

- 1 The table below shows a linear relationship between the values of x and y .

Mark your answer here: 1. (A)(B)(C)(D)

x	y
1	1
2	6
3	11
4	16

Based on the relationship in the table, what is the value of y when $x = 7$?

- A. 35
- B. 31
- C. 28
- D. 21

- 2 The first five numbers of a quadratic sequence are shown below.

Mark your answer here: 2. (A)(B)(C)(D)

4, 6, 11, 19, 30, . . .

What is the next number in the sequence?

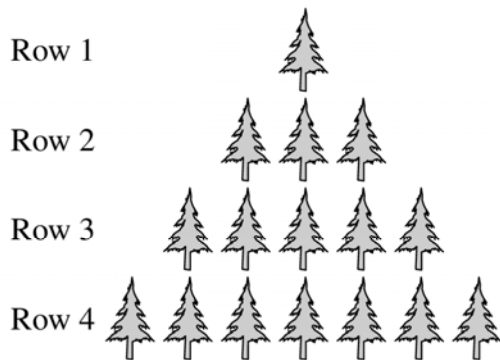
- A. 44
- B. 43
- C. 42
- D. 41



- 3 A tree farmer planted 4 rows of trees in a triangular pattern. The first row has 1 tree, the second row has 3 trees, the third row has 5 trees, and the fourth row has 7 trees, as shown in the diagram below.

Mark your answer here: 3. (A)(B)(C)(D)

Tree Farm Design



How many **additional** trees will the farmer need to plant if he wants to continue this linear pattern and add 4 more rows to the triangle?

- A. 15
- B. 33
- C. 48
- D. 64

- 4 The first four numbers in a geometric sequence are shown below.

Mark your answer here: 4. (A)(B)(C)(D)

2, 8, 32, 128, . . .

What is the next number in the sequence?

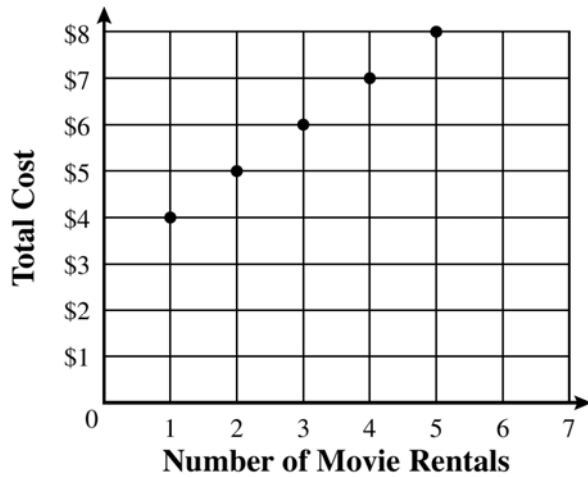
- A. 160
- B. 224
- C. 256
- D. 512



- 5 Spencer graphed the total monthly costs of renting different numbers of movies at Video Central, as shown below.

Mark your answer here: 5. (A)(B)(C)(D)

Total Monthly Cost of Movie Rentals



If the linear pattern shown by the graph continues, what would be the total monthly cost of 15 movie rentals?

- A. \$15
- B. \$18
- C. \$45
- D. \$60



- 6 The first six rows of a pattern are shown in the triangular array below.

Row 1				2				
Row 2			2	2				
Row 3			2	4	2			
Row 4			2	6	6	2		
Row 5			2	8	12	8	2	
Row 6			2	10	20	20	10	2
Row 7	?	?	?	?	?	?	?	

Each number in the array, other than 2, can be found by adding the two numbers in the preceding row that are diagonally above it. For example, $6 = 2 + 4$, as shown in the triangular array.

- a. If the pattern continues, what are the seven numbers in Row 7? Show or explain how you got your answer.

Write your answer here:

