

Topic 5: Geometric Sequences (F.BF 2)

Purpose: The purpose of the first three examples is to get students to understand some of the key vocabulary associated with geometric sequences. The focus of these examples is recursive equations, those that define a sequence in terms of the value that precedes it. The final three examples ask students to solve problems involving explicit equations. Please use your professional judgment when following this guide, if students are struggling with the content and need more support, then provide that additional support.

Core Standards Focus:

F.BF 2 - Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

Launch (Individual time): Starting with example 1, ask students to take 1 minute individually to write everything they can about the sequence of numbers. It is important that students make sense of the pattern of numbers prior to writing equations. Some students may not be able to start on this task. Identify those students and consider pairing them with another student who may be able to provide additional support. If most of the class is unable to start on the task then facilitate the first example as a whole class think-aloud. It may help to move the slider as instructed to see how the value of $a(n)$ changes. Due to the complexity of the first example you may want to move on to the second example before expecting that all students will understand how the pattern is formed.

Explore (pairs): Using example 3, give students a few minutes to work together to write a recursive equation to represent the sequence. Consider suggesting that students re-write the sequence of numbers and look for patterns. When students are ready for example 4 they may need significant support in writing an explicit equation. It helps if students number each term. Students then need to think of a way to express the terms value in terms of the number it has been assigned. Repeat this process for examples 5 and 6.

Discuss (Whole Class): Call on some students to share their solutions and talk about their reasoning. Be selective with the student work you use and sequence the work in a way that will connect a variety of ideas. Use the FluidMath program to check their work.