



Park Hill School District

Building Successful Futures • Each Student • Every Day

4th Grade Math Curriculum

Scope and Sequence

Quarter	Instructional Units
1	Unit 1: Math Is... Unit 2: Generalize Place Value Structure Unit 3: Addition and Subtraction Strategies and Algorithms Unit 4: Multiplication as Comparison (Finish before PTC-Report grades in Q2)
2	Unit 5: Numbers and Number Patterns Unit 6: Multiplication Strategies with Multi-Digit Numbers Unit 7: Division Strategies with Multi-Digit Dividends and 1-Digit Divisors (Finish in January-Report grades in Q3)
3	Unit 8: Fraction Equivalence Unit 9: Addition and Subtraction Meanings and Strategies with Fractions Unit 10: Addition and Subtraction Strategies with Mixed Numbers Unit 11: Multiply Fractions by Whole Numbers
4	Unit 12: Decimal Fractions Unit 13: Units of Measurement and Data Unit 14: Geometric Figures

Curriculum Revision Tracking

Spring 2026: Revised Unit 1. Updated for clarity, pacing and standards reporting to fit the 2026-2027 calendar. Updated for accessibility.

Unit 1: Math Is

Subject: Math

Grade: 4th Grade

Name of Unit: Math Is

Length of Unit: 8 days

Overview of Unit: This unit replaces the *Math Is* unit found in your Teacher's Manual, Volume 1. Please use this one.

This unit aims to help students and teachers see math as problem-solving strategies rather than just computation. We encourage students to see that math is part of our daily lives and shows up in almost every activity. It is important that students see themselves as skilled doers of math, so we want to help them understand that math is much more than carrying out operations and calculations. Rather, doing math is more accurately making sense of and solving problems and finding relationships and patterns among quantities and numbers. Students define a productive and positive classroom environment where all students can:

- Share ideas and collaborate freely
- Find success in math and become doers of mathematics
- Apply their math thinking and practices to problem solving
- Take ownership of their personal learning journey
- Become the creative problem solvers of tomorrow

Getting Ready for the Unit:

- Read through the 5 EEs to understand what you will be doing and why.
- Preview the [Jot Thoughts](#) protocol for EE 1.
- Preview the [Canva Slides](#) for the [Learning Pit Lesson](#), Print Sudoku Puzzles ([4x4](#), [6x6](#)), and the [Famous Failures](#) article for EE2.
- Print the [5 Math Norms](#) for EE 3 and decide where you will hang them after the lesson for reference all year. Review the [Gallery Walk with Docent protocol](#).
- For EE 4 you will be setting up expectations for how your students will use ALEKS Adventure. Read through that EE and practice finding the student view in ALEKS Adventure before doing this lesson (directions in EE 4).
- Print Greg Tang's Six Step Problem Solving [Model](#) for EE 5.

Essential Questions:

- What does it mean to do math?
- What is my math identity?

Enduring Understandings:

- Wise learners value the struggle of learning new content and skills.
- Math communities support each other through struggle.
- Errors are gifts that promote discussion and help us to learn.

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
struggle community identity norm strategy representation task	mathematician

Engaging Experience 1

Teaching Point: *Today I want to teach you that we all have identities in our heads. We want to be aware of our math identities and how they can work with other's math identities as we become a community of mathematicians who support each other through our struggles.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to start by having your students draw a picture of what a mathematician looks like. It will be interesting to note if the drawings look varied like the students or tend to look one way, such as adult men. After students draw, have them share their pictures and their thinking behind them. Next, do a brainstorming session using a structure such as [Jot Thoughts](#) to the prompt “What do we need in our math community?” Some possible answers might include:

- *Our math tools need to be available and organized.*
- *We need to encourage each other when we get stuck.*
- *We need to encourage each other to follow through with action steps to reach our goals.*
- *We can coach each other without giving the answer.*

Once groups have had an opportunity to organize their notes, have a class discussion to come up with the class's Math Community Agreements.

Another way to do this after students draw a picture of what a mathematician looks like, do a quick Gallery Walk and create a list of similarities and differences. Then, write on a piece of chart paper, “In our math community, we promise to...” As a class, brainstorm ways to support each other (e.g, encouraging words, explaining different ways, celebrating mistakes as learning opportunities). Turn this into a classroom **Math Community Promise** and display it.

After this has been created, you can provide students with a challenging (but accessible) math problem, such as the Work Together problem on page 9 of the student edition workbook and coaching prompts, such as: “I see what you're trying - let's think it through together.” “Can you explain what you're thinking?” “Let's try breaking this down step by step.” Students should try to use these as they work in pairs to solve the problem.

At the end, you can ask students to write on a sticky note one thing they learned about being part of a math community and add it to their **Math Community Promise**.

Suggestions: *Relationships are at the heart of all instruction. We know that students learn best when we work to build a community of learners because it creates a low-stress, high-trust environment. The activity in this engaging experience is meant to help your students work to build the relationships that will enable them to work together as mathematicians. We strongly encourage you to post and refer often to the chart that you create with your students throughout this unit and the school year.*

Engaging Experience 2

Teaching Point: *Today I want to teach you that wise mathematicians value struggle and give you an opportunity to experience some math struggles.*

Suggested Length of Time: 2 days

Detailed Description/Instructions:

One way to do this is to use this lesson on James Nottingham's [The Learning Pit](#).

Another way to do this is to share stories of famous people who struggled, such as Colonel Sanders, J.K. Rowling, Stephen Curry, Michael Jordan, etc. You can get ideas from the article "[Famous Failures For Kids - And How to Teach Them Mindset](#)." Following a discussion of the story(ies), review the Math Norm "**Talk about each other's thinking.**" Tell students you are going to put them in random groups of 3 and give them a task to work on.

To get students into random groups of 3, use a deck of playing cards. Ahead of time, take cards out of the deck so that there are only 3 of each type of card possible. Let students pick a card. Let students know that the expectation of a supportive math community is to be happy to work with anyone and never boo or cheer when they learn who is in their group, because that would hurt people's feelings. You might want to refer to the work done as a class in EE 2 before beginning the task.

Decide where each student group will work. Peter Liljedahl's work in *Building Thinking Classrooms* talks about the cognitive value of having students stand and work on vertical surfaces. If you wanted to try this, you could hang chart paper or 11 x 17 sheets around the room for each group. If you don't want to try vertical work, you could have students work in designated spots around the room.

Have each group start by sharing the pen and writing their names. Each person should take a turn writing someone else's name, passing the pen. After that as they start working, they should share the pen every 2-3 minutes. Some possible tasks you could give students are linked below.

Once students are finished, debrief the math and let students share their work. Debrief how students felt and how they were able to support each other. Let students know that they will be doing something similar tomorrow with another group of 3.

Options for tasks: [Answers Are](#), [Chessboard](#), [Ice Cream Cones](#)

Suggestions: *Research shows that productive struggle is necessary for our brains to learn new content. It is the grappling of new ideas that makes the new learning "stick" in our long term memories. The goal of this lesson is to help your students understand that struggling with something is good because it grows our brains. You can learn more about how productive struggle can help our students learn from the [What is Productive Struggle?](#) article.*

Engaging Experience 3

Teaching Point: *Today I want to teach you about the Math Norms we will use this year in our math community.*

Suggested Length of Time: 2 days

Detailed Description/Instructions:

One way to do this is to start by writing a simple mistake on the board such as $4 \times 3 = 7$. Ask “What do you notice?” “What do you wonder?” Discuss why mistakes help us learn. Introduce the math norm: **Errors are gifts that promote discussion**. You can do this by creating a 2-column chart with the norm on the left side and what it looks like and sounds like on the right side.

