

4.1 Introduction to Sequences and Google Sheets

Sequence	Definition:	Example:
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Example) Given the sequence, identify the following term values: {3, 12, 21, 30, 39, 48, ... }

n						
a_n						

$a_1 =$ _____

$a_4 =$ _____

$a_7 =$ _____

$a_{11} =$ _____

Since each term value is paired with exactly one term number in the sequence, we can think of a sequence as a _____ where the domain is the _____ and the range is the set of _____.

Example. Karin has been doing crunches and recording the number she completes each day for the last week.
20, 22, 24, 26, 28, 30, 32, ...

Describe the pattern in your own words.

Let's write a formula now to find **any** term in the sequence.

$a_{initial} =$ _____

Therefore = $\begin{cases} a_1 = \\ a_n = \end{cases}$

$a_{next} =$ _____

This type of description of a sequence is called _____ because it is based on a recurring pattern.

Recursive Notation:

Practice. Write a formula given the sequence {25, 19, 13, 7, 1, ... }

Practice. Find the first five terms of the sequence.

1.
$$\begin{cases} a_1 = 17 \\ a_n = a_{n-1} + 4; n > 1 \end{cases}$$

2.
$$\begin{cases} a_1 = 8 \\ a_n = 3a_{n-1} - 1; n > 1 \end{cases}$$

Now find the 100th term of each sequence. (Use Google Sheets)

1.

2.

On your own. Describe the sequence in words and then write in standard recursive notation. Then find the 50th term of each sequence using google sheets.

1. $\{17, 20, 23, 26, 29, 32, \dots\}$

2. $\{81, 27, 9, 3, 1, \frac{1}{3}, \dots\}$

Practice (use excel): A tree farm initially has 5000 trees. Each year 10% of the trees are harvested and 450 seedlings are planted.

a) Write a recursive rule for the number of trees on the tree farm at the beginning of the nth year.

b) How many trees remain at the beginning of the fifth year?

c) What happens to the tree population over time?