DO NOW:

Consider the sequence: 3, 6, 12, 24, 48 . . .

a) What is the **rule** from one term to the next?

b) Find the **next 3** terms.

_____, _____, _____

c) What is the **recursive** formula? (Hint: What is done to the previous term to get the next term?)

d) Look for **a pattern** and **find the 10th term**?

t_1 = _____ t_6 = _____

t_2 = _____ t_7 = _____

t_3 = _____ t_8 = _____

t_4 = _____ t_9 = _____

t_5 = _____ $\mathbf{t_{10}}$ = _____

e) Can you figure out **an explicit formula** to get you the 10th term? (Hint- think about the 1st term, the rule, and how can you use those values to get the 10th term?)

t_{10} = _____

Geometric Sequence: a sequence whose terms share a common ratio, (by multiplication or division) called *r*

i) 3, 6, 12, 24, 48 …

r = ___ t_1 = ____

ii) 27, 9, 3, 1, $^1/_3$ …

r = ___ t_1 = ____

Create the **Explicit Formula** for a **Geometric Sequence** using t_1 and r.

$$t_n = (t_1)(r^{(n-1)})$$

t_1 =

Given the recursive formula for a geometric sequence find the common ratio, the first five terms, and the explicit formula.

11) $a_n = a_{n-1} \cdot 2$
$a_1 = 2$

12) $a_n = a_{n-1} \cdot -3$
$a_1 = -3$

Given the explicit formula for a geometric sequence find the first five terms and the 8th term.

7) $a_n = 3^{n-1}$

10) $a_n = -4 \cdot 3^{n-1}$

Comparing Arithmetic and Geometric Sequences

For each sequence, state if it is arithmetic, geometric, or neither.

1) 1, 3, 6, 10, 15, ...

2) 40, 43, 46, 49, 52, ...

3) $4, \frac{13}{3}, \frac{14}{3}, 5, \frac{16}{3}, \ldots$

4) −4, 12, −36, 108, −324, ...

5) 4, 16, 36, 64, 100, ...

6) −29, −34, −39, −44, −49, ...

11) $a_n = -163 + 200n$

12) $a_n = 16 + 3n$

16) $a_n = (2n)^2$

20) $a_n = 2 \cdot (-3)^{n-1}$

23) $a_n = a_{n-1} \cdot -5$
$a_1 = 4$

24) $a_n = a_{n-1} + 8$
$a_1 = -17$

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