Next, present an open-ended problem such as: *Using some digits 1 to 9, at most one time each, create two three-digit numbers to make a difference that is as close to 329 as possible.*

Students can use vertical surfaces in groups to work on their solution. Groups that finish “early” can be encouraged to find additional solutions. As you walk around the different groups, help reinforce the first math norm introduced. When all students have finished finding their solution, do a [Gallery Walk with Docent Protocol](#) to debrief the activity and see the different solutions. Prior to the Gallery Walk, introduce the math norms with 2-column charts: **Use multiple strategies and multiple representations**, and **Ask questions until ideas make sense**. As students move through the Gallery Walk, reinforce the math norms from this engaging experience and EE2 by encouraging students to talk about each other’s thinking and ask questions of each other and practice the math norms. Make a point of valuing all of the different work displayed and stress the final math norm: **Answers are important, but they are not the math**.

Another way to do this is to let your students know they are going to be math detectives! Their mission is to uncover the habits that make great mathematicians successful. Say to the students, “*A sum is larger than 700 and has two addends that use the digits 1 to 9, at most one time each. What could the equation be?*” Have students share different strategies to solve (drawings, equations, guessing and checking). Ask, “*Why was it helpful to hear different ways to solve this?*”

Introduce the idea that good mathematicians use norms to help them think, talk, and learn. Then, divide students into small groups and give each a [Math Mystery Envelope](#) with 4 cue cards. Each card should have:

1. A strategy (e.g., drawing, number sentence, model)
2. A mistake
3. A question (e.g., “What do you think of this strategy?”)
4. A partial explanation of an answer

Student groups work together to make sense of the clues, correct errors, and explain their thinking.

After the groups have had time to complete the task, gather together. Introduce one math norm at a time, linking it to what students experienced today. End by having students reflect: “*Which norm helped you the most today? Why?*”

Suggestions: *Print the Math Norms to have them handy for this lesson then designate*

a space in your classroom where the Math Norms will be posted all year. You may also refer to the poster you created during EEI about your math community.

Engaging Experience 4

Teaching Point: *Today I am going to show you how to use ALEKS Adventure as a tool to grow your math thinking.*

Suggested length of Time: 2 days

Detailed Description/Instructions:

One way to do this is to first, get students started in their ALEKS Adventure notebook by revisiting the Math Norm “**Answers are important, but they are not the math.**” This norm will help give the rationale for the expectation you are going to set, that students write down their thinking and their work as they do ALEKS Adventure lessons. Use this example of an [ALEKS Adventure notebook](#) to show your students how they might keep track of their work in their notebooks. Student notebook work should include working out the problems. They can also include notes about how to do things, reflections, and goals. **On the second day**, have students do their Initial Knowledge Check, reinforcing the use of their notebooks to show their work.

Another way to do this is to use the ALEKS Adventure student view to help students set up their work space in their notebooks as shown in the ALEKS Adventure student sample linked above for day one and still have students use day 2 to complete their Initial Knowledge Check, using their notebooks to show their work. To do this follow these steps:

1. On the top drop bar menu in ALEKS Adventure, click on your class
2. Click “Class tools” located towards the top right hand corner (in Classic view or along the top in New ALEKS view).
3. Click “Student view”
4. Click the “Enter student view” button.

Suggestions: *Showing students a set way for them to keep track of their learning in a notebook will facilitate the students being able to refer to their learning as they progress through it. In addition, students showing their work boosts [their mathematical learning](#). Click on [Leveling Up Learning with the ALEKS Notebook: A Teacher’s Guide](#) for ideas on how to make using ALEKS Adventure Notebooks more meaningful with students. ALEKS Adventure Notebooks will also provide a means for the teacher to figure out misconceptions that students may develop when they struggle with a lesson or to see their progression of skills.*

Engaging Experience 5

Teaching Point: *Today I am going to teach you how mathematicians use problem solving steps to make sense of word problems.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to discuss how mathematicians often have to solve challenging word problems. Then ask the students if they know about how using a checklist of steps helps learners complete difficult tasks. Model how to use the Six Step Problem Solving [Model](#) to solve a word problem and challenge students to track your completion of each step. Next, provide students a visual of the model and prepare to guide students through using the steps to complete a word problem in a “We Do” process. This is a wonderful time to use observation to begin learning the students’ ability and comfort in using this model. During the students’ independent work, try to center your encouragement on using the steps and making sense of the situation more

than achieving the answer.

A possible word problem you could use is: *A teacher prepares bags of supplies for her class. Each bag has the **same number of pencils** inside. After making all the bags, she **gives some pencils away** to another classroom. She wants to know **how many pencils she has left**.*

Another way to do this is to use a numberless word problem to walk the students through the steps in the Six Step Problem Solving [Model](#). Using a numberless word problem such as, *A library receives **several boxes of new books**. Each box has the **same number of books** inside. Later that week, the librarian **puts some of the books on display**. She wants to know **how many books are still not on display**.*

In this problem, you could walk the students through the steps as follows:

1. **Read the entire problem.**
2. **Rewrite the question as a statement.** *There are ____ books still not on display.*
3. **Who or what is the problem about?** Write it! *The problem is about new books at the library.*
4. **Draw your model.** *In this model, there will be two initial unknowns. One for how many boxes the librarian received and one for how many books are in each box. In the next part of the problem there is one unknown for how many books the librarian initially puts on display.*
5. **Write an equation.** *At this point in time, students can choose any reasonable number for the unknown numbers. Each student can choose a different number.*
6. **Solve it.** *Students solve the problem with the numbers they chose.*

Provide students with other word problems to try the steps in pairs or random groups of 3. As you interact with the students, try to center your encouragement on using the steps and making sense of the situation more than achieving the answer. You can find numberless word problems at numberlesswp.com.

Suggestions: *Many of the “tips and tricks” we once learned and use to teach students to help them solve word problems can cause misconceptions that are difficult for them to discard as they move up through the grades. If you would like to know more about Math Rules That Expire, read this article: [13 Rules That Expire](#).*

Also, this may be a wise time to revisit the student drawings and ideas shared from Engaging Experience 3 about perceived math identities. It will be interesting to see if the students have a revised perception around what mathematicians look like as a result of learning through this unit.

The second way to teach this engaging experience uses numberless word problems. These problems help students focus on the math and understanding the problems instead of the students’ likely choice of jumping to “do” something with the numbers without knowing what the problem is asking them to do. You can learn more about numberless word problems in [this article](#) from the numberlesswp website.

Unit 2: Generalize Place-Value Structure

Subject: Math

Grade: 4th

Name of Unit: Generalize Place-Value Structure

Length of Unit: 10 days

Overview of Unit:

In this unit, students extend their understanding of the base-ten place value structure to multi-digit numbers within one million. They analyze the relationship between the value of digits in consecutive positions in 3-digit numbers and then look to generalize that relationship to 4-digit and 5-digit numbers. They generalize the base-ten place-value structure and explain that a digit in one place represents ten times the value of the digit in the place to its right.

Students explore the three-position periods that define our base-ten number system and explain the names of different positions within one million and the values of digits in them.

Students extend their understanding of place value and number sense concepts learned in previous grades. These include:

- **Represent numbers in different forms:** Students read and write up to 6-digit numbers in standard, expanded, and word forms.
- **Compare multi-digit numbers:** Students compare up to two 6-digit numbers.
- **Round multi-digit numbers:** Students round multi-digit numbers to an appropriate place based on the purpose of the estimated value.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Base-ten blocks
 - *Place-Value Chart to Millions* Teaching Resource
 - *Number Cards 0-10* Teaching Resource
 - Number cubes
 - *Activity Cards* Teaching Resource
 - *Blank Number Lines* Teaching Resource

Essential Questions:

- How can I use place value to work with multi-digit numbers?
- How can we describe the relationship among the digits in a 3-digit number?

