

MS Algebra – F-BF-2

Geometric Sequences

Recursive & Explicit Formulas

Mr. Deyo

Recursive Rule $a_1 = \text{start}$

$$a_n = (a_{n-1})(r)$$

Explicit Rule $a_n = (a_1)(r)^{n-1}$

Learning Target

By the end of the period, I will write geometric sequences both recursively and with an explicit formula.

I will demonstrate this by completing Four-Square Notes and by solving problems in a pair/group activity.

Home Work 1-2-3: 1) Class 4-Square Notes Put In Binder?

2) Section _____
TxtBk. **Problems** _____
Solved and Put in Binder?

3) Section _____
Notes Copied on blank sheet
of paper in Binder?

Table of Contents

Date

Description

Date Due

Storm Check (Think, Write, Discuss, Report)

Questions on which to ponder and answer:

1. How are the two images similar?
2. How are they different?
3. How can these two images be related to math?

IMAGE 1

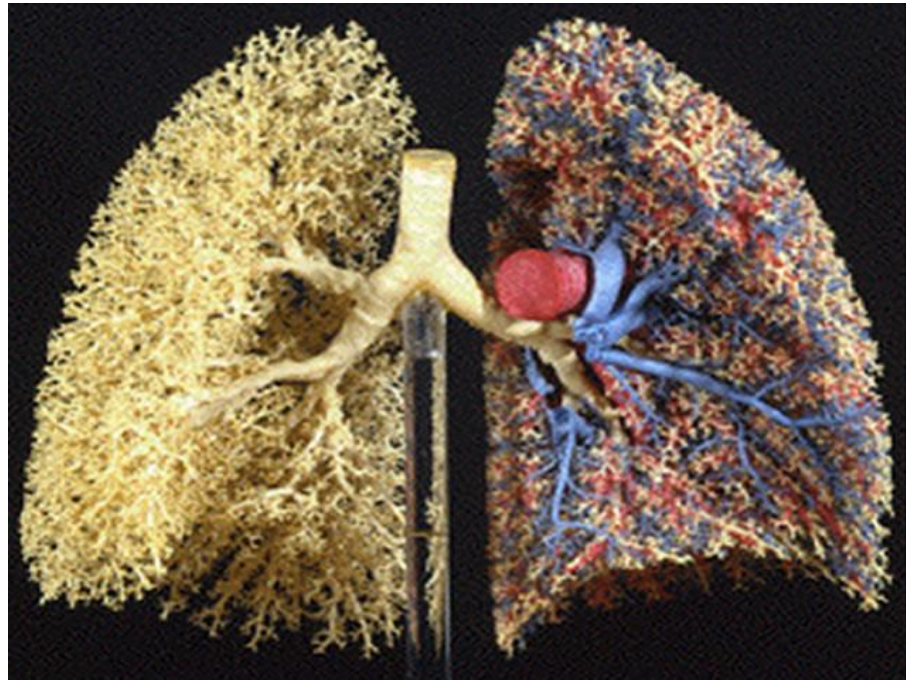


IMAGE 2



Vocabulary

- 1) Geometric Sequence**
- 2) Common Ratio (or Factor)**
- 3) Geometric Recursive Formula**
- 4) Geometric Explicit Formula**

Sketch

DAY 2

1. Review word
 - ◆ Friendly Definition
 - ◆ Physical Representation
2. Draw a sketch

Friendly Definition

DAY 1

1. Use Visuals
2. Introduce the word
 - ◆ Friendly Definition
 - ◆ Physical Representation
3. Use Cognates
4. Write friendly definition
5. Physical Representation

Word List

- 1.
- 2.
- 3.
- 4.

Wordwork

DAY 3 and/or DAY 4

1. Review the word
 - ◆ Friendly Definition
 - ◆ Physical Representation
2. Show how the word works
 - ◆ Synonyms/antonym
 - ◆ Word Problems
 - ◆ Related words/phrases
 - ◆ Example/non-example

Sentence

DAY 5

1. Review the word
 - ◆ Friendly definition
 - ◆ Physical Representation
3. Write a sentence
 - ✓ at least 2 rich words (1 action)
 - ✓ correct spelling
 - ✓ correct punctuation
 - ✓ correct subject/predicate agreement
 - ✓ clear and clean writing

Notes: Recursion is the process of choosing a starting term and repeatedly applying the same process to each term to arrive at the next term.

Recursion requires that you know the value of the term immediately before the term you are trying to find.

A recursive formula always has **two parts**:

1. the **starting value** for a_1 .
2. the **recursion equation** for a_n as a function of a_{n-1} (the term before it.)

Geometric Recursion

$$a_1 = \text{start}$$

$$a_n = a_{n-1} (r)$$

a_n = current term

a_{n-1} = previous term

r = common ratio or factor

n = term number

A-B Problem A notes:

Recursive Formula
for Geometric Sequence

$$a_1 = \text{start}$$

$$a_n = a_{n-1}(r)$$

a_n = current term

a_{n-1} = previous term

r = common ratio or factor

n = term number

297, 99, 33, 11, ...

$$a_1 = \square$$

$$a_n = a_{n-1}(\square)$$

1, -6, 36, -216, ...

$$a_1 = \square$$

$$a_n = a_{n-1}(\square)$$

A-B Problem B SOLVE!!:

Recursive Formula for Geometric Sequence

$$a_1 = \text{start}$$

$$a_n = a_{n-1}(r)$$

a_n = current term

a_{n-1} = previous term

r = common ratio or factor

n = term number

3, -6, 12, -24, ...

$$a_1 = \square$$

$$a_n = a_{n-1} (\square)$$

5, 15, 45, 135, ...

$$a_1 = \square$$

$$a_n = a_{n-1} (\square)$$

Storm Check (Think, Write, Discuss, Report)

What are the two parts of a recursive formula?

The two parts of a recursive formula are:

a) _____

b) _____

Complete the sentence:

Recursion requires that you know the

_____ of the term _____

before the term you are trying to find.

Notes:

To find the value of **ANY** term of an geometric sequence, you need:

Explicit Formula for an Geometric Sequence

$$a_n = a_1 (r)^{n-1}$$

a_1 = first term

a_n = current term

r = common ratio (or factor)

n = term number

A-B Problem A notes:

Explicit Formula for Geometric Sequence

$$a_n = a_1 (r)^{n-1}$$

a_n = current term

a_1 = first term

r = common ratio

n = term number

297, 99, 33, 11, ...

$$a_n = a_1 (r)^{n-1}$$

$$a_n =$$

1, -6, 36, -216, ...

$$a_n = a_1 (r)^{n-1}$$

$$a_n =$$

A-B Problem B SOLVE!!:

Explicit Formula for Geometric Sequence

$$a_n = a_1 (r)^{n-1}$$

a_n = current term

a_1 = first term

r = common ratio

n = term number

3, -6, 12, -24, ...

$$a_n = a_1 + (n-1)d$$

$$a_n =$$

5, 15, 45, 135, ...

$$a_n = a_1 + (n-1)d$$

$$a_n =$$

Storm Check (Think, Write, Discuss, Report)

What is the geometric explicit formula?

The geometric explicit formula is:

From the above formula, what does each term represent?

a_1 : _____

r : _____

n : _____

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