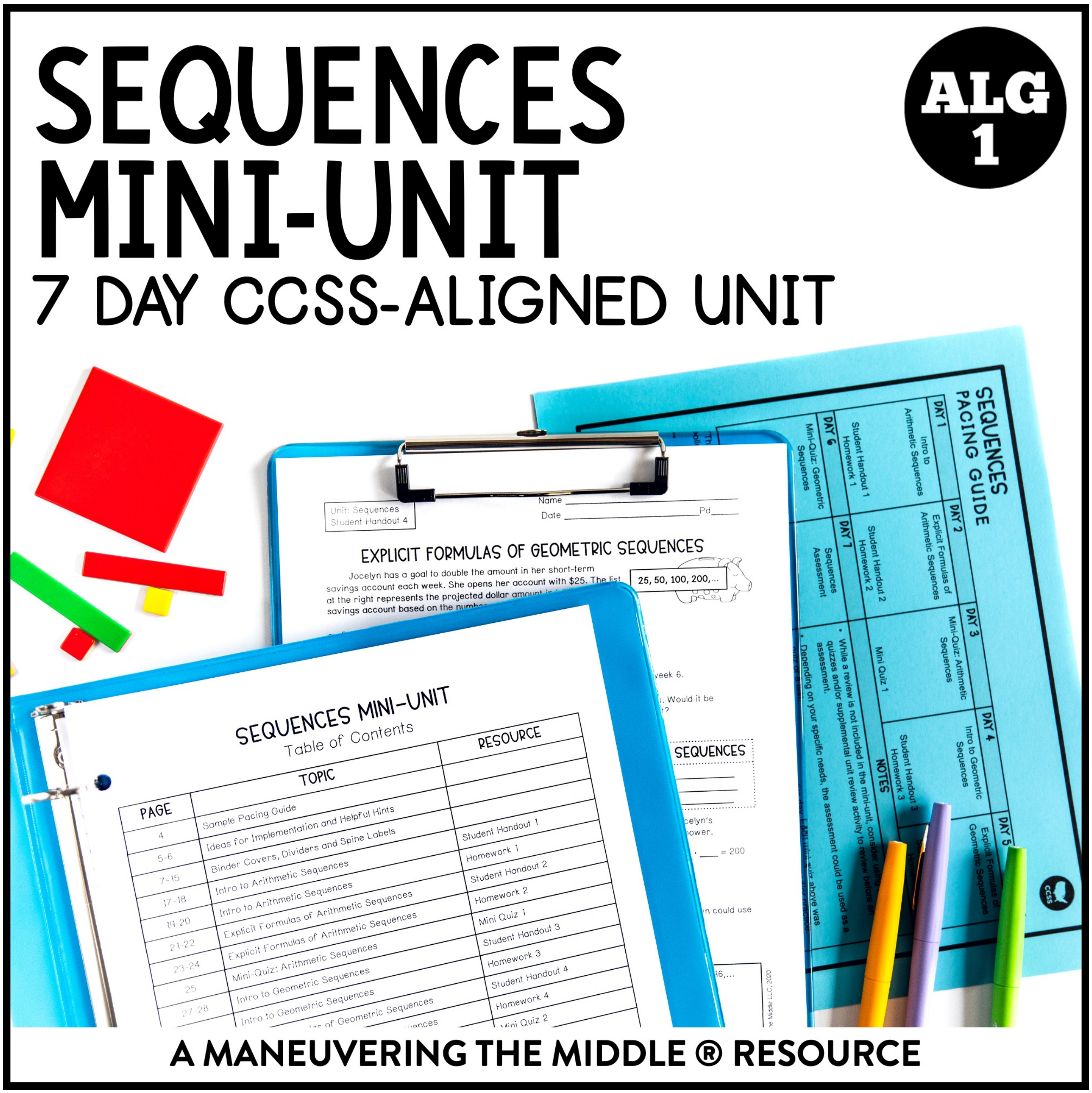
learning focus:

- ✓ recognize that sequences are functions
- ✓ create a graph to represent an arithmetic sequence
- ✓ write explicit and recursive formulas for geometric sequences



SEQUENCES

ALG 1

a 7 day CCSS-aligned unit
CCSS: F.IF.3, F.BF.2, F.LE.2

ready-to-go, scaffolded student materials

SEQUENCES MINI-UNIT

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A MANEUVERING THE MIDDLE® RESOURCE

SEQUENCES

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CCSS: F.IF.3, F.BF.2, F.LE.2

student friendly + real-world application

scaffolded concepts

Unit: Sequences
Student Handout 1

Name ______________________

Date ______________________ Pd_____

INTRO TO ARITHMETIC SEQUENCES

Marco is building towers out of dominos. He uses a pattern to determine the number of dominos to use at each level, as shown below. Use the tower illustration to complete the table for levels 1-3 and answer a-c.

LEVEL	1	2	3	4
# OF DOMINOS				

a. Write the number of dominos used at ea

b. Describe the pattern Marco is using to d number of dominos needed at each level.

c. Complete the table for level 4 and sketch should build.

The number of dominos at each level form number in the sequence is called a ______ using either ______________ notation or

SUBSCRIPT NOTATION

a_n

a_n is the term; n is the ______ ______

Using the domino example, answer question

1. What are the first three terms in the sequence?

a_1 = ______ a_2 = ______ a_3 = ______

3. Without sketching a model, could you fin

An ______________ sequence is a t described below.

ARITHMETIC SEQUENCE

- A sequence where t constant.
- This constant differ

Is the domino sequence an arithmetic seque

4. Determine if each sequence in the table is arithmetic. If so, record the common difference.

SEQUENCE	ARITHMETIC?	COMMON DIFFERENCE
a. 3, 5, 7, 9, 11, 13,...		
b. {50, 42, 34, 26,...}		
c. 3, 6, 12, 24, 48 ...		
d. {15, 20, 15, 20,...}		

5. Explain how you could find future terms in the arithmetic sequences.

6. If a_n represents a term, how could you represent the term before a_n?

One of the ways to represent an arithmetic sequence is by using a __________ formula. A recursive formula will define a starting term, ____ as well as a process for finding the n^{th} term of the sequence using the previous term. Label the parts of the formulas shown.

A recursive formula for an arithmetic s In your own words, describe what the f first five terms of the sequence.

For 7-10, use your knowledge of seque

7. A sequence is generated using $a_n = a_{n-1} + 7$ where $a_1 = 10$. Write the first four terms of the sequence.

8. Us miss show {86

10. The recursive formula for a seque where f(1) = 2.

a. List the first four terms of the seq

b. Create a graph of the arithmetic se represent the term number, n, and term, f(n). Describe the type of rel

c. What is the domain of the function

Unit: Sequences
Homework 1

Name ______________________

Date ______________________ Pd_____

INTRO TO ARITHMETIC SEQUENCES

Six sequences are given below. Use the sequences to answer questions 1-6. Show your work.

A. 12, 8, 4, 0, -4,...

B. 19, 26, 30, 33, 35,...

C. {30, 38, 46, 54,...}

D. {16, 26, 36, 46,...}

E. 81, 85, 89, 93, 97,...

F. {5, 20, 80, 320,...}

1. Which sequence(s) are NOT arithmetic?	2. Which sequence has a common difference of 4?	3. Find a_5 for sequence C.
4. Find the following for sequence D. f(2) = f(6) =	5. Which sequence has a negative value for the common difference?	6. If $a_n = a_{n-1} + d$ represents sequence C, what is the value of d?

Use your knowledge of sequences to answer questions 7-10.

7. A sequence is generated using $a_n = a_{n-1} - 5$ where $a_1 = 62$. Write the first five terms of the sequence.	8. The recursive formula of a sequence is shown below. What is the value of a_4? $a_1 = 16; \quad a_n = a_{n-1} + 6$

skill application

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streamline your planning process with unit overviews

✓ key vocabulary

✓ vertical alignment

sample pacing calendar

teaching ideas

SEQUENCES OVERVIEW

CCSS

STANDARDS

F.IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

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.

F.LE.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

BIG IDEAS

- Lists of numbers can represent sequences and there are different types of sequences based on their patterns.
- Recursive formulas can be v
- Sequences can also be repr

ESSENTIAL QUESTION

- How can you determine if a
- What type of function relatic
- When is it advantageous to limitations?
- When is it advantageous to

SEQUENCES PACING GUIDE

CCSS

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Intro to Arithmetic Sequences Student Handout 1 Homework 1	Explicit Formulas of Arithmetic Sequences Student Handout 2 Homework 2	Mini-Quiz: Arithmetic Sequences	Intro to Geometric Sequences Student Handout 3	Explicit Formulas of Geometric Sequences Student Handout 4

DAY 6	DAY 7
Mini-Quiz: Geometric Sequences Mini Quiz 2	Sequences Assessment Assessment

*This mini-unit was designed to be flexible based on t following as examples where individual adjustments i

- For teachers and/or districts who include arithmeti included within the other unit.
- For teachers and/or districts who include geometri included within the other unit.
- In each scenario above, specific questions from the needed.