Enduring Understandings:

- In the base-ten place-value structure, a digit in one place represents ten times the value of the digit in the place to its right.
- Multi-digit whole numbers can be represented in standard, expanded, and word forms.
- Two multi-digit numbers can be compared by using place value.
- Place value helps us to round numbers to use in estimation.

Priority Standards:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.2 Read, write and identify multi-digit whole numbers up to one million using number names, base ten numerals and expanded form.
 - 4.NBT.A.3 Compare two multi-digit numbers using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting Standards:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.1 Round multi-digit whole numbers to any place.

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.2	How to use place value understanding to read, write and identify whole numbers up to one million.	Read, write, identify whole numbers within one million. Convert between number names (word form), base ten numerals (standard form) and expanded form.	Evaluate	3
4.NBT.A.3	How to use place value understanding to compare two multi-digit numbers.	Compare two multi-digit numbers using $<$, $=$, or $>$. Justify with words or models.	Evaluate	3

Assessment Options:

Formative Assessment Options (Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)	Summative Assessment Options (Administered at the end of a unit or topic to assess mastery of learning objectives.)
● Readiness Diagnostic ● Exit Ticket ● Math Probe ● Fluency Check ● Unit Assessment Form A	● Performance Task ● Unit Assessments Form B

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
generalize	base-10 number system
notice	digit
represent	period
conjecture	expanded form
estimate	standard form
explain	word form
justify	value
	halfway point
	round

Suggestion: Add a vocabulary section in students' math journal at the beginning of the unit with three-columns, word--definition--example. As new words are introduced throughout the unit, add the words to the journal.

Math Language Routines:

- MLR 6: Three Reads
- MLR 4: Information Gap
- MLR 2: Collect and Display
(shown in order of use within unit lessons)

Number Routines:

- Would You Rather?

Sense-Making Routines:

- Which Doesn't Belong?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: What question could you ask?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS Adventure	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS Adventure	● Physical Application Station (Use It!) ● Online Application Station-Extension Activity ● Extend Thinking Page from Differentiation Resource Book ● ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 2 Readiness Diagnostic or assign the online Unit 2 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 2 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment addresses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I use place value to work with multi-digit numbers? Play the STEM career video and then have students complete the Ignite! activity on page 32 of their workbook.

Another way to do this is to introduce the Focus Question: How can I use place value to work with multi-digit numbers? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *The teacher can provide physical coin manipulatives or a link to [Polypad](#) virtual manipulatives for the Ignite! activity. Coins on Polypad are found under Probability and Data.*

Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could begin during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 2>Targeted Intervention.

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 2-1 Understand the Structure of Multi-Digit Numbers

Teaching Point: *Today I want to teach you how to use place value to determine the value of a digit.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standard: 4.NBT.A.2

Supporting Standard: 4.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 2-1. Students draw on their prior knowledge of place value to think about the relationship between adjacent place-value positions. They connect to previously learned place-value concepts such as the value of a digit depends on its place-value position.

Another way to do this is to use the Activity-Based Exploration for 2-1. Students explore the relationship among the values of a digit in different positions in a multi-digit number.

Suggestions:

- *Teachers can have place value charts accessible to students. This can be found in the Digital Teacher Center on ConnectEd.*
- *Teachers can use [Polypad](#) to display place value. When you click on the manipulatives and hit split it shows how a thousands cube is made of 10 hundreds flats, etc. It can help show the 10x greater relationship in numbers such as 4,444.*
- *Teachers can model the [6 step problem solving steps](#) from Greg Tang while analyzing word problems.*

Bloom's Level: Apply

DOK: 2

Engaging Experience 2: 2-2 Read and Write Numbers to One Million

Teaching Point: *Today I want to teach you to read and write numbers to 1,000,000 in word form, standard form, and expanded form.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NBT.A.2

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 2-2. Students extend their knowledge of place value to the millions period and use their knowledge to read and write multi-digit numbers in different forms.

Another way to do this is to use the Activity-Based Exploration for 2-2. Students explore how place-value structure can help them read and write multi-digit numbers.

Suggestions: *Teachers can give the 2-2 online exit ticket. The next day teachers can pull small groups and assign differentiated practice based on the previous day's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine and Sense-Making Routine can be used as the Launch portion of the lesson.*

Bloom's Level: Apply

DOK: 2

Engaging Experience 3: 2-3 Compare Multi-Digit Numbers

Teaching Point: *Today I want to teach you how to compare two multi-digit numbers based on the value of the digits in each place.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority Standard: 4.NBT.A.3

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 2-3. Students connect to previously learned place-value concepts and apply them to compare multi-digit numbers.

Another way to do this is to use the Activity-Based Exploration for 2-3. Students explore different ways to compare multi-digit numbers and record their comparisons using symbols $>$, $=$, or $<$.

Suggestions: *This is a standard on the report card. You can use two days for this and not do 2-4 as a whole group lesson. You can pull groups on rounding based on data. If you choose to do two days: Teachers can give the 2-3 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine and Sense-Making Routine can be used as the Launch portion of the lesson.*

Bloom's Level: Apply

DOK: 3

Engaging Experience 4: 2-4 Round Multi-Digit Numbers *(Optional - see suggestions in EE3)*

Teaching Point: *Today I want to teach you to round multi-digit numbers to any place.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NBT.A.2, 4.NBT.A.3

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use Guided Exploration for 2-4. Students extend strategies they learned in Grade 3 for rounding 3-digit numbers to numbers with 4 or more digits. They also think about the uses of rounding numbers, in particular to determine a reasonable estimate.

Another way to do this is to use the Activity-Based Exploration for 2-4. Students analyze different situations to determine when a more precise estimate may be needed.

Suggestions: *Teachers can utilize number lines, place-value charts, or other tools to help remind students of rounding strategies.*

Bloom's Level: Apply

DOK: 3

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include reading, writing, and identifying whole numbers and comparing multi-digit numbers.*

Suggested Length of Time: 1-2 day

Standards Addressed

Priority Standards: 4.NBT.A.2, 4.NBT.A.3

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 2, pages 51-54 in the student workbook.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion. Finish your time by having students complete the Fluency Practice as an additional spiral review.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Analyze

DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about place value.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NBT.A.2, 4.NBT.A.3

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 6 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 2 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Apply

DOK: 3

Engaging Scenario - Unit 2

Task: How Do They Compare?

Teacher's Edition page 36C

Students research a purchase by comparing prices and other fees. You can assign this Application Station digitally from Lesson 2-1>Differentiate>Application Station: How Do They Compare?

Unit 3: Addition and Subtraction Strategies and Algorithms

Subject: Math

Grade: 4th

Name of Unit: Addition and Subtraction Strategies and Algorithms

Length of Unit: 15 days

Overview of Unit:

In this unit, students will estimate sums, making use of strategies such as rounding, front-end estimation, and compatible numbers while building on their understanding on the uses and reasonableness of estimation.

Students will also extend strategies they previously learned for adding and subtracting up to 3-digit numbers to adding and subtracting up to 6-digit numbers.

Students will become fluent with adding and subtracting, using vertical algorithms, commonly referred to as *standard algorithms*.

