F.LE.A.2: Sequences 1a

1 What is the \( n \)th term of the sequence 
\(-1, 3, 7, 11, \ldots \)?

1) \( a_n = -1 - 4(n - 1) \)
2) \( a_n = -1 + 4(n - 1) \)
3) \( a_n = 4 - (n - 1) \)
4) \( a_n = 4 + (n - 1) \)

2 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) \( a_n = 4n + 2 \)

3 What is a formula for the \( n \)th term of sequence \( B \) 
shown below?

\( B = 10, 12, 14, 16, \ldots \)

1) \( b_n = 8 + 2n \)
2) \( b_n = 10 + 2n \)
3) \( b_n = 10(2)^n \)
4) \( b_n = 10(2)^{n-1} \)

4 Given \( f(9) = -2 \), which function can be used to 
generate the sequence \(-8, -7.25, -6.5, -5.75, \ldots \)?

1) \( f(n) = -8 + 0.75n \)
2) \( f(n) = -8 - 0.75(n - 1) \)
3) \( f(n) = -8.75 + 0.75n \)
4) \( f(n) = -0.75 + 8(n - 1) \)

5 For the sequence \(-27, -12, 3, 18, \ldots \), the expression 
that defines the \( n \)th term where \( a_1 = -27 \) is

1) \( 15 - 27n \)
2) \( 15 - 27(n - 1) \)
3) \( -27 + 15n \)
4) \( -27 + 15(n - 1) \)

6 Which function defines the sequence 
\(-6, -10, -14, -18, \ldots \), where \( f(6) = -26 \)?

1) \( f(x) = -4x - 2 \)
2) \( f(x) = 4x - 2 \)
3) \( f(x) = -x + 32 \)
4) \( f(x) = x - 26 \)

7 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?

1) \( a_n = 8n + 10 \)
2) \( a_n = 8n - 14 \)
3) \( a_n = 16n + 10 \)
4) \( a_n = 16n - 38 \)
8 In an arithmetic sequence, \( a_4 = 19 \) and \( a_7 = 31 \).

Determine a formula for \( a_n \), the \( n^{th} \) term of this sequence.

9 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) \( a_n = 54 \left( \frac{1}{3} \right)^{n-1} \)

10 The formula of the \( n \)th term of the sequence 3, −6, 12, −24, 48 . . . is

1) \( a_n = −2(3)^n \)

2) \( a_n = 3(−2)^n \)

3) \( a_n = −2(3)^{n−1} \)

4) \( a_n = 3(−2)^{n−1} \)

11 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) \( a_n = 4(2.5)^{n−1} \)
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Answer Section

1 ANS: 2 REF: 061624a2
2 ANS: 2 REF: 061424ai
3 ANS: 1
   common difference is 2. \( b_n = x + 2n \)
   
   \[ 10 = x + 2(1) \]
   \[ 8 = x \]
   REF: 081014a2
4 ANS: 3 REF: 061720aii
5 ANS: 4 REF: 081820ai
6 ANS: 1 REF: 081610ai
7 ANS: 2 REF: 081416ai
8 ANS:
   \[ \frac{31 - 19}{7 - 4} = \frac{12}{3} = 4 \]
   \[ x + (4 - 1)4 = 19 \]
   \[ a_n = 7 + (n - 1)4 \]
   
   \[ x + 12 = 19 \]
   \[ x = 7 \]
   REF: 011434a2
9 ANS: 4 REF: 061026a2
10 ANS: 4 REF: 011715a2
11 ANS: 4
   \[ \frac{10}{4} = 2.5 \]
   REF: 011217a2