Secondary Math 3

Concept: Geometric Series (finite)

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| **Learning Objective:**  I know…I can… | **Assessment Examples:** |
| I can write a series with sigma notation. | Write out the following sum.  Find |
| I can derive the formula for the sum of a geometric series (when the common ratio is not 1)  I can use the formula of a geometric series to solve problems. | A geometric series that starts with 2, ends with -6250 and has a common ration of -5. Find the sum.  Find the sum of the series: 10 – 20 + 40 – 80 + 160 - … + 2560 |

**Launch:** (How will you begin your lesson to help students make connections to material already learned and help students understand why they are learning the new concept?)

(Will have taught sequences)

Sequence warm ups- review lesson from last time

1. Write a recursive rule and an explicit rule for each sequence:

9, 27, 81, 243

2. Find the stated term of the geometric sequence:

-3, -6, -12, -24, … ; 9th term

3. You have 2 biological parents, 4 biological grandparents, and 8 biological great-grandparents. How many great-great-great-great grandparents (6th generation) do you have? How many direct ancestors do you have if you trace your ancestry back 6 generations? (Start working with series …)

**Explore:** (How will you allow students to construct their own understandings?)

Paper series activity (HMH 12.3)

Start with a rectangular sheet of paper and assume the sheet has an area of 1 square unit. Cut the sheet in half and lay down one of the half-pieces. Then cut the remaining piece in half, and lay down one of the quarter-pieces as if rebuilding the original sheet of paper. Continue the process: At each stage, cut the remaining piece in half, and lay down one of the two pieces as if rebuilding the original sheet of paper.



Write the sequence formed by the areas of the individual pieces that are laid down. What type of sequence is it?





**Discuss:** (How will you share students’ learning and assure all students have a minimal level of understanding?)

-Go over answers from Explore Activity … make sure students are on the right page.

-Derive formula for finite geometric series as a class

-Go over summation notation (specifically sigma notation)

-Practice geometric series

**Summarize:** (How will you help students understand what they learned, why they learned it, how does it connect to what you already know?)

Story problem together (make connections to what they have learned and the purpose of series)

Niobe is saving for a down payment on a new car, which she intends to buy a year from now. At the end of each month, she deposits $200 from her paycheck into a dedicated savings account, which earns 3% annual interest that is applied to the account balance each month. After making 12 deposits, how much money will Niobe have in her savings account?