Addition and Subtraction Strategies include:

- **Add using partial sums:** Students align addends vertically by place value and record each partial sum. They then add the partial sums.
- **Add using adjusting:** Students adjust addends to create compatible numbers, which can be added more easily.
- **Add using an addition algorithm:** Students align addends vertically and add digits in each place. They record and regroup as needed.
- **Subtract using decomposition:** Students subtract by decomposing the subtrahend and then subtracting each value from the minuend.
- **Subtract using adjusting:** Students adjust numbers to create compatible numbers, which can be subtracted more easily.
- **Subtract using a subtraction algorithm:** Students align the subtrahend and minuend vertically and subtract digits in each place. They record and regroup values as needed.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Number cubes
 - *Show and Explain Your Strategies* Teaching Resource
 - Base-ten blocks
 - *Place-Value Chart* Teaching Resource
 - Spinner (0-9)
 - Number cubes
 - *Open Number Line* Teaching Resource
 - *Bar Diagram* Teaching Resource

Essential Questions:

- How can I add and subtract with strategies and algorithms?
- What does it mean to add and subtract?

Enduring Understandings:

- Rounding and front-end estimation are strategies to check the reasonableness of addition and subtraction answers.
- The same strategies you use to add and subtract 3-digit numbers can be used for larger numbers.
- There are many strategies to add and subtract including the standard algorithm.

Priority Standards:

- 4.RA.A Use the four operations with whole numbers to solve problems.
 - 4.RA.A.2 Solve multi-step whole number problems involving the four operations and variables and use estimation to interpret the reasonableness of the answer.
- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.5 Demonstrate fluency with addition and subtraction of whole numbers.

Supporting Standards:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.1 Round multi-digit whole numbers to any place.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.RA.A.2	How to use the four operations with whole numbers to solve problems.	Describe how to use estimation to assess the reasonableness of answers. Solve multi-step problems involving any of the four operations. Represent problems using equations with a letter or symbol standing for the unknown quantity.	Analyze	3
4.NBT.A.5	Demonstrate fluency with addition and subtraction of whole numbers.	Fluently add and subtract whole numbers up to one million using strategies based on place value, properties of operations, and/or the relationship between addition and	Analyze	3

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
		subtraction. Communicate the reasoning in solving problems. Demonstrate or recognize alternate approaches to solving problems, with or without context, involving addition and subtraction.		

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Unit Assessments Form B

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
reasonable strategy focus scan consider efficiently indicate logical prove valid check modify clarify represent correspond process	estimate front-end estimation round decompose partial sums algorithm regroup decompose difference variable multi-step strategies

Suggestion: Add a vocabulary section in the students' math journal at the beginning of the unit with three-columns, word--definition--example. As new words are introduced throughout the unit, add the words to the journal.

Math Language Routines:

- MLR 7: Compare and Connect
 - MLR 2: Collect and Display
 - MLR 5: Critique, Correct, Clarify
 - MLR 8: Discussion Supports
 - MLR 1: Stronger and Clearer Each Time
 - MLR 6: Three Reads
- (shown in order of use within unit lessons)

Number Routines:

- Decompose It!
- Where Does It Go?
- Can You Make the Number?
- About How Much?

Sense-Making Routines:

- Numberless Word Problem: What's the question?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What question could you ask?
- Numberless Word Problem: What math do you see in this problem?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS Adventure	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS Adventure	● Online Application Station-Extension Activity ● Physical Application Station (Use It!) ● Extend Thinking Page from Differentiation Resource Book ● ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 3 Readiness Diagnostic or assign the online Unit 3 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 3 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I add and subtract with strategies and algorithms? Play the STEM career video and then have students complete the Ignite! activity on page 58 of their workbook.

Another way to do this is to introduce the Focus Question: How can I add and subtract with strategies and algorithms? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could begin during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 3>Targeted Intervention.*

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 3-1 Estimate Sums or Differences

Teaching Point: *Today I'm going to teach you to estimate sums and differences involving multi-digit numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 4.RA.A.2, 4.NBT.A.5

Supporting: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-1. Students use estimation strategies, such as rounding and front-end estimation to find the estimated sum. They compare the exact sum to the estimated sum to determine if it is reasonable.

Another way to do this is to use the Activity-Based Exploration for 3-1. Students explore different estimation strategies to find the estimated sum, and discuss the reasonableness of the calculated solution.

Suggestions: *Emphasize vocabulary: front-end estimation and reasonable strategy. Look for common misconceptions. Students may think that front-end estimation is the same process as rounding to the greatest place-value position. Clarify the difference between the two strategies.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 3-2 Strategies to Add Multi-Digit Numbers

Teaching Point: *Today I'm going to teach you to add multi-digit numbers by adjusting numbers or decomposing the numbers by place value.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-2. Students extend their knowledge of addition strategies, partial sums and adjusting numbers, to add numbers up to 6-digits. They will add using partial sums vertically to help prepare for adding using an algorithm.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion.

Another way to do this is to use the Activity-Based Exploration for 3-2. Students extend their knowledge of adding numbers with up to 3-digits to adding numbers with up to 6-digits.

Suggestions: *This lesson introduces the following math terms: Partial Sums and Decomposition. Students could add these vocabulary words to their math journals.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 3-3 Understand an Addition Algorithm

Teaching Point: *Today I'm going to teach you to use an algorithm to add multi-digit numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-3. Students make sense of an addition algorithm by relating it to the partial-sums strategy. They think about the similarities between the two strategies and the efficiency of using an algorithm to add.

Another way to do this is to use the Activity-Based Exploration for 3-3. Students use their knowledge of partial sums and place value to determine possible addends for a given sum. They look for patterns in the digits of their solutions and discover the overall structure of an algorithm.

Suggestions: *Teachers can provide place value charts for students. This will help learners line up numbers in the correct place value when adding and regrouping.*

Bloom's Level: Apply

DOK: 2

Engaging Experience 4: 3-4 Understand an Addition Algorithm Involving Regrouping

Teaching Point: *Today I'm going to teach you to use an algorithm to add multi-digit numbers with regrouping.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-4. Students build on their understanding of an addition algorithm to add multi-digit numbers that involve regrouping. They use their knowledge of place-value concepts to record the regrouping in the algorithm.

Another way to do this is to use the Activity-Based Exploration for 3-4. Students analyze an addition problem involving regrouping that was solved using an algorithm. They make sense of the regrouping in the algorithm by creating a logical sequence of steps taken to find the sum.

Suggestions: *Teachers can provide place value charts for students. This will help learners line up numbers in the correct place value when adding and regrouping. Teachers can give the 3-4 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine can be used as the "Launch" portion of the lesson.*

Bloom's Level: Apply

DOK: 2

Engaging Experience 5: 3-5 Strategies to Subtract Multi-Digit Numbers

Teaching Point: *Today I'm going to teach you to subtract multi-digit numbers by adjusting numbers or by decomposing the numbers by place value.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-5. Students extend strategies they learned for subtracting 3-digit numbers to multi-digit numbers. They solve a subtraction problem by decomposing one of the numbers by place value and by adjusting the numbers to make them easier to subtract.

Another way to do this is to use the Activity-Based Exploration for 3-5. Students extend strategies they used to subtract 3-digit numbers to subtract two 4-digit numbers. They explore using more than one strategy and discuss the efficiency of strategies.

Suggestions: *Provide place value charts for students. This will help learners line up numbers in the correct place value when adding and regrouping.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 3-6 Understand a Subtraction Algorithm

Teaching Point: *Today I'm going to teach you to use an algorithm to subtract multi-digit numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-6. Students make sense of a subtraction algorithm. They explain their thinking with each step and think about the efficiency of an algorithm when subtracting multi-digit numbers.

