Finding The Next Term Of A Sequence:

A. There are many different forms of sequences on Number Sense tests and they can vary widely. Because of this there is no way of showing every example but I can show you some things to look for.

B. Fibonacci Sequence

1. In this sequence, each number is the sum of the two preceding numbers.
2. In other words: 1, 1, 2, 3, 5, 8, ... (Notice the 3rd number is 1+1, the 4th is 1 + 2, the 5th is 2 + 3, and so on.)

Ex [1] The next term of 3, 4, 7, 11, 18,... is _____.

a. This sequence follows the rules of a Fibonacci Sequence.
b. Therefore, the next term is 11 + 18 or 29.
c. The answer is 29.

C. Adding A Fixed Number

1. Some sequences add the same number to all the terms.

Ex [2] The next term of 5, 11, 17, 23,... is _____.

a. In this sequence, 6 is being added to each successive number.
b. The next term in this sequence is 23 + 6 or 29.
c. The answer is 29.

D. Adding A Fixed Number Alternately

1. Some sequences add the same number to every other number. (Not always the same number for each set.)

Ex [3] The next term of 3, 4, 6, 7, 9, 10, ... is _____.

a. In this sequence, 3 is added to every other number for both sets: {3,6,9,...} and {4,7,10,...}.
b. The next term in this sequence is 9 + 3 or 12.
c. The answer is 12.

Ex [4] The next term of 2, 5, 6, 8, 10, 11,... is _____.

a. In this sequence, 4 is added to every number for the first set and 3 is added to every number for the second set: {2,6,10,...} and {5,8,11,...}.

b. The next term in this sequence is 10 + 4 or 14.

c. The answer is 14.

E. Adding Multiples of a Number

1. Some sequences will add multiples of a number to each successive term. (i.e. a^{n-1}, where n is the n^{th} term).

Ex [5] The next term of 3, 5, 9, 17, 33,... is _____.

a. In this sequence, 2^{n-1} is added to each term: $3+2, 5+2^2, 9+2^3,...$

b. The next term in this sequence is $33+2^5$ or 55.

c. The answer is 55.

F. Evaluating an Expression

1. Perhaps the most difficult one to recognize is when you have to find the expression to come up with the next number.
2. This type of sequence can vary dramatically. It takes practice to be able to find the next number. If you can't find it soon, my advice would be to skip it and come back if you have time.

Ex [6] The next term of 2, 5, 14, 41,... is _____.

a. In this sequence, the next term is evaluated by the expression 3x - 1, where x is the previous number of the sequence.

b. The next term in this sequence is 3(41) - 1 or 122.

c. The answer is 122.

Ex [7] The next term of -1, 2, 7, 14, 23,... is _____.

a. In this sequence, the next term is evaluated by the expression $n^2 - 2$.

b. The next term in this sequence is $6^2 - 2$ or 34.

c. The answer is 34.