1 Searching for Patterns

Topic 2: Sequences

ELPS: 1.A, 1.C, 1.E, 1.F, 1.G, 2.C, 2.E, 2.I, 3.D, 3.E, 4.B, 4.C, 5.B, 5.F, 5.G

Topic Pacing: 14 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing**
1	**Is There a Pattern Here?** Recognizing Patterns and Sequences	Students begin by exploring various patterns in Pascal's triangle. *Sequence* and *term of a sequence* are defined. Given ten geometric patterns or contexts, students write a numeric sequence to represent each problem. They are guided to represent each sequence as a table of values and conclude that all sequences are functions. Students then organize the sequences in a table, state whether each sequence is increasing or decreasing, and describe the sequence using a starting value and operation. They determine that all sequences have a domain that includes only positive integers. *Infinite sequence* and *finite sequence* are defined and included as another characteristic for students to consider as they write sequences.	A.9A A.12A A.12D	2
Suggested Placement of Learning Individually with Skills Practice or MATHia				1
2	**The Password Is … Operations!** Arithmetic and Geometric Sequences	Given 16 numeric sequences, students generate several additional terms for each sequence and describe the rule they used for each sequence. They sort the sequences into groups based upon common characteristics of their choosing and explain their rationale. The terms *arithmetic sequence, common difference, geometric sequence,* and *common ratio* are then defined, examples are provided, and students respond to clarifying questions. They then categorize the sequences from the beginning of the lesson as arithmetic, geometric, or neither and identify the common difference or common ratio where appropriate. Students begin to create graphic organizers, identifying four different representations for each arithmetic and geometric sequence. In the first activity, they glue each arithmetic and geometric sequence to a separate graphic organizer and label them, and in the second activity, the corresponding graph is added. The remaining representations are completed in the following lessons. This lesson concludes with students writing sequences given a first term and a common difference or common ratio and identifying whether the sequences are arithmetic or geometric.	A.12A A.12D	2
Suggested Placement of Learning Individually with Skills Practice or MATHia				1
Mid-Topic Assessment				1
3	**Did You Mean: *Recursion?*** Determining Recursive and Explicit Expressions from Contexts	Scenarios are presented that can be represented by arithmetic and geometric sequences. Students determine the value of terms in each sequence. The term *recursive formula* is defined and used to generate term values. As the term number increases, it becomes more time consuming to generate the term value. This sets the stage for *explicit formulas* to be defined and used. Students practice using these formulas to determine the values of terms in both arithmetic and geometric sequences.	A.12C A.12D	2
Suggested Placement of Learning Individually with Skills Practice or MATHia				1

Texas Algebra I: Module 1, Topic 2 Pacing Guide

180-Day Pacing

TEXAS MATH SOLUTION

Lesson	Lesson Title	Highlights	TEKS*	Pacing**
4	**3 Pegs, N Discs** Modeling Using Sequences	Students are introduced to the process of mathematical modeling in this lesson, with each of the four activities representing a specific step in the process. Students are first presented with the Towers of Hanoi puzzle game and invited to play the game, observe patterns, and think about a mathematical question. Students then organize their information and pursue a given question by representing the patterns they notice using mathematical notation. The third step of the modeling process involves analyzing recursive and explicit formulas the students have generated and using these formulas to make predictions. Finally, students test their predictions and interpret their results. They then reflect on the modeling process and summarize what is involved in each phase.	**A.9D** A.12D	2
Suggested Placement of Learning Individually with Skills Practice or MATHia				1
End of Topic Assessment				1

Texas Algebra I: Module 1, Topic 2 Pacing Guide

180-Day Pacing

TEXAS MATH SOLUTION

1 Day Pacing = 45-minute Session

✱ This activity highlights a key term or concept that is essential to the learning goals of the lesson.

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: A.9A, A.12A, A.12D **LESSON 1** **Is There a Pattern Here?** GETTING STARTED ACTIVITY 1 ✱	**LESSON 1** continued ACTIVITY 2 ✱ TALK THE TALK ✱	**LEARNING INDIVIDUALLY** Skills Practice OR MATHia	TEKS: A.12A, A.12D **LESSON 2** **The Password Is... Operations!** GETTING STARTED ✱ ACTIVITY 1 ✱	**LESSON 2** continued ACTIVITY 2 ✱ TALK THE TALK
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
LEARNING INDIVIDUALLY Skills Practice OR MATHia	**MID-TOPIC ASSESSMENT**	TEKS: A.12C, A.12D **LESSON 3** **Did You Mean: *Recursion?*** GETTING STARTED ✱ ACTIVITY 1 ✱ ACTIVITY 2 ✱	**LESSON 3** continued ACTIVITY 3 ✱ TALK THE TALK ✱	**LEARNING INDIVIDUALLY** Skills Practice OR MATHia
Day 11	**Day 12**	**Day 13**	**Day 14**	
TEKS: **A.9D**, A.12D **LESSON 4** **3 Pegs, N Discs** GETTING STARTED ✱ ACTIVITY 1 ✱	**LESSON 4** continued ACTIVITY 2 ✱ ACTIVITY 3 ✱ TALK THE TALK ✱	**LEARNING INDIVIDUALLY** Skills Practice OR MATHia	**END OF TOPIC ASSESSMENT**	