Another way to do this is to use the Activity-Based Exploration for 3-6. Students use their knowledge of subtraction strategies and place value to determine unknown digits in a subtraction problem. They look for patterns in the digits of their solutions and discover the overall structure of an algorithm.

Suggestions: *Teachers can provide place value charts for students. This will help learners line up numbers in the correct place value when regrouping. Teachers can get out manipulatives to help show regrouping.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 7: 3-7 Understand a Subtraction Algorithm Involving Regrouping

Teaching Point: *Today I'm going to teach you to use an algorithm to subtract multi-digit numbers with regrouping.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-7. Students build on their understanding of a subtraction algorithm to subtract multi-digit numbers that involve regrouping. They use their knowledge of place-value concepts to record the regrouping in the algorithm.

Another way to do this is to use the Activity-Based Exploration for 3-7. Students extend their understanding of subtracting by solving a subtraction problem involving regrouping. They connect regrouping using manipulatives to regrouping using the algorithm.

Suggestions: *Teachers can provide place value charts for students. This will help learners line up numbers in the correct place value when adding and regrouping. Teachers can give the 3-7 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine can be used as the "Launch" portion of the lesson.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 8: 3-8 Represent and Solve Multi-Step Problems

Teaching Point: *Today I'm going to teach you to use representations and equations to show the relationship between quantities in a multi-step word problem.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-8. Students identify the hidden questions and the unknown quantities in a multi-step problem. They determine how to represent each step using bar diagrams and equations with variables. Students may have previously used bar diagrams and equations with variables to represent two-step word problems. Ask them about those representations, and how they could create similar representations to solve multi-step word problems.

Another way to do this is to use the Activity-Based Exploration for 3-8. Students create a multi-step problem based on given equations. They solve another student's problem using representations, such as bar diagrams and equations, to show the relationship between the quantities in the problem.

Suggestions: *Teachers can use bar diagrams or other models to help students identify what the hidden questions are and what they already know. Teachers can model the [6 step problem solving steps](#) from Greg Tang while analyzing word problems.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 9: 3-9 Solve Multi-Step Problems Involving Addition and Subtraction

Teaching Point: *Today I'm going to teach you to use equations with variables and representations to solve multi-step problems.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-9. Students apply what they know about solving two-step word problems. They determine the steps needed to solve a multi-step word problem and show the steps using representations and equations with variables.

Another way to do this is to use the Activity-Based Exploration for 3-9. Students analyze the structure of a multi-step word problem involving addition and subtraction.

Suggestions: *Teachers can model the [6 step problem solving steps](#) from Greg Tang while analyzing word problems.*

Bloom's Level: Analyze

Webb's DOK: 3

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include solving multi-step word problems involving addition and subtraction.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 3, pages 97-100 in the student workbook.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Analyze

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about solving multi-step word problems involving addition and subtraction.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.5

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 6 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 2 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Apply

DOK: 3

Engaging Scenario - Unit 3

Task: Turn a Standard Algorithm into a Computer Program
Teacher's Edition page 62C

Students use algorithms to write computer code. You can assign this Application Station digitally from Lesson 3-1>Differentiate>Application Station: Turn a Standard Algorithm into a Computer Program. **Consider allowing students to actually code on [Scratch](#).**

Unit 4: Multiplication as Comparison

Subject: Math

Grade: 4th

Name of Unit: Multiplication as Comparison

Length of Unit: 8 days

Overview of Unit:

In this unit, students will use multiplication and division to translate phrases such as *times as many* and *times as much* to find the total or unknown factors in problems. They recognize that these kinds of phrases are associated with *multiplicative* comparisons. One commonly used representation for such comparisons is a bar diagram. Students will further understand that this and other representations of multiplicative comparison can also be used for division.

Students understand this because of the relationship between multiplication and division. In solving multiplicative comparison problems, students use this relationship to write and solve multiplication and division equations with the unknown in any position.

Due to calendar pacing, this unit will begin in Quarter 1 and will be completed in Quarter 2. You will report on these standards in Quarter 2. Please see suggestions on the bottom of lessons to know where to break the unit.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Connecting cubes
 - Counters
 - *Number Cards 0-10* Teaching Resource
 - Number cubes
 - Base-ten blocks
 - Counters in two colors

Essential Question:

- How can I compare using multiplication?

Enduring Understandings:

- Statements such as *times as many* and *times as much* can be represented as multiplication equations.
- There is a difference between additive and multiplicative comparisons (6 greater vs. 6 times greater).
- You can write multiplication and division equations with an unknown to represent and solve multiplicative comparison problems.

Priority Standards:

- 4.RA.A Use the four operations with whole numbers to solve problems
 - 4.RA.A.1 Multiply or divide to solve problems involving a multiplicative comparison.
 - 4.RA.A.2 Solve multi-step whole number problems involving the four operations and variables and use estimation to interpret the reasonableness of the answer.

Supporting Standards:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.1 Round multi-digit whole numbers to any place.
 - 4.NBT.A.7 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, and justify the solution.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.RA.A.1	How to multiply or divide to solve problems involving a multiplicative comparison.	Multiply or divide to solve problems with or without context. Use two quantities that could be multiplied together or use division to find the missing factor.	Analyze	3
4.RA.A.2	How to use the four operations with whole numbers to solve problems.	Describe how to use estimation to assess the reasonableness of answers. Solve multi-step problems involving any of the four operations. Represent problems using equations with a letter or symbol standing for the unknown quantity.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Benchmark Assessment 1 • Unit Assessments Form B

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
represent state distinguish between indicate consider vary correspond suppose	multiplicative comparison additive comparison bar diagram unknown

Suggestion: Add a vocabulary section in the students' math journal at the beginning of the unit with three-columns, word--definition--example. As new words are introduced throughout the unit, add the words to the journal.

Math Language Routines:

- MLR 7: Compare and Connect
- MLR 2: Collect and Display
- MLR 5: Co-Craft Questions and Problems
- MLR 8: Discussion Supports
- MLR 1: Stronger and Clearer Each Time

Number Routines:

- About How Much?
- What's Another Way to Write It?

Sense-Making Routines:

- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: How are they the same? How are they different?
- Numberless Word Problems: What math do you see in this problem?
- Notice & Wonder: Tell me everything you can

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group Activity Lesson • Online Take Another Look Lesson • Reinforce Understanding Page from Differentiation Resource Book • ALEKS Adventure	• Print & Digital Games • Online Interactive Additional Practice • Additional Practice page from Student Practice Book • Print or Digital Spiral Review • ALEKS Adventure	• Online Application Station-Extension Activity • Physical Application Station (Use It!) • Extend Thinking Page from Differentiation Resource Book • ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 4 Readiness Diagnostic or assign the online Unit 4 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 4 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment addresses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

Webb's DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I compare using multiplication? Play the STEM career video and then have students complete the Ignite! activity on page 104 of their workbook.

Another way to do this is to introduce the Focus Question: How can I compare using multiplication? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 4>Targeted Intervention.*

Bloom's Level: Analyze

Webb's DOK: 2

Engaging Experience 1: 4-1 Understand Comparing with Multiplication

Teaching Point: *Today I'm going to teach you to use multiplication to compare quantities.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.RA.A.1

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-1. Students use connecting cube sticks to investigate multiplicative comparison. They use the representations to visualize multiplicative relationships and make comparison statements using comparison words and equations.

Another way to do this is to use the Activity-Based Exploration for 4-1. Students develop understanding of multiplicative comparison by creating their own comparison statements. They use models and equations as representations of the multiplicative relationship.

