Unit 10 Reveal Grade 3

Content Area: **Math**
Course(s):
Time Period: **April**
Length: **2 weeks**
Status: **Published**

Unit Overview

UNIT 10 PLANNER

Use Properties and Strategies to Multiply and Divide

PACING: 10 days

LESSON		MATH OBJECTIVE	LANGUAGE OBJECTIVE	SOCIAL AND EMOTIONAL LEARNING OBJECTIVE	LESSON	KEY VOCABULARY
Unit Opener	IgNITE! Which Option Is Better? Students construct viable arguments and critique the reasoning of others as they decide which is the better option for earning money doing chores.					
						Math Terms
10-1	Patterns with Multiples of 10	Students use basic facts, place-value understanding, and patterns to determine the product of a 1-digit factor and a multiple of 10.	Students list three strategies for multiplication using *and*.	Students set a focused mathematical goal and make a plan for achieving that goal.	10-1	multiple
10-2	More Multiplication Patterns	Students identify and explain patterns in the multiplication fact table.	Students explain commonalities between patterns by using the phrase *Some of these....*	Students engage in active listening and work collaboratively with a partner to complete mathematical tasks.	10-2	factor pattern product
10-3	Understand the Associative Property	Students explain that three factors can be grouped in different ways without changing the product.	Students explain an impossible mathematical outcome with *does not*.	Students identify personal traits that make them good students, peers, and math learners.	10-3	factor product
Math Probe	Multiplication Equations Apply understanding of equality and the operation of multiplication when determining the missing product in an equation.					
10-4	Two-Step Problems Involving Multiplication and Division	Students make sense of a two-step word problem and use multiplication and division to solve.	Students explain more than one way to solve two-step multiplication problems using the verb *use*.	Students reflect on and describe the logic and reasoning used to make a mathematical decision or conclusion.	10-4	bar diagram unknown
10-5	Solve Two-Step Problems	Students make sense of a two-step word problem and determine which operations are needed to solve the problem.	Students offer a justification for using a model to solve a problem by using *to* + verb.	Students exchange ideas for mathematical problem-solving with a peer, listening attentively and providing thoughtful and constructive feedback.	10-5	bar diagram unknown
10-6	Explain the Reasonableness of a Solution	Students use mental computation and estimation strategies to assess the reasonableness of answers to a two-step problem.	Students articulate numerical estimations by using the expression *about*.	Students use prior knowledge and new understanding of mathematical concepts to complete a task, building stronger self-efficacy.	10-6	estimate
Unit Review						
Fluency Practice						
Performance Task						
Unit Assessment						

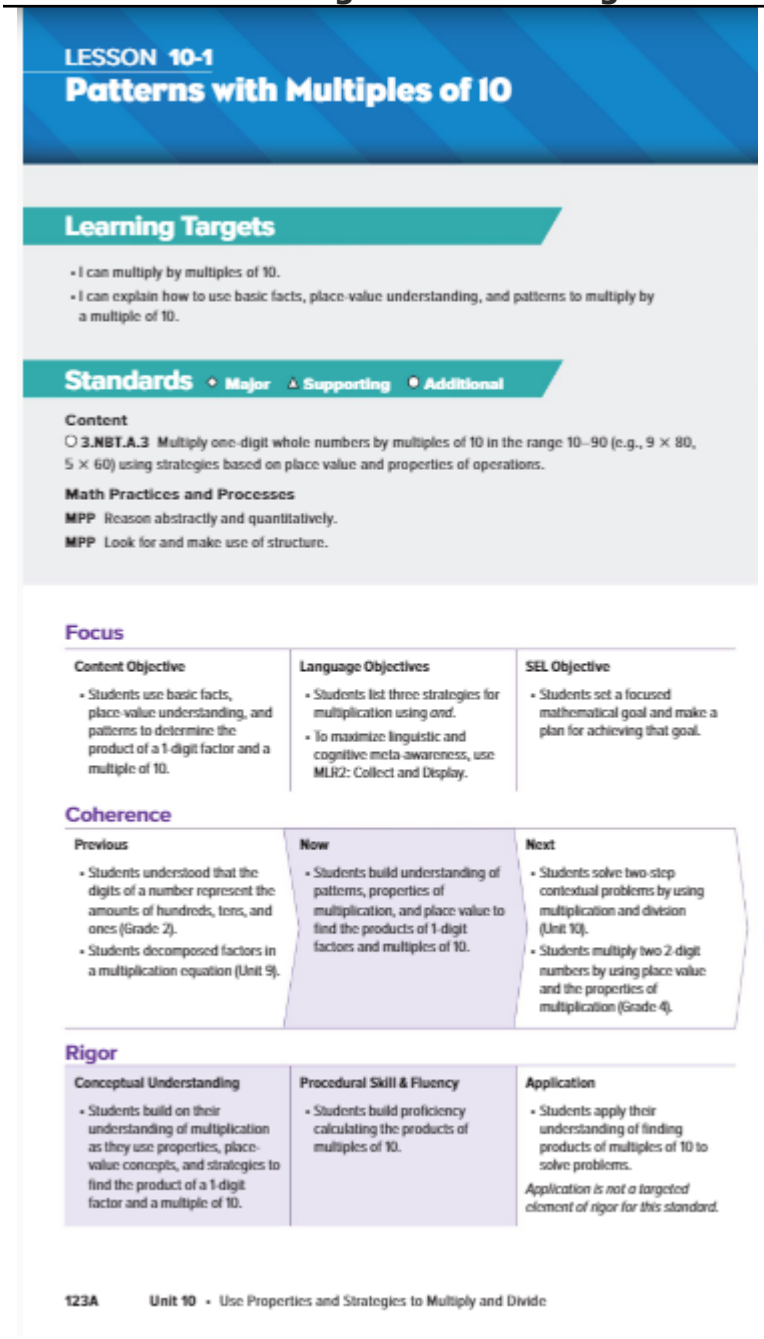
Enduring Understandings

See Above

Essential Questions

See Above

Instructional Strategies and Learning Activities



LESSON 10-1

Patterns with Multiples of 10

Learning Targets

- I can multiply by multiples of 10.
- I can explain how to use basic facts, place-value understanding, and patterns to multiply by a multiple of 10.

Standards ◆ Major ▲ Supporting ○ Additional

Content

○ **3.NBT.A.3** Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Math Practices and Processes

MPP Reason abstractly and quantitatively.

MPP Look for and make use of structure.

Focus

Content Objective	Language Objectives	SEL Objective
• Students use basic facts, place-value understanding, and patterns to determine the product of a 1-digit factor and a multiple of 10.	• Students list three strategies for multiplication using *and*. • To maximize linguistic and cognitive meta-awareness, use MLR2: Collect and Display.	• Students set a focused mathematical goal and make a plan for achieving that goal.

Coherence

Previous	Now	Next
• Students understood that the digits of a number represent the amounts of hundreds, tens, and ones (Grade 2). • Students decomposed factors in a multiplication equation (Unit 9).	• Students build understanding of patterns, properties of multiplication, and place value to find the products of 1-digit factors and multiples of 10.	• Students solve two-step contextual problems by using multiplication and division (Unit 10). • Students multiply two 2-digit numbers by using place value and the properties of multiplication (Grade 4).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build on their understanding of multiplication as they use properties, place-value concepts, and strategies to find the product of a 1-digit factor and a multiple of 10.	• Students build proficiency calculating the products of multiples of 10.	• Students apply their understanding of finding products of multiples of 10 to solve problems. *Application is not a targeted element of rigor for this standard.*

LESSON 10-2

More Multiplication Patterns

Learning Targets

- I can identify patterns in the multiplication fact table.
- I can explain how to identify patterns in the multiplication fact table.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **3.OA.D.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

Math Practices and Processes

MPP Construct viable arguments and critique the reasoning of others.

MPP Look for and make use of structure.

Focus

Content Objective	Language Objectives	SEL Objective
• Students identify and explain patterns in the multiplication fact table.	• Students explain commonalities between patterns by using the phrase *Some of these....* • To optimize output and maximize linguistic and cognitive meta-awareness, use MLR3: Critique, Correct, and Clarify.	• Students engage in active listening and work collaboratively with a partner to complete mathematical tasks.

Coherence

Previous	Now	Next
• Students used multiplication strategies based on properties of operations to recall basic facts (Unit 4). • Students multiplied 1-digit whole numbers by multiples of 10 by using strategies based on place value and properties of operations (Unit 10).	• Students extend their understanding of multiplication by identifying patterns and relationships between factors and products. • Students use patterns to determine whether a product will be even or odd.	• Students apply multiplication to solve problems (Unit 10). • Students generate, extend, and describe number patterns that follow a given rule (Grade 4).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students extend their understanding of multiplication as they examine and identify patterns that show multiplicative relationships.	• Students build fluency with basic facts by identifying patterns between factors and products. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of patterns that exist between factors and products to solve problems. *Application is not a targeted element of rigor for this standard.*

LESSON 10-3

Understand the Associative Property

Learning Targets

- I can group three factors in different ways to multiply.
- I can explain how grouping factors can make it easier to multiply three numbers.

Standards ◆ Major ▲ Supporting ○ Additional

Content

◇ **3.OA.B.5** Apply properties of operations as strategies to multiply and divide. Examples: *If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property).*

Math Practices and Processes

MPP Reason abstractly and quantitatively.

MPP Construct viable arguments and critique the reasoning of others.

Focus

Content Objective	Language Objectives	SEL Objective
• Students explain that three factors can be grouped in different ways without changing the product.	• Students explain an impossible mathematical outcome with *does not*. • To optimize output, use MLR5: Co-Craft Problems.	• Students identify personal traits that make them good students, peers, and math learners.

Coherence

Previous	Now	Next
• Students understand that the order in which two factors are multiplied does not change the product (Unit 3). • Students decomposed factors to find a product (Unit 5).	• Students extend their understanding of multiplication to explain why the order in which three factors are multiplied does not change the product.	• Students apply properties of multiplication to solve two-step word problems (Unit 10). • Students multiply two 2-digit whole numbers, using properties of multiplication (Grade 4).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students understand that multiplying three factors in any order always results in the same product (Associative Property of Multiplication).	• Students build fluency with multiplying three factors. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students multiply three factors to solve contextual problems. *Application is not a targeted element of rigor for this standard.*

LESSON 10-4

Two-Step Problems Involving Multiplication and Division

Learning Targets

- I can solve two-step word problems involving multiplication and division.
- I can explain how to use representations and equations to solve two-step word problems.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **3.OA.D.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Math Practices and Processes

MPP Make sense of problems and persevere in solving them.

MPP Reason abstractly and quantitatively.

Focus

Content Objective	Language Objectives	SEL Objective
• Students make sense of a two-step word problem and use multiplication and division to solve.	• Students explain more than one way to solve two-step multiplication problems by using the verb use. • To optimize output, use MLR8: Discussion Supports.	• Students reflect on and describe the logic and reasoning used to make a mathematical decision or conclusion.

Coherence

Previous	Now	Next
• Students solved two-step addition and subtraction word problems (Unit 2). • Students solved word problems with multiplication (Unit 3).	• Students solve two-step word problems involving multiplication and division.	• Students solve two-step word problems with any operation (Unit 10). • Students solve multi-step problems with any operation and interpret remainders (Grade 4).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build on their understanding of multiplication and division strategies to solve two-step word problems.	• Students build proficiency writing multiplication and division equations and representing unknowns. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of multiplication and division to solve two-step word problems with real-world contexts.

LESSON 10-5

Solve Two-Step Problems

Learning Targets

- I can solve two-step word problems involving any of the four operations.
- I can explain how to use representations and equations to solve two-step word problems.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **3.OA.D.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Math Practices and Processes

MPP Make sense of problems and persevere in solving them.

MPP Use appropriate tools strategically.

Focus

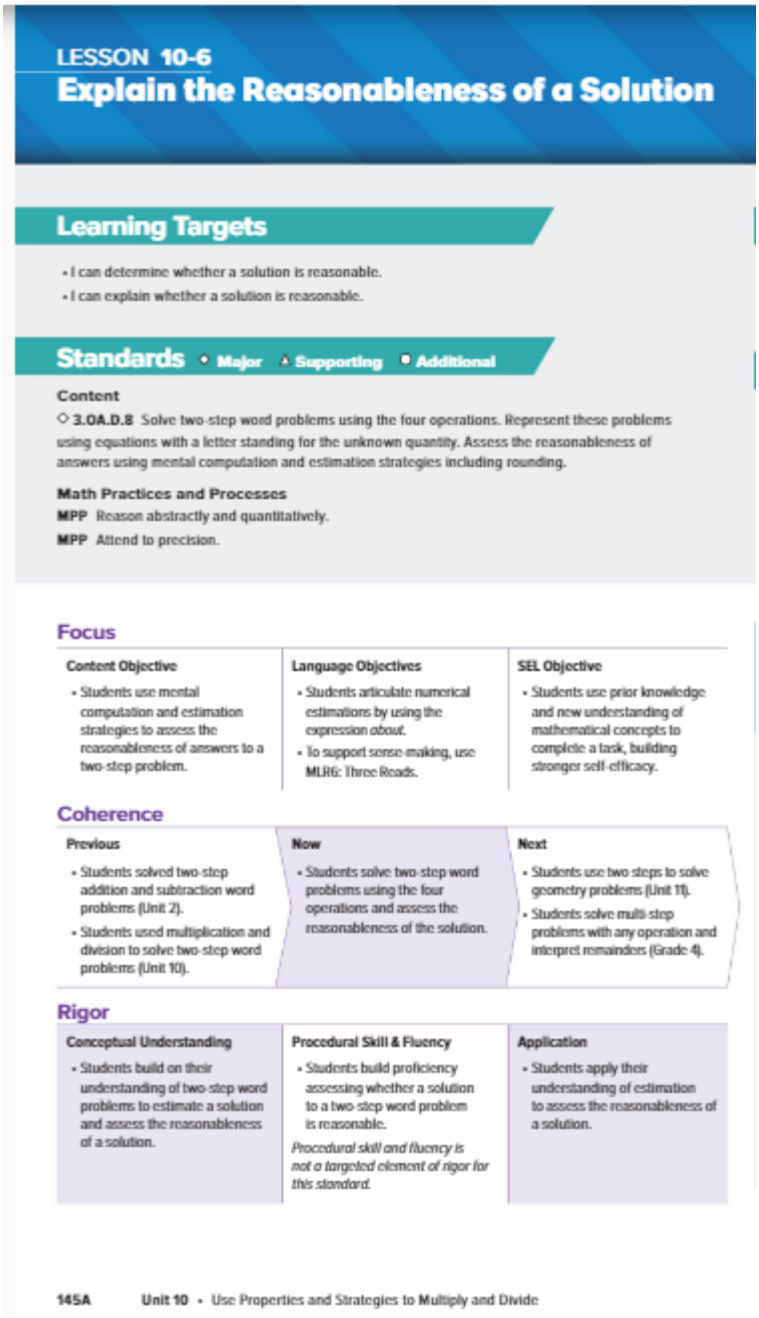
Content Objective	Language Objectives	SEL Objective
• Students make sense of a two-step word problem and determine which operations are needed to solve the problem.	• Students offer a justification for using a model to solve a problem by using *to* + verb. • To optimize output, use MLR1: Stronger and Clearer Each Time.	• Students exchange ideas for mathematical problem-solving with a peer, listening attentively and providing thoughtful and constructive feedback.

