

1

sequence:

Recursive:

2

Partial SUM:

Series:

Sigma Notation:

SERIES

&

SEQUENCES

3

Essential Question:

EX 1. 1, 3, 5, 7, 9

EX 2. Find the first 4 terms & the 100th term

A.  $a_n = \frac{1}{2^n}$

B.  $a_n = (-1)^n$

C.  $a_n = (-1)^{n+1}$

Recursive Sequence

EX 3.  $a_n = a_{n-1} + 3$        $a_1 = 1$

Partial Sums

EX 4. Find  $S_1$ ,  $S_2$ , &  $S_3$  for  $a_n = 2n + 3$

Series & Summation Notation

EX 5.  $\sum_{x=4}^{10} 2x$

EX 6.  $\sum_{i=3}^5 i^2 + 2$

EX 7. Write in sigma notation  $3^3 + 3^4 + 3^5 + \dots + 3^{20}$

SUMMARY:

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Essential Question:

Direct Formula:

EX 1. 2, 5, 8, 11, ...

EX 2. 4, 8, 12, 16, ...

EX 3. Find the  $n$ th term for 7, 5, 3, ...

Series

Partial Sum Formulas

EX 4. Find the sum of the first 30 odd numbers.

SUMMARY:

# Unit 10 FORMULAS

$$a_n = a + d(n-1) \quad S_n = \frac{n}{2}[2a + d(n-1)]$$

$$S_n = a \left( \frac{1-r^n}{1-r} \right) \quad a_n = a(r)^{n-1}$$

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$$S_n = n \left( \frac{a + a_n}{2} \right) \quad S = \frac{a}{1-r}$$

$$\binom{n}{r} = \frac{n!}{r!(n-r)!}$$

Essential Question:

DIRECT FORMULA:

EX 1. 2, 4, 8, 16, ...

EX 2. 18, 6, 2, ...

EX 3. Find the  $n$ th term  $-3, 1, -\frac{1}{3}, \frac{1}{9}, \dots$

SERIES

PARTIAL SUM FORMULA

EX 4. Find the SUM of the series  $3 + 6 + 12 + 24 + \dots + 768$

INFINITE GEOMETRIC SERIES

$$1 + 2 + 4 + 8 + 16 + \dots \quad \text{vs.} \quad \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$$

• If  $|r| < 1$  ...

EX 5.  $1 + -3 + 9 + -27 + \dots$

EX 6.  $27 + 9 + 3 + 1 + \dots$

SUMMARY: