What is a Sequence and a Series?

Worksheet

A sequence is an ordered list of terms (a, a, a,); a series is the sum of a sequence's terms. In an arithmetic sequence terms differ by a constant d; in a geometric sequence terms are multiplied by a constant ratio r.

$$S_n = @sum_{k=1}^{n} a_k$$

Questions

1. What is the 6th term of 4, 7, 10, 13, ?

A) 19
B) 16
C) 22
D) 25

2. Sum of first 4 terms of 1, 2, 4, 8, ?

A) 15
B) 16
C) 30
D) 7

3. In an arithmetic sequence, what stays constant between terms?

A) The ratio
B) The difference
C) The product
D) The square

4. A series is

A) the same as a sequence
B) the sum of a sequence's terms
C) always infinite
D) only for geometric sequences

5. Find the sum of the first 10 terms of the arithmetic sequence 3, 7, 11, 15,

6. What is the 8th term of the sequence 5, 8, 11, 14, ?

7. Find the sum of the first 5 terms of the geometric sequence 2, 6, 18, 54,

8. Define: What is a sequence?

9. Define: What is a series?

10. Define: Arithmetic vs geometric sequence?

Answer Key

1. A) 19 - a_n=a1+(n-1)d=4+53=19
2. A) 15 - S_n=a1(r^n-1)/(r-1)=1(16-1)/1=15
3. B) The difference - Consecutive terms differ by a fixed common difference d.
4. B) the sum of a sequence's terms - A series is formed by adding up the terms of a sequence.
5. a1 = 3, d = 4, n = 10 S_n = n/2(2a1+(n-1)d) = 10/2(23+94) = 5(6+36) = 542 = 210
6. a1=5, d=3 a_n = a1+(n-1)d a_8 = 5+73 = 5+21 = 26
7. a1=2, r=3, n=5 S_n = a1(r^n1)/(r1) = 2(3^51)/(31) = 2242/2 = 242
8. An ordered list of numbers following a specific rule or pattern, like 2, 4, 6, 8,
9. The sum of the terms of a sequence, e.g. 2+4+6+8.
10. Arithmetic: constant difference d between terms. Geometric: constant ratio r between terms.