Arithmetic and Geometric Sequences
Recursive and Explicit Formulas Day 2

Notation:
t_1 = first term in the sequence
t_n = the nth term
t_{n-1} = the term BEFORE the nth term
d = common difference (could be negative)
r = common ratio (could be fraction)

<u>Recursive Formula</u> – must know previous term
*two formulas: arithmetic and geometric

For an Arithmetic Sequence: **For a Geometric Sequence:**
t_1 = 1st term t_1 = 1st term
$t_n = t_{n-1} + d$ $t_n = r(t_{n-1})$

*Note: When writing the formula, the only thing you fill in is the 1st term and either d or r.

<u>Explicit Formula</u> – based on the term number.
*You are able to find the nth term without knowing the previous term.

For an Arithmetic Sequence: **For a Geometric Sequence:**
$t_n = t_1 + d(n - 1)$ $t_n = t_1(r^{n-1})$

*Note: When writing the formula, the only thing you fill in is the t_1 and either the d or r.

Write an explicit and recursive formula for the following sequences (examples from worksheet).

1.   -4, -6, -8, -10, …

Explicit:

Recursive:

2.   19, 13, 7, 1, …

Explicit:

Recursive:

3.   25, 75, 225, …

Explicit:

Recursive:

4.   3, 9, 27, 81, …

Explicit:

Recursive: