



Park Hill School District

Building Successful Futures • Each Student • Every Day

Summer School 4th Grade Math Curriculum

Scope and Sequence:

Timeframe	Unit	Instructional Topics
24 Days	Summer School 4th Grade Math Curriculum: Expanding Multiplication The Elementary Curriculum, Grades K–5, is being released under the Creative Commons Attribution license (CC BY) that permits anyone to copy, revise, remix, and distribute the work, as long as SFUSD is credited for the original creation.	Topic 1: Introduction to Being a Mathematical Learner Topic 2: Properties of Operations in Multiplication Topic 3: Patterns in Multiplication Topic 4: Properties and Patterns in Multiplication

2019 Summer School 4th Grade Math Unit: Expanding Multiplication

Subject: Math

Grade: 4th Grade Summer School

Name of Unit: Expanding Multiplication

Length of Unit: 24 days

Overview of Unit:

The first week of this unit sets the tone for the math classroom for the summer. The lessons in this unit help to establish math class procedures and norms that help develop a growth mindset and equitable participation. Learners will explore math routines including: use of manipulatives, games, and math notebooks.

In this unit, students use the properties of operations and patterns in multiplication as strategies to efficiently multiply numbers. First students use the distributive and associative properties to determine unknown multiplication facts using more accessible facts using arrays and the multiplication chart. Then students explore patterns that appear when multiplying with a focus on zero and odd/even numbers. Finally, students use the associative property in problem contexts to multiply three numbers in varying orders. They decompose and rearrange the order of factors in order to more efficiently multiply numbers.

In Topic 1: Introduction to Being a Mathematical Learner

Teachers will establish math class procedures and norms that help develop a growth mindset and equitable participation. This week will also focus on setting up math routines like using manipulatives, games, math notebooks and math talks.

In Topic 2: Properties of Operations in Multiplication

Students use the properties of operations to build unknown facts using more accessible multiplication facts (such as 1s, 2s, and 5s).

In Topic 3: Patterns in Multiplication

Students explore patterns that appear when multiplying certain numbers by other numbers, with a particular focus on zero and odd/even numbers.

In Topic 4: Properties and Patterns in Multiplication

Relationships between numbers in multiplication can be described using number patterns and interpreted and expressed in multiple ways by applying properties of operations and mathematical strategies.

Priority Standards for the Unit:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
- 4.RA.A Use the four operations with whole numbers to solve problems.
- 4.RA.C Generate and analyze patterns.

Supporting Standards for the Unit:

- 4.NBT.A.6 Multiply a whole digit of up to four digits by a one-digit whole number and multiply two two-digit numbers, and justify the solution.
- 4.RA.A.1 Multiply or divide to solve problems involving a multiplicative comparison.
- 4.RA.C.6 Generate a number pattern that follows a given rule.

Getting Ready for the Unit:

- Read [Unit 3.0: Introduction](#)
- Read [Unit 3.5: Expanding Multiplication](#)
- Watch Graham Fletchers [Subitizing to Foster Multiplication Video](#)

Resources/ Supplies:

- Spiral notebook (1 per student)
- 2 pocket folder (1 per student)
- Pencils
- Notebook paper (5 packages of wide lined)
- Highlighters (1 per student)
- Post-it notes
- Chart paper
- Markers (for chart paper)

New:

- Tape
- Linking cubes
- Playing cards
- Tape measure and/or rulers
- Paper plates (1 package per room)
- Counters (should have in enVision)
- Tiles (should have in enVision)
- Base 10 blocks (should have in enVision)

Essential Questions:

1. How can I use what I know about the properties of operations to multiply by 6, 7, 8, and 9?
2. How can I use what I know about the properties of operations to decompose numbers?
3. How can I use patterns in multiplication to improve my fluency when multiplying numbers?