Suggestions: *Make sure to emphasise vocabulary and be explicit when using the phrase "as many as." An equal sign represents an equal amount on each side or "the same as."*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 4-2 Represent Comparison Problems

Teaching Point: *Today I'm going to teach you to solve comparison word problems using multiplication and addition.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.1, 4.RA.A.2

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-2. Students use bar diagrams and equations to represent additive and multiplicative comparisons. They also distinguish between multiplicative and additive comparison.

Another way to do this is to use the Activity-Based Exploration for 4-2. Students explore and compare an additive comparison situation with a multiplicative comparison situation by representing them using manipulatives, drawings, or equations.

Suggestions:

- *Make sure to emphasize the difference between "more than" and "times as many." Address any misconceptions about these phrases.*

- *Due to calendar pacing we recommend splitting the unit after lesson 4-2, please refer to the overview.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 4-3 Solve Comparison Problems Using Multiplication

Teaching Point: *Today I'm going to teach you to represent word problems involving multiplicative comparison using bar diagrams and multiplication equations.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.1, 4.RA.A.2

Supporting Standard: 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-3. Students use bar diagrams and multiplication equations to solve multiplicative comparison problems. They use the representations to find the unknown factor that represents the smaller quantity to solve the word problem.

Another way to do this is to use the Activity-Based Exploration for 4-3. Students use physical representations to identify the unknown factor that represents the smaller quantity in a multiplicative comparison situation. Students use equations to represent and solve the problem.

Suggestions: *When solving word problems, re-teach the students the [6 step problem solving steps](#) from Greg Tang. Emphasize the bar model method.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 4: 4-4 Solve Comparison Problems Using Division

Teaching Point: *Today I'm going to teach you to represent word problems involving multiplicative comparison using bar diagrams and division equations.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.1, 4.RA.A.2

Supporting Standard: 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-4. Students recognize that multiplicative comparison situations can be represented by division equations when the quantity that is being multiplied by the times as much factor is unknown. Students use a bar diagram and a division equation to represent a multiplicative comparison situation.

Another way to do this is to use the Activity-Based Exploration for 4-4. Students solve a problem involving multiplicative comparison by representing it with concrete objects or drawings and a division equation with an unknown.

Suggestions: *When solving word problems, re-teach the students the [6 step problem solving steps](#) from Greg Tang. Remind students that multiplication and division are inverse operations and multiplication can be used to help solve these division word problems.*

Bloom's Level: Analyze

Webb's DOK: 3

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include solving multiplicative comparison problems.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.1, 4.RA.A.2

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 4, pages 123-126 in the student workbook.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion. Finish your time by having students complete the Fluency Practice as an additional spiral review.

Another way to do this is to pull small groups based on needs determined through formative assessment and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Analyze

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about multiplicative and additive comparisons.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.1, 4.RA.A.2

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to assign the Benchmark Assessment 1. You can assess the priority standards of the unit while also spiraling in concepts from the first four units.

Another way to do this is to assign the Form B-Unit 4 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 4 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Scenario - Unit 4

Task: Double, Triple, Quadruple Savings
Teacher's Edition page 108C

Students make a table to investigate how money can grow by regular saving. You can assign this Application Station digitally from Lesson 4-1>Differentiate>Application Station: Double, Triple, Quadruple Savings.

Unit 5: Numbers and Number Patterns

Subject: Math

Grade: 4th

Name of Unit: Numbers and Number Patterns

Length of Unit: 10 days

Overview of Unit: In this unit, students will use their understanding of multiplication to decompose a number into factor pairs, recognize that factor pairs of a number can be used to classify a number as prime or composite, and explore the relationship between factors and multiples.

Students examine shape and number patterns and write pattern rules to describe the patterns. They recognize that patterns behave in different ways and understand how the pattern rule dictates what a pattern looks like. They will use their understanding of factors, multiples, and arithmetic patterns to analyze patterns and explain features of the pattern that are not clearly stated in the pattern rule.

Students will extend their understanding of multiplication, division, and arithmetic patterns learned in previous grades. These include:

- **Find Factor Pairs and Multiples:** Students find factor pairs and multiples and understand the relationship between factors and multiples.
- **Identify Prime and Composite Numbers:** Students use understanding of factor pairs to identify prime and composite numbers.
- **Describe, Extend, and Analyze Patterns:** Students use a pattern rule to describe and extend a number or shape pattern. They also identify features of the pattern not explicitly stated in the rule.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Color tiles
 - Paper clips
 - Connecting cubes
 - Counters
 - Grid paper
 - Index cards 0 - 100
 - Inflatable ball with numbers between 1 and 100 written on it (optional)
 - *Multiplication Fact Table 0-10* Teaching Resource
 - Index cards 0 -100 (composite numbers only)
 - Dry erase boards and markers
 - Counters in different colors
 - Pattern blocks
 - *Patterns* Teaching Resource

- Color tiles in different colors
- Craft sticks (optional)

Essential Questions:

- How can I use patterns to describe the relationship between numbers?
- Where can I find patterns in the real world?

Enduring Understandings:

- Knowing multiplication facts is the basis for finding all the factor pairs of a number.
- A number can be identified as prime or composite by finding all of the factor pairs. Prime numbers only have one pair.
- Understanding multiplication helps to find multiples of a number and the relationship between factors and multiples.
- Number or shape patterns that repeat or grow can be described by a pattern rule.
- Patterns can be generated and extended based on a pattern rule.

Priority Standards:

- 4.RA.C Generate and analyze patterns
 - 4.RA.C.6 Generate a number pattern that follows a given rule.
 - 4.RA.C.7 Use words or mathematical symbols to express a rule for a given pattern.

Supporting Standards:

- 4.RA.B Work with factors and multiples
 - 4.RA.B.4. Recognize that a whole number is a multiple of each of its factors and find the multiples for a given whole number.
 - 4.RA.B.5 Determine if a whole number within 100 is composite or prime, and find all factor pairs for whole numbers within 100.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.RA.C.6	Understand that patterns have rules that allow us to continue a pattern or generate a new one.	Generate a pattern, a sequence, or a series of numbers that follow a particular rule.	Analyze	3
4.RA.C.7	Understand the meaning of pattern rules. Understand that patterns have a rule.	Use words or mathematical symbols to express a rule for a given pattern. Generate and analyze patterns.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
● Readiness Diagnostic ● Exit Ticket ● Math Probe ● Fluency Check ● Unit Assessment Form A	● Performance Task ● Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
predict	factor
prediction	factor pairs
process	composite number
categorize	prime number
state	multiple
notice	product
reasonable	pattern
examine	pattern rule
process	sequence
represent	term
assess	

Suggestion: Add a vocabulary section in the students' math journal at the beginning of the unit with three-columns, word--definition--example. As new words are introduced throughout the unit, add the words to the journal.

Math Language Routines:

- MLR 8: Discussion Supports
- MLR 6: Three Reads
- MLR 7: Compare and Connect
- MLR 2: Connect and Display
- MLR 5: Co-Craft Questions and Problems
- MLR3: Critique, Correct, and Clarify

Number Routines:

- What's Another Way to Write It?
- Find a Pattern, Make a Pattern?
- Can You Make the Number?

Sense-Making Routines:

- Notice & Wonder: What do you notice? What do you wonder?
- Which Doesn't Belong?
- Notice & Wonder: How are they the same? How are they different?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS Adventure	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS Adventure	● Online Application Station-Extension Activity ● Physical Application Station (Use It!) ● Extend Thinking Page from Differentiation Resource Book ● ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 5 Readiness Diagnostic or assign the online Unit 5 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 5 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I use patterns to describe the relationship between numbers? Play the STEM career video and then have students complete the Ignite! activity on page 130 of the workbook.

