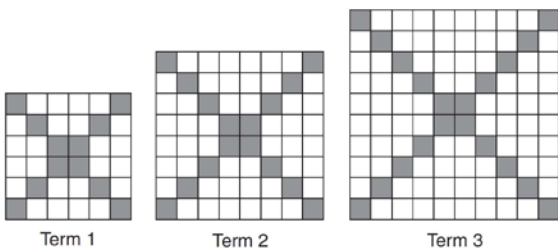


### F.BF.A.1: Sequences

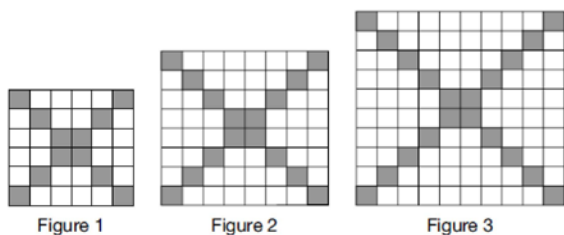
- Given: the sequence 4, 7, 10, 13, ...  
When using the arithmetic sequence formula  $a_n = a_1 + (n - 1)d$  to determine the 10th term, which variable would be replaced with the number 3?
  - $a_1$
  - $n$
  - $a_n$
  - $d$
- What is the  $n$ th term of the sequence  $-1, 3, 7, 11, \dots$ ?
  - $a_n = -1 - 4(n - 1)$
  - $a_n = -1 + 4(n - 1)$
  - $a_n = 4 - (n - 1)$
  - $a_n = 4 + (n - 1)$
- For the sequence  $-27, -12, 3, 18, \dots$ , the expression that defines the  $n$ th term where  $a_1 = -27$  is
  - $15 - 27n$
  - $15 - 27(n - 1)$
  - $-27 + 15n$
  - $-27 + 15(n - 1)$
- The equation that represents the sequence  $-2, -5, -8, -11, -14, \dots$  is
  - $a_n = -3 + (-2)(n - 1)$
  - $a_n = -2 + (-3)(n - 1)$
  - $a_n = 3 + (-2)(n - 1)$
  - $a_n = -2 + (3)(n - 1)$
- The third term in an arithmetic sequence is 10 and the fifth term is 26. If the first term is  $a_1$ , which is an equation for the  $n$ th term of this sequence?
  - $a_n = 8n + 10$
  - $a_n = 8n - 14$
  - $a_n = 16n + 10$
  - $a_n = 16n - 38$
- What is a formula for the  $n$ th term of sequence  $B$  shown below?  
 $B = 10, 12, 14, 16, \dots$ 
  - $b_n = 8 + 2n$
  - $b_n = 10 + 2n$
  - $b_n = 10(2)^n$
  - $b_n = 10(2)^{n-1}$
- In a sequence, the first term is 4 and the common difference is 3. The fifth term of this sequence is
  - 11
  - 8
  - 16
  - 19
- An arithmetic sequence has a first term of 10 and a sixth term of 40. What is the 20th term of this sequence?
  - 105
  - 110
  - 124
  - 130
- The 24<sup>th</sup> term of the sequence  $-5, -11, -17, -23, \dots$  is
  - 149
  - 143
  - 133
  - 139
- A theater has 35 seats in the first row. Each row has four more seats than the row before it. Which expression represents the number of seats in the  $n$ th row?
  - $35 + (n + 4)$
  - $35 + (4n)$
  - $35 + (n + 1)(4)$
  - $35 + (n - 1)(4)$

- 11 On the main floor of the Kodak Hall at the Eastman Theater, the number of seats per row increases at a constant rate. Steven counts 31 seats in row 3 and 37 seats in row 6. How many seats are there in row 20?
- 1) 65
  - 2) 67
  - 3) 69
  - 4) 71
- 12 The diagrams below represent the first three terms of a sequence.



Assuming the pattern continues, which formula determines  $a_n$ , the number of shaded squares in the  $n$ th term?

- 1)  $a_n = 4n + 12$
  - 2)  $a_n = 4n + 8$
  - 3)  $a_n = 4n + 4$
  - 4)  $a_n = 4n + 2$
- 13 The shaded boxes in the figures below represent a sequence.



If figure 1 represents the first term and this pattern continues, how many shaded blocks will be in figure 35?

- 1) 55
- 2) 148
- 3) 420
- 4) 805

- 14 In an arithmetic sequence,  $a_4 = 19$  and  $a_7 = 31$ . Determine a formula for  $a_n$ , the  $n^{\text{th}}$  term of this sequence.
- 15 Determine the common difference of the arithmetic sequence in which  $a_1 = 5$  and  $a_5 = 17$ . Determine the 21<sup>st</sup> term of this sequence.
- 16 A sequence has the following terms:  $a_1 = 4$ ,  $a_2 = 10$ ,  $a_3 = 25$ ,  $a_4 = 62.5$ . Which formula represents the  $n$ th term in the sequence?
- 1)  $a_n = 4 + 2.5n$
  - 2)  $a_n = 4 + 2.5(n - 1)$
  - 3)  $a_n = 4(2.5)^n$
  - 4)  $a_n = 4(2.5)^{n-1}$
- 17 What is the formula for the  $n$ th term of the sequence 54, 18, 6, ...?
- 1)  $a_n = 6\left(\frac{1}{3}\right)^n$
  - 2)  $a_n = 6\left(\frac{1}{3}\right)^{n-1}$
  - 3)  $a_n = 54\left(\frac{1}{3}\right)^n$
  - 4)  $a_n = 54\left(\frac{1}{3}\right)^{n-1}$

## F.BF.A.1: Sequences

### Answer Section

1 ANS: 4  
 $31 = 4 + (10 - 1)3$

REF: 062118ai

2 ANS: 2 REF: 061624a2

3 ANS: 4 REF: 081820ai

4 ANS: 2 REF: 062415ai

5 ANS: 2 REF: 081416ai

6 ANS: 1

common difference is 2.  $b_n = x + 2n$

$$10 = x + 2(1)$$

$$8 = x$$

REF: 081014a2

7 ANS: 3

$$a_n = 3n + 1$$

$$a_5 = 3(5) + 1 = 16$$

REF: 061613ai

8 ANS: 3

$$\frac{40 - 10}{6 - 1} = \frac{30}{5} = 6 \quad a_n = 6n + 4$$

$$a_{20} = 6(20) + 4 = 124$$

REF: 081510a2

9 ANS: 2

$$a_{24} = -5 + (24 - 1)(-6) = -143$$

REF: 062305ai

10 ANS: 4 REF: 061520a2

11 ANS: 1

$$d = \frac{37 - 31}{6 - 3} = 2 \quad a_n = 2n + 25$$

$$a_{20} = 2(20) + 25 = 65$$

REF: 061807ai

12 ANS: 2 REF: 061424ai

13 ANS: 2

$$a_n = 4n + 8$$

$$a_{35} = 4(35) + 8 = 148$$

REF: 012008ai

14 ANS:

$$\frac{31-19}{7-4} = \frac{12}{3} = 4 \quad x + (4-1)4 = 19 \quad a_n = 7 + (n-1)4$$

$$x + 12 = 19$$

$$x = 7$$

REF: 011434a2

15 ANS:

$$d = \frac{17-5}{5-1} = 3; \quad a_{21} = 5 + (21-1)(3) = 65$$

REF: 082330ai

16 ANS: 4

$$\frac{10}{4} = 2.5$$

REF: 011217a2

17 ANS: 4

REF: 061026a2