Coherence

Previous	Now	Next
• Students solved two-step addition and subtraction word problems (Unit 2). • Students used multiplication and division to solve two-step word problems (Unit 10).	• Students solve two-step word problems by using the four operations. • Students use two equations with unknowns to solve two-step word problems.	• Students use two steps to solve geometry problems (Unit 11). • Students solve multi-step problems with any operation and interpret remainders (Grade 4).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build on their understanding of two-step word problems by identifying the operations needed to solve the problem.	• Students build proficiency solving two-step word problems that require using multiple operations to solve. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of addition, subtraction, multiplication, and division to solve two-step word problems with real-world contexts.



LESSON 10-6

Explain the Reasonableness of a Solution

Learning Targets

- I can determine whether a solution is reasonable.
- I can explain whether a solution is reasonable.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **3.OA.D.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Math Practices and Processes

MPP Reason abstractly and quantitatively.

MPP Attend to precision.

Focus

Content Objective	Language Objectives	SEL Objective
• Students use mental computation and estimation strategies to assess the reasonableness of answers to a two-step problem.	• Students articulate numerical estimations by using the expression *about*. • To support sense-making, use MLR6: Three Reads.	• Students use prior knowledge and new understanding of mathematical concepts to complete a task, building stronger self-efficacy.

Coherence

Previous	Now	Next
• Students solved two-step addition and subtraction word problems (Unit 2). • Students used multiplication and division to solve two-step word problems (Unit 10).	• Students solve two-step word problems using the four operations and assess the reasonableness of the solution.	• Students use two steps to solve geometry problems (Unit 11). • Students solve multi-step problems with any operation and interpret remainders (Grade 4).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build on their understanding of two-step word problems to estimate a solution and assess the reasonableness of a solution.	• Students build proficiency assessing whether a solution to a two-step word problem is reasonable. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of estimation to assess the reasonableness of a solution.

Integration of Career Readiness, Life Literacies and Key Skills

9.1.2.CR.1	Recognize ways to volunteer in the classroom, school and community.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
9.1.2.CR.2	List ways to give back, including making donations, volunteering, and starting a business.
9.1.2. FI.1	Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).

9.4.2.CT.2	Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.1.2.FP.1	Explain how emotions influence whether a person spends or saves.
9.1.2.FP.3	Identify the factors that influence people to spend or save (e.g., commercials, family, culture, society).
9.4.2.DC.3	Explain how to be safe online and follow safe practices when using the internet (e.g., 8.1.2.NI.3, 8.1.2.NI.4).
9.1.2.PB.1	Determine various ways to save and places in the local community that help people save and accumulate money over time.
9.1.2.PB.2	Explain why an individual would choose to save money.
9.4.2.DC.6	Identify respectful and responsible ways to communicate in digital environments.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change (e.g., 6.3.2.CivicsPD.1).
9.4.2.TL.2	Create a document using a word processing application.
9.4.2.TL.5	Describe the difference between real and virtual experiences.
9.4.2.TL.6	Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
9.4.2.TL.7	Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts (e.g., W.2.6., 8.2.2.ED.2).

Technology and Design Integration

8.1.2.CS.1	Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.3	Identify and describe patterns in data visualizations.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.1.2.AP.5	Describe a program's sequence of events, goals, and expected outcomes.
8.2.2.ITH.4	Identify how various tools reduce work and improve daily tasks.

Interdisciplinary Connections

LA.RI.3.1	Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
LA.RI.3.2	Determine the main idea of a text; recount the key details and explain how they support the main idea.
LA.RI.3.3	Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
LA.RI.3.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
LA.RI.3.5	Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.
LA.RI.3.6	Distinguish their own point of view from that of the author of a text.

LA.RI.3.8	Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text.
LA.RI.3.9	Compare, contrast and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) the most important points and key details presented in two texts on the same topic.
LA.RI.3.10	By the end of the year, read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.W.3.4	With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LA.SL.3.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
LA.L.3.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:



-

Modifications and Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

Additional Benchmarks used in this unit:

Reveal Unit assessments

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

Teacher observation

Checklists

Questioning and Discussion

Quizzes

Summative Assessments

summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

End of Unit assessments

Instructional Materials

See above

Standards

MA.3.OA.B.5	Apply properties of operations as strategies to multiply and divide.
MA.3.OA.D.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
MA.3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
MA.3.NBT.A.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.