Today's Learning Goal(s):

Date: _____

By the end of the class, I will be able to:

a) recognize the characteristics of geometric sequences.
b) write the general term.

Last day's work: pp. 424-425 #1 – 13, 15, 16

7.2 Geometric Sequences

Date: _Dec. 16/15_

Geometric Sequence:
A sequence that has a common **ratio** between the terms.
(ie. you multiply by some number to move from one term to the next).

Ex.1   Consider the following sequence: 2, 6, 18, 54, ...

$\frac{6}{2} = 3$

$\times 3 \quad \times 3 \quad \times 3$

$\therefore r = 3$

In an geometric sequence, the first term is a and the common **ratio** is r
the terms are $a, ar, ar^2, ar^3, ...$

often only 3 terms given

The general term is $t_n = ar^{n-1}$

The recursive formula is $t_1 = a, t_n = rt_{n-1}$, n   **N**, n $>$ 1
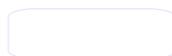
a) What is the 11th term?

$a = 2 \quad r = 3$

$t_n = ar^{n-1}$

$t_{11} = ar^{10}$

$= 2(3)^{10}$

$= 118098$

1

Ex.2 The fifth term of an geometric sequence is 48, and the 13th term is 12288.
Determine the first 4 terms.

$t_5 = 48$ $t_{13} = 12288$

$$a = 3, r = 2$$
$$t_1 = 3, \ t_2 = 6, \ t_3 = 12, \ t_4 = 24$$

$ar^4 = 48$ $ar^{12} = 12288$

$$\frac{ar^{12}}{ar^4} = \frac{12288}{48}$$

$$r^{12-4} = 256$$

$$r^8 = 256$$

$$r = \sqrt[8]{256}$$

$$r = 2$$

$\rightarrow$ Sub: $ar^4 = 48$

$$a(2)^4 = 48 \rightarrow a = \frac{48}{2^4}$$

$$16a = 48$$

$$a = \frac{48}{16}$$

$$a = 3$$

$\therefore t_1 = 3, \ t_2 = ar$

$$= (2)(3)$$

$$= 6$$

$t_3 = 12, \ t_4 = 24$

Are there any Homework Questions you would like to see on the board?

Last day's work: pp. 424-425 #1 − 13, 15, 16

Today's Homework Practice includes:

p. 426 A − H
pp. 430-432 #1 − 3, 5 − 11 [18-20]