3.4 Applications

Name Key

1. Buying one movie ticket online costs $16.50, two tickets cost $30.50, and three tickets cost $44.50. Assuming that the relationship is linear, write a recursive formula and a function to represent the cost C of *n* tickets bought online. Give the domain of the function.

recursive formula: $a_n = a_{n-1} + 14$; $a_1 = 16.50$

function: $C(n) = 14n + 2.50$ domain: $x \in \{0,1,2,3,\ldots\}$

$d = 14$

16.50, 30.50, 44.50 (+14, +14)

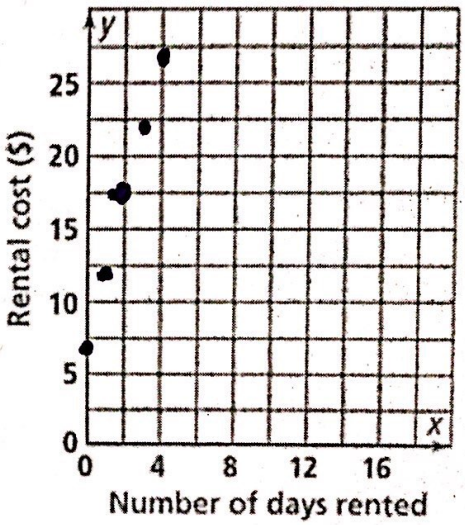
0	1	2	3
2.50	16.50	30.50	44.50

2. The table shows the cost of renting ski equipment at a ski lodge. Write a linear function *f* for the sequence. Then graph the function.

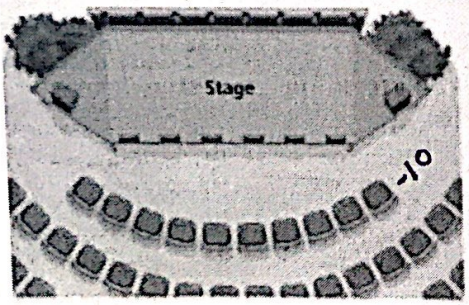
x	Number of Days Rented	0	1	2	3	4
f(x)	Rental Cost ($)	7	12	17	22	27

(+5, +5, +5, +5)

function: $f(x) = 5x + 7$



3. Performance Task A city sets up 14 rows of chairs for an outdoor concert. Each row has 2 more chairs than the row in front of it.



Part A Write a recursive formula to represent the number of chairs in the nth row.

Part B Write an explicit formula to represent the number of chairs in the nth row.

Part C Graph the sequence for the first 5 rows.

Part D What linear function represents the sequence? Which represents this situation best, the linear function or one of the formulas you wrote? Explain.

A. $a_n = a_{n-1} + 2$

B. $a_1 = 10$

$d = 2$

$a_n = a_1 + (n-1)d$

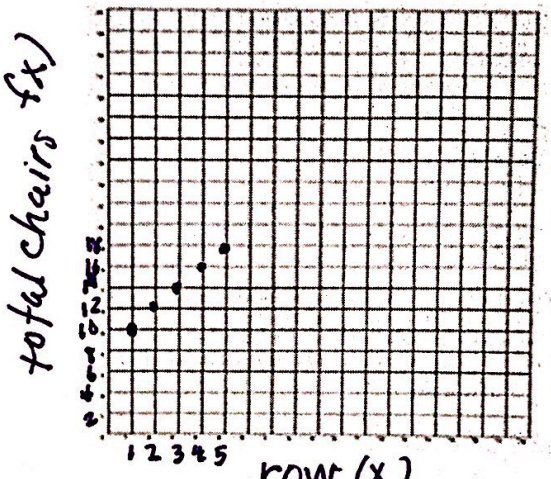
$a_n = 10 + (n-1)2$

$a_n = 10 + 2n - 2$

$\boxed{a_n = 2n + 8}$

C. see graph

D. $\boxed{f(x) = 2x + 8}$



$a_1 = 10$

$a_2 = 12$

$a_3 = 14$

$a_4 = 16$

$a_5 = 18$