Enduring Understanding/ Big Ideas:

1. Students go deeper into multiplication concepts. They build on their understanding of the properties of operations to now focus on multiplying by 6, 7, 8, and 9.
2. Students apply the commutative, distributive, and associative properties as strategies for finding products as they deepen their understanding of number decomposition and recomposition.
3. Students also observe, explain, and generalize patterns in multiplication, helping them to work towards fluency with multiplication.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.NBT.A	place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.	Use Perform	Apply Apply	1 3
4.RA.A	the four operations with whole numbers to solve problems.	Use Solve	Apply Create	1 3
4.RA.C	patterns	Generate Analyze	Create Analyze	3 3

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
<ul style="list-style-type: none">● Understand● Perform● Solve● Generate● Analyze	<ul style="list-style-type: none">● Operation● Place value● Multiply● Whole numbers● Patterns● Multi-digit

Topic 1: Introduction to Being a Mathematical Learner

Engaging Experience 1

Title: Introduction to Being a Mathematical Learner

Suggested Length of Time: 5 days

Standards Addressed

Priority: Mathematical Practices

Supporting:

MP1 Make sense of problems and persevere in solving them.

MP2 Reason abstractly and quantitatively.

MP3 Construct viable arguments and critique the reasoning of others.

MP4 Model with mathematics.

MP5 Use appropriate tools strategically.

MP6 Attend to precision.

MP7 Look for and make use of structure.

MP8 Look for and express regularity in repeated reasoning.

Detailed Description/Instructions:

Teachers will establish math class procedures and norms that help develop a growth mindset and equitable participation. This week will also focus on setting up math routines like using manipulatives, games, math notebooks and math talks.

Bloom's Level: Understand

Webb's DOK: 3

Topic 2: Properties of Operations in Multiplication

Engaging Experience 1

Title: Properties of Operations in Multiplication

Suggested Length of Time: 6 days

Standards Addressed

Priority:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.

Supporting:

- 4.NBT.A.6 Multiply a whole digit of up to four digits by a one-digit whole number and multiply two two-digit numbers, and justify the solution.

Detailed Description/Instructions:

Students use the properties of operations to build unknown facts using more accessible multiplication facts (such as 1s, 2s, and 5s).

Bloom's Level: Apply

Webb's DOK: 1, 3

Topic 3: Patterns in Multiplication

Engaging Experience 1

Title: Patterns in Multiplication

Suggested Length of Time: 4 days

Standards Addressed

Priority:

- 4.RA.C Generate and analyze patterns.

Supporting:

- 4.RA.C.6 Generate a number pattern that follows a given rule.

Detailed Description/Instructions:

Students explore patterns that appear when multiplying certain numbers by other numbers, with a particular focus on zero and odd/even numbers.

Bloom's Level: Create, Analyze

Webb's DOK: 3, 3

Topic 4: Properties and Patterns in Multiplication

Engaging Experience 1

Title: Properties and Patterns in Multiplication

Suggested Length of Time: 5 days

Standards Addressed

Priority:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
- 4.RA.A Use the four operations with whole numbers to solve problems.
- 4.RA.C Generate and analyze patterns.

Supporting:

- 4.NBT.A.6 Multiply a whole digit of up to four digits by a one-digit whole number and multiply two two-digit numbers, and justify the solution.
- 4.RA.A.1 Multiply or divide to solve problems involving a multiplicative comparison.
- 4.RA.C.6 Generate a number pattern that follows a given rule.

Detailed Description/Instructions:

Relationships between numbers in multiplication can be described using number patterns and interpreted and expressed in multiple ways by applying properties of operations and mathematical strategies.

Bloom's Level: Apply, Create, Analyze

Webb's DOK: 1, 3

Engaging Scenario

Engaging Scenario (An Engaging Scenario is a culminating activity that includes the following components: situation, challenge, specific roles, audience, product or performance.)

Situation: Students use the properties and patterns of multiplication as they solve problems about earning raffle tickets.

Class 201	Class 202	Class 203
6 students each earned 8 tickets in one day.	4 students each earned 6 tickets each day for 2 days.	2 students each earned 4 tickets each day for 6 days.

Challenge: One student figured out that each class earned the same number of tickets, but the principal thought that couldn't be true. Who is right?

Specific Roles: Mathematicians

Audience: Classmates

Product/Performance:

Show how you know using pictures, numbers, words, and/or equation. Write a complete sentence answer.

Extension:

In Class 301, Marshaun earned the same number of tickets each day for seven days. He earned an even number of tickets each day. He counted his tickets and determined he had 49 total. Anjali used multiplication to find Marshaun's total and got 56 tickets. Who is right?

Explain or show how you know using pictures, numbers, words, and/or equations. Write a complete sentence answer.