

All OGT Questions (2003) from
Patterns, Functions, & Algebra

Name: _____ Date: _____ Block: _____

3. At the beginning of the summer, Katie opened a new checking account with a \$60 deposit. Each week during the summer, she earned \$95 as a part-time lifeguard. Katie deposited 10% of these earnings into her account. Which of these equations represents the amount of money, m , Katie will have deposited in her checking account after w weeks?

- A. $m = 15.5w$
- B. $m = w + 69.5$
- C. $m = 95w + 60$
- D. $m = 9.5w + 60$

11. Which pair of equations represents lines that are parallel and perpendicular, respectively, to the graph of $y = -\frac{3}{4}x + 4$?

- A. $y = \frac{3}{4}x + 3$ and $y = -\frac{3}{4}x + 5$
- B. $y = \frac{3}{4}x + 6$ and $y = -\frac{4}{3}x + 2$
- C. $y = -\frac{3}{4}x + 5$ and $y = \frac{3}{4}x + 4$
- D. $y = -\frac{3}{4}x + 8$ and $y = \frac{4}{3}x + 1$

14. To raise money, a school club is operating a dunking booth at the local fair. The club will pay \$120 to rent the booth. Each customer will pay \$1.50 to throw a ball at the dunking platform on which a person sits. Which inequality could be used to find the number of customers, c , required for the club to make a net profit of at least \$350?
- A. $1.5c - 120 \geq 350$
 - B. $1.5c + 120 \geq 350$
 - C. $1.5c - 120 \leq 350$
 - D. $1.5c + 120 \leq 350$

20. To solve a math problem, Penny is graphing the equations $y = x^2$ and $y = x^2 + 1$. To graph the equations, she created the tables shown below.

$y = x^2$		$y = x^2 + 1$	
x	y	x	y
-3		-3	
-2		-2	
-1		-1	
0		0	
1		1	
2		2	
3		3	

In your **Answer Document**, copy the tables above and find the y -values for each of the given x -values.

Use the grid provided to graph each equation using the pairs of x - and y -values.

Based on the graphs you have completed, analyze how the graphs differ and write a hypothesis to describe how adding a number to x^2 changes the graph of x^2 .

23. A telephone manufacturing company has determined that the cost of producing a certain type of telephone can be found by using the equation $y = 42x + 2,000$, where y is the production cost and x is the number of telephones produced. The company accountant calculates an average daily production cost of \$8,426. Approximately how many telephones does the company produce daily?

- A. 153
- B. 248
- C. 6,426
- D. 355,892

26. Density is a physical property of matter which measures the mass of an object per unit of volume.

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

As most stars grow older, the mass remains the same while the radius becomes smaller. What happens to the star's density as the star ages?

- A. The density increases.
- B. The density decreases.
- C. The density stays the same.
- D. The density increases and decreases periodically over time.

29. The first 5 terms of a sequence are given in the table.

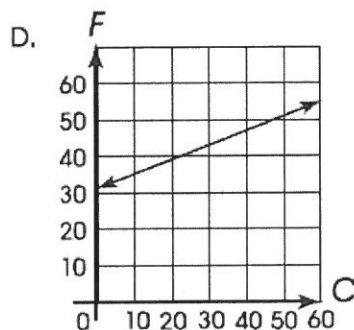
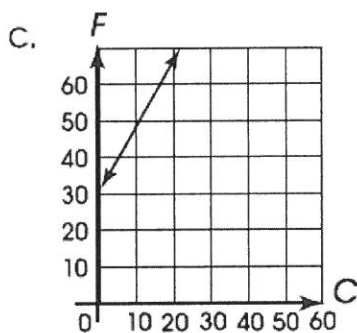
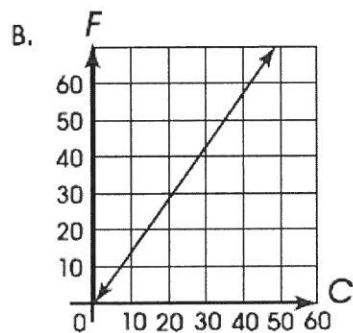
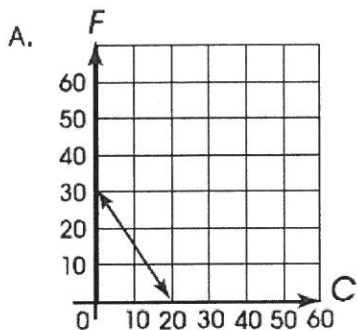
Term Number (n)	Term Value (t)
1	2
2	5
3	10
4	17
5	26

For this sequence, which of these represents the relationship between n , the number of the term, and t , its corresponding value?

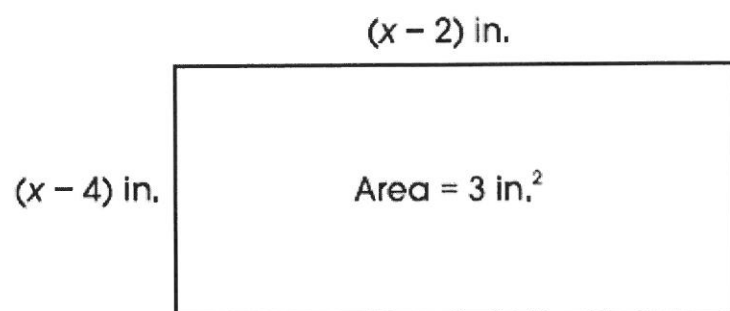
- A. $t = n^2 + 1$
- B. $t = 2n + 1$
- C. $t = 3n - 1$
- D. $t = 2n^2 - 1$

31. The formula for converting temperature on the Celsius scale, C , to the Fahrenheit scale, F , is

$F = \frac{9}{5}C + 32$. Which graph represents this equation?



35. The area of the rectangle illustrated below is 3 square inches.



Marisa used the equation $(x - 2)(x - 4) = 3$ to determine the values for x to be 1 and 5.

In your **Answer Document**, show whether Marisa's solutions are correct for the problem situation. Support your answers by showing work or providing an explanation.