

SEQUENCES

Sequence: A set of objects that follow a pattern.

Term: The placement of the object in the sequence

TWO TYPES OF SEQUENCES

ARITHMETIC

(+ / -)

GEOMETRIC

(x / ÷)

ARITHMETIC SEQUENCES

A sequence with a common difference (d)

EXPLICIT FORMULA

$$A_n = A_1 + d(n - 1)$$

$$n = \underline{\text{TERM}}$$

$$A_n = \underline{\text{SPECIFIC TERM}}$$

$$A_1 = \underline{\text{FIRST TERM}}$$

$$d = \underline{\text{COMMON DIFFERENCE}}$$

EXAMPLE

Write the Explicit Formula
for the given arithmetic sequence.

$$A_n = A_1 + d(n - 1)$$

25, 18, 11, 4, ...

∨
-7

$$A_1 = 25$$

$$d = -7$$

FORMULA

$$A_n = 25 - 7(n-1)$$

EXAMPLE

Write the Explicit Formula
for the given arithmetic sequence
& Find the given term.

$$A_n = A_1 + d(n - 1)$$

33, 35, 37, 39, ...

∨
+2

Find a_{35}

$$A_1 = 33$$

FORMULA

$$A_n = 33 + 2(n-1)$$

$$d = 2$$

$$A_{35} = 33 + 2(35-1) = 101$$

GEOMETRIC SEQUENCES

SEQUENCE THAT HAS A COMMON RATIO

EXPLICIT FORMULA

$$A_n = A_1(r)^{(n-1)}$$

n = TERM

A_n = SPECIFIC TERM

A₁ = FIRST TERM

r = COMMON RATIO

(Found by Dividing Terms)

EXAMPLE

Write the Explicit Formula
for the given geometric sequence.

$$A_n = A_1(r)^{(n-1)}$$

-2, 8, -32, 128, ...

∨
x -4

$$A_1 = -2$$

FORMULA

$$r = -4$$

$$A_n = -2(-4)^{(n-1)}$$

EXAMPLE

Write the Explicit Formula

for the given geometric sequence

& Find the given term.

$$A_n = A_1(r)^{(n-1)}$$

-1, -2, -4, -8, ...

✓
x 2

Find a_{11}

$$A_1 = -1$$

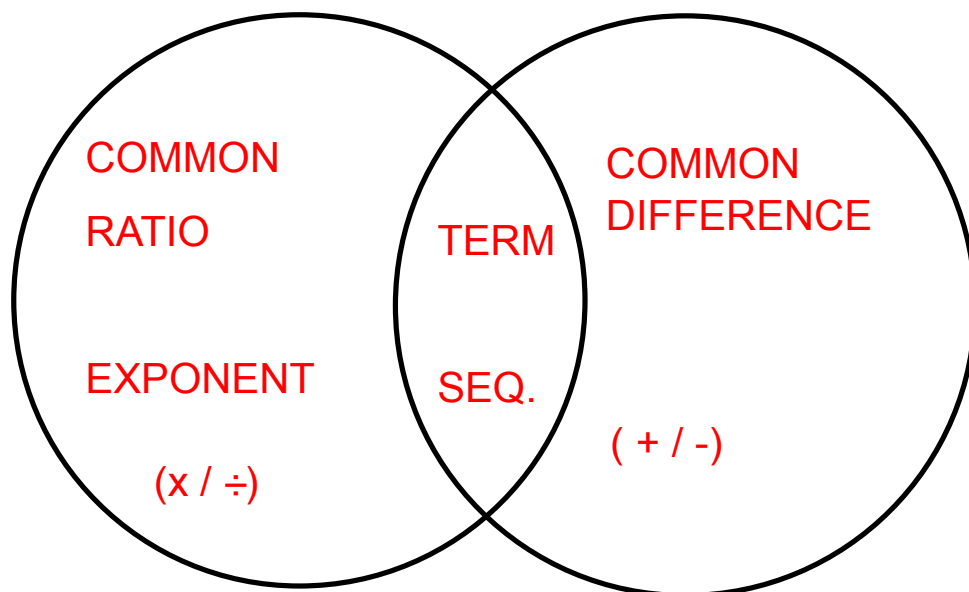
FORMULA

$$r = 2$$

$$A_n = -1(2)^{(n-1)}$$

$$A_{11} = -1(2)^{(11-1)} = -32$$

GEOMETRIC VS. ARITHMETIC



LOOK FOR COMMON RATIO (r) FIRST!

EXAMPLE

Given the following sequences, determine whether they are

GEOMETRIC OR ARITHMETIC

-1, 4, -16, 64, ...

x -4

GEOMETRIC

-33, -28, -23, -18, ...

+ 5

ARITHMETIC