Another way to do this is to introduce the Focus Question: How can I use patterns to describe the relationship between numbers? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 5>Targeted Intervention.*

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 5-1 Understand Factors of a Numbers

Teaching Point: *Today I'm going to teach you how to multiplicatively decompose a number into two factors, called factor pairs. I'm going to teach you how to find all factor pairs of a number.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.RA.C.6

Supporting Standard: 4.RA.B.4

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-1. Students use their understanding of multiplication to decompose a number into factor pairs. They explore how to use a systematic approach to list all the factor pairs of a number.

Another way to do this is to use the Activity-Based Exploration for 5-1. Students explore how to use a systematic process to list the different arrangements of a number of objects and then list the factor pairs of the number using manipulatives, drawings, or equations.

Suggestions: *Make sure to emphasise vocabulary and be explicit when using the phrase "factor pairs." Make sure students are orderly when listing factor pairs, starting with 1, 2, and so on, and stop when the factors repeat in reverse order. Example: When finding the factor pairs of 12: 1 and 12, 2 and 6, 3 and 4.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 5-2 Understand Prime and Composite Numbers

Teaching Point: *Today I'm going to teach you to identify a whole number as prime or composite based on the number of factor pairs it has.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.RA.C.6

Supporting Standard: 4.RA.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-2. Students learn to classify a number as a prime or composite based on the number of factor pairs it has.

Consider starting with the Math Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion.

Another way to do this is to use the Activity-Based Exploration for 5-2. Students use a systematic approach to list the factor pairs of several numbers. Students will compare the number of factor pairs each number has and then identify the number as prime or composite.

Suggestions: *Make sure to address any misconceptions about all odd numbers being prime and all even numbers being composite. For example, you could discuss how 9 and 15 are composite while 2 is prime.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 3: 5-3 Understand Multiples

Teaching Point: *Today I'm going to teach you to find multiples of a whole number in the range 1-100.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.RA.C.6

Supporting Standard: 4.RA.B.4

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-3. Students apply their understanding of multiplication to find multiples of a given number and recognize the number as a multiple of each of its factors.

Another way to do this is to use the Activity-Based Exploration for 5-3. Students use a multiplication fact table to find factors of a number and identify the number as a multiple of each of its factors.

Suggestions: *Make sure students know that there are more factors of 70 than just the ones listed as options on the Work Together problem on page 142 of the workbook. Students could define multiples in their notebook with the key takeaway: A multiple of a whole number is a product of that number and another whole number.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 4: 5-4 Number or Shape Patterns *(Optional)*

Teaching Point: *Today I'm going to teach you how to recognize, extend, and describe a number or shape pattern.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.C.6, 4.RA.C.7

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-4. Students examine two shape patterns and determine that one is a repeating pattern and the other is a growing pattern. They identify the pattern rule and apply the pattern rule to extend the pattern.

Another way to do this is to use the Activity-Based Exploration for 5-4. Students identify growing and repeating shape patterns in sequences of shapes. They identify

the pattern rule and extend the pattern.

Suggestions: *Be explicit when teaching the students the difference between a repeating pattern and a growing pattern. You could use pattern blocks to show both.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 5-5 Generate a Pattern

Teaching Point: *Today I'm going to teach you to generate a number or shape pattern from a given rule.*

Suggested Length of Time: 2 day

Standards Addressed

Priority Standard: 4.RA.C.6

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-5. Students generate a pattern from a given rule and explore how the rule describes what the pattern will look like. Students organize the information in a table as they generate each term.

Another way to do this is to use the Activity-Based Exploration for 5-5. Students explore identifying the rule of a pattern and generating another pattern from the same rule.

Suggestions: *Make sure students know that the term may represent different things based on the problem. It represents the unit, so the term could be a number, rows, counters, etc. The term in the Work Together problem is each row of counters.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 5-6 Analyze Features of a Pattern

Teaching Point: *Today I'm going to teach you how to identify and explain features of a number or shape pattern.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.RA.C.6

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-6. Students analyze a pattern to identify features that may not be apparent in the rule, explain why those features exist, and use the features to predict future terms of the pattern.

Another way to do this is to use the Activity-Based Exploration for 5-6. Students explore identifying features of a pattern, explaining why those features exist, and using the features to predict future terms of the pattern.

Suggestions: *Continue to use manipulatives as needed. Keep reinforcing the term "pattern rule."*

Bloom's Level: Apply

Webb's DOK: 2

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include patterns, factors, and multiples.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.RA.C.6

Supporting Standards: 4.RA.B.4, 4.RA.B.5

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 5, pages 157-160 in the student workbook.

Another way to do this is to pull small groups based on needs determined through formative assessment and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about numbers and number patterns.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.RA.C.6

Supporting Standards: 4.RA.B.4, 4.RA.B.5

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 5 post-assessment and the performance task.

Another way to do this is to print the Form B-Unit 5 post-assessment and the performance task.

Suggestions: Assessments are editable. Teachers can edit the test to focus on the priority standards. *Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Scenario - Unit 5

Task: Too Much of a Good Thing
Teacher's Edition page 134C

Students compare their estimated and actual screen time to that of a partner and look for patterns. You can assign this Application Station digitally from Lesson 5-1>Differentiate>Application Station: Too Much of a Good Thing

Unit 6: Multiplication Strategies with Multi-Digit Numbers

Subject: Math

Grade: 4th

Name of Unit: Multiplication Strategies with Multi-Digit Numbers

Length of Unit: 14 days

Overview of Unit: In this unit, students will use multiplication strategies to multiply multi-digit numbers. They will apply decomposition of numbers and the Distributive Property of Multiplication to create area models and find partial products used to calculate a product. Students will also use an understanding of place value, properties of operations, and decomposition of factors to multiply multiples of 10.

Finally, Students will apply what they have learned to solve multi-step word problems involving multiplication of multi-digit factors.

There are examples of multiplication of multi-digit numbers all around the world. Encourage students to identify real-world problems that involve multiplication of multi-digit numbers, represent the problem using an equation, and solve.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Base-ten blocks
 - Number cubes
 - Color tiles
 - Counters in two colors
 - Grid paper
 - Multiplication Facts Table Teaching Resource

Essential Questions:

- How can you multiply multi-digit numbers?
- Where have you seen multiplication of multi-digit numbers used in the real world?

Enduring Understandings:

- Number patterns can be used to easily multiply by multiples of 10, 100, or 1,000 and to multiply two multiples of 10.
- Using an area model to decompose factors and find partial products is a valid strategy for finding the products of multi-digit multiplication.
- Multi-digit multiplication has many real-world applications and can be used to solve multi-step problems.

Priority Standards:

- 4.RA.A Use the four operations with whole numbers to solve problems.
 - 4.RA.A.2 Solve multi-step whole number problems involving the four operations and variables and use estimation to interpret the reasonableness of the answer.
- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.6 Multiply a number up to four digits by a one-digit whole number and multiply two two-digit numbers, and justify the solution.

Supporting Standards:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.1 Round multi-digit whole numbers to any place.
 - 4.NBT.A.4 Understand that in a multi-digit whole number, a digit represents 10 times what it would represent in the place to its right.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.RA.A.2	How to use the four operations with whole numbers to solve problems.	Describe how to use estimation to assess the reasonableness of answers. Solve multi-step problems involving any of the four operations. Represent problems using equations with a letter or symbol standing for the unknown quantity.	Analyze	3
4.NBT.A.6	How to use place value understanding and properties of multiplication to multiply multi-digit numbers.	Multiply a whole number of up to four digits by a one-digit whole number using properties of operations, e.g., distributive property, or strategies based on place value, e.g. partial products, repeated addition. Multiply two two-digit numbers using properties of operations, e.g., distributive property, or strategies based on place value, e.g. partial products, repeated addition. Justify solutions using	Analyze	3

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
		various methods, e.g., illustrate the calculation using equations, explain in words, use rectangular arrays, area models, and/or other models. Use properties, i.e., associative, commutative, distributive, identity, but not identify or name them.		

