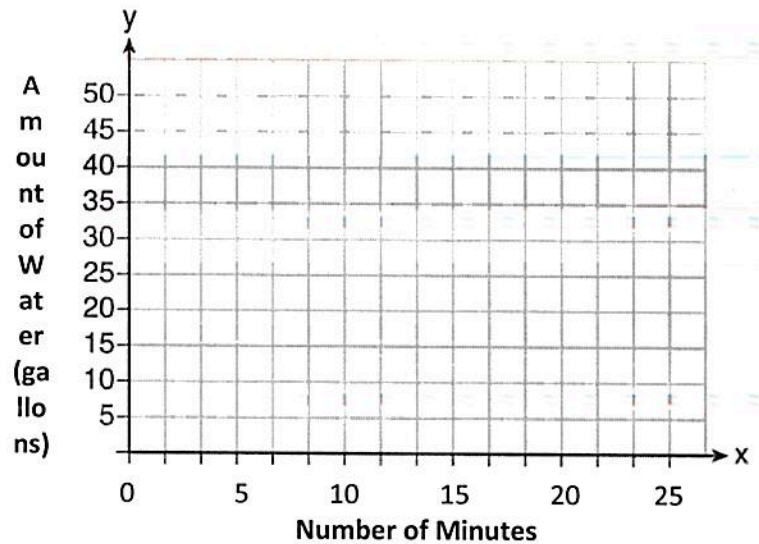
14. Write a system of equations and solve algebraically.

Spotlight sells 243 tickets to a night's performance. One adult ticket costs \$9 and a child's ticket price is \$5. If the total money collected was \$1975, find the number of tickets sold in each category.

15. An outdoor shower head connected to a mechanism that contains 45 gallons of water releases 1.8 gallons of water per minute. The function $V(x) = 45 - 1.8x$ represents the amount of water remaining after x minutes.

a. Complete the table of values below that models this situation and graph the function.

x	$V(x)$
0	
5	
10	
15	
20	
25	



b. Identify the y -intercept. Explain its meaning in the context of this situation.

c. Identify the x -intercept. Explain its meaning in the context of this situation.