SEQUENCES OVERVIEW

CCSS

TOPIC	TEACHING TIPS
Sequences	• Many aspects of sequence notation will be new for students, so it may be helpful to build in time to teach students how to "read" the math. For example, "a_n" is read aloud as "a sub n," etc.
Arithmetic Sequences	• Students can use alliteration to remember that generating terms in an arithmetic sequence involves adding a constant value between consecutive terms (even if the value added is a negative value). • Students can compare arithmetic sequences and their attributes to linear functions and relationships. As you work through examples, highlight that the domain of sequence functions will be integer numbers greater than or equal to 1. Therefore, sequences are a type of discrete linear functions.
Geometric Sequences	• Students can compare geometric sequences and their attributes to exponential functions and relationships. It may be helpful to note, though, that sequences represent discrete functions while many exponential relationships are continuous. Discuss how this impacts the domain of sequence functions as compared to continuous exponential functions. • If comparing geometric sequences to exponential functions, it may be helpful to point out that the common ratio in a geometric sequence can be negative unlike exponential functions. • As an extension, consider visiting this site (or another similar site) to allow students to visualize the graph of a geometric sequence with a negative common ratio and compare it to the graph of an exponential function. https://demonstrations.wolfram.com/PlotOfAGeometricSequenceAndItsPartialSums/

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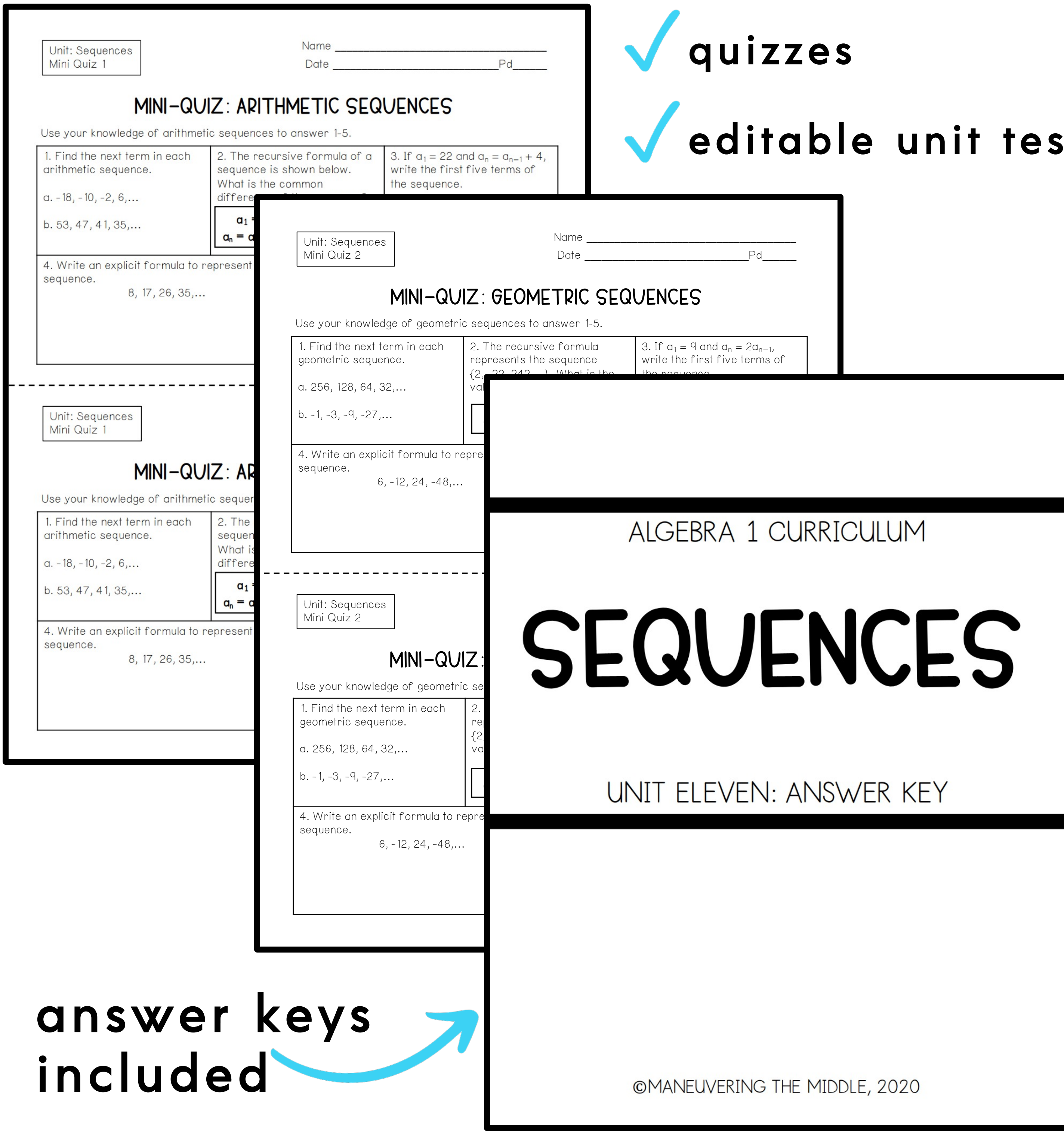
assessments + answer key

✓ quizzes
✓ editable unit test



answer keys included

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