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
notice represent utilize accurate focus method develop logical clarify oppose reasonable examine recognize reasonable check	associative property of multiplication multiples compatible numbers rounding decompose distributive property factor product area model partial products

Math Language Routines:

- MLR 6: Three Reads
- MLR 7: Compare and Connect
- MLR 1: Stronger and Clearer Each Time
- MLR 8: Discussion Supports
- MLR 3: Critique, Correct, Clarify
- MLR 2: Collect and Display
- MLR 5: Co-Craft Questions and Problems

Number Routines:

- Would You Rather?
- Greater Than, Less Than
- Decompose It
- Find the Missing Values

Sense-Making Routines:

- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What could the question be?
- Notice & Wonder: Is it always true?
- Numberless Word Problem: What math do you see?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: Tell me everything you can.
- Notice & Wonder: What question could you ask?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS Adventure	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS Adventure	● Online Application Station-Extension Activity ● Physical Application Station (Use It!) ● Extend Thinking Page from Differentiation Resource Book ● ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 6 Readiness Diagnostic or assign the online Unit 6 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 6 Readiness Diagnostic, give the Form A Unit 6 assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can you multiply multi-digit numbers? Play the STEM career video and then have students complete the Ignite! activity on page 164 of the workbook.

Another way to do this is to introduce the Focus Question: How can you multiply multi-digit numbers? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 6>Targeted Intervention.*

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 6-1 Multiply by Multiples of 10, 100, or 1,000

Teaching Point: *Today I'm going to teach you to identify patterns of zeros that exist in products of a 1-digit number and multiples of 10, 100, and 1,000.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standard: 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-1. Students extend strategies they learned in Grade 3 for multiplying 1-digit numbers by multiples of 10 to find products of multiples of 10, 100, and 1,000. They also use strategies based on properties of multiplication to find products of multiples of 10, 100, and 1,000.

Students analyze the products to determine the patterns with zeros that exist in the products.

Another way to do this is to use the Activity-Based Exploration for 6-1. Students use representations such as base-ten blocks and place-value understanding to represent multiplication of 1-digit numbers by multiples of 10, 100, and 1,000. They explore patterns in the products of multiples of 10, 100, and 1,000.

Suggestions: *Students may write the number correctly but may be unable to say the product accurately. Ask students to read the equation aloud to listen for incorrect place value in their responses.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 6-2 Estimate Products *(Optional - See Suggestions)*

Teaching Point: *Today I'm going to teach you to use rounding and compatible numbers to estimate products. I'm also going to teach you to explain how to estimate products using different estimation strategies.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-2. Students use estimation strategies they previously learned, such as compatible numbers and rounding to estimate products. They use two different strategies to find an estimated product for the same equation.

Another way to do this is to use the Activity-Based Exploration for 6-2. Students use estimation strategies they previously learned, such as compatible numbers and rounding to estimate products of 3- and 4-digit numbers.

Suggestions: *Students may lack the skills to verbalize how they estimated even when they are able to estimate. You could ask "What number can you use to make multiplying easy?" to help them verbalize this work. If you choose to not do this lesson, you can teach this skill during guided exploration throughout the other lessons OR since this is not the first time teaching estimation, this can be done with students who have not yet mastered this skill during differentiated time.*

Bloom's Level: Analyze

Webb's DOK: 2

Engaging Experience 3: 6-3 Use the Distributive Property to Multiply

Teaching Point: *Today I'm going to teach you to use the Distributive Property of Multiplication to multiply two numbers. I'm also going to teach you to explain how to use the Distributive Property of Multiplication to find products.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-3. Students use an array to represent factors in a multiplication problem. They use the array to represent decomposing one of the factors and finding the product, thereby demonstrating how The Distributive Property works.

Another way to do this is to use the Activity-Based Exploration for 6-3. Students create arrays with counters and explore the Distributive Property by writing different equations to find the total number of counters.

Suggestions: *On the Work Together problem on page 174, students may mistakenly decompose the 6 to 2 and 3 (rather than 3 and 3) and write $2 \times 15 + 3 \times 15$. This would add back up to 5×15 , instead of 6×15 . Make sure students know that the decomposed number should add up to the original factor.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 4: 6-4 Multiply 2-Digit by 1-Digit Factors

Teaching Point: *Today I'm going to teach you to find partial products to multiply 2-digit by 1-digit factors. I'm also going to teach you to explain how to use partial products to multiply 2-digit by 1-digit factors.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-4. Students use an area model to represent decomposing a 2-digit factor by place value and finding partial products to multiply.

Another way to do this is to use the Activity-Based Exploration for 6-4. Students create and use an area model to multiply a 2-digit factor by a 1-digit factor.

Suggestions: *Students can write the multiplication equation in each rectangle on the area model to ensure they are solving for the correct partial products.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 6-5 Multiply Multi-Digit by 1-Digit Factors

Teaching Point: *Today I'm going to teach you to find partial products to multiply 3-digit and 4-digit factors by 1-digit factors. I'm also going to teach you how to use partial products to multiply 3-digit and 4-digit factors by 1-digit factors.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standards: 4.NBT.A.1, 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-5. Students extend their understanding of using partial products to multiply 2-digit factors by 1-digit factors to multiply multi-digit factors by 1-digit factors.

Another way to do this is to use the Activity-Based Exploration for 6-5. Students apply previously learned strategies such as partial products to find the product of a multi-digit factor and a 1-digit factor.

Suggestions: *Teachers can give the 6-5 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine can be used as the Launch portion of the lesson on Day 2.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 6-6 Multiply Two Multiples of 10

Teaching Point: *Today I'm going to teach you how to identify patterns that exist in products of two multiples of 10.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standard: 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-6. Students extend multiplication strategies they learned to multiply a 1-digit factor by multiples of 10, 100, and 1,000 to multiply two multiples of 10.

Another way to do this is to use the Activity-Based Exploration for 6-6. Students extend previously learned multiplication strategies to multiply two multiples of 10.

Suggestions: *Remind students they can use place value and multiplication facts to assist their work.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 7: 6-7 Multiply Two 2-Digit Factors

Teaching Point: *Today I'm going to teach you to find partial products to multiply two 2-digit factors. I'm also going to teach you to describe how to use partial products to multiply two 2-digit factors.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-7. Students extend their understanding of using partial products to multiply multi-digit factors by 1-digit factors to multiplying two 2-digit factors.

Another way to do this is to use the Activity-Based Exploration for 6-7. Students explore ways to find the product of two 2-digit factors.

Suggestions: *Teachers can give the 6-7 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine can be used as the Launch portion of the lesson on Day 2.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 8: 6-8 Solve Multi-Step Problems Involving Multiplication

Teaching Point: *Today I'm going to teach you to solve multi-step word problems involving multiplication by representing these problems using equations with a variable to represent the unknown.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standard: 4.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-8. Students solve a multi-step problem by using representations, such as equations and bar diagrams. They use known multiplication strategies to solve the problem. Students also check for the reasonableness of a solution.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion.

Another way to do this is to use the Activity-Based Exploration for 6-8. Students identify appropriate representations and solve multi-step word problems involving multiplication by using area models.

Suggestions: *Consