

SEQUENCES

PRAXIS FLASHCARD #147

SEQUENCE

A **sequence** is a set of members where order is important. For example, the sequence of letters ABC is entirely different from the sequence of letters ACB – although we are using the same three letters, they are in different order. There are four types of sequences taught in elementary school: arithmetic, geometric, Fibonacci, and harmonic.

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ARITHMETIC SEQUENCE

An **arithmetic sequence** is an ordered list of numbers where each number is formed by adding a constant number to the previous number. An example of an arithmetic sequence is: 3, 6, 9, 12, 15, 18, etc. where each number is formed by adding 3 to the previous number. An arithmetic sequence may be written algebraically as

$$a_n = a_{n-1} + k$$

Do not confuse this with an **arithmetic series** where numbers are not a list but form an addition problem.

An example of an arithmetic series is $3 + 6 + 9 + 12 + \dots$

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GEOMETRIC SEQUENCE

A **geometric sequence** is an ordered list of numbers where each number is formed by multiplying a constant number to the previous number. An example of a geometric sequence is: 3, 9, 27, 81, 243, etc. where each number is formed by multiplying by 3. An arithmetic sequence may be written algebraically as

$$a_n = ka_{n-1}$$

Do not confuse this with a **geometric series** where numbers are not a list but form an addition problem.

An example of a geometric series is $3 + 9 + 27 + 81 + \dots$

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FIBONACCI SEQUENCE

The **Fibonacci Sequence** is formed by starting with 0 and 1, adding those two terms to obtain the third term, adding the second and third terms to obtain the fourth term, and continuing by adding the last two terms to find the next term. The Fibonacci sequence is named after Leonardo of Pisa, who was known as Fibonacci.

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

The Fibonacci numbers appear in biological settings and are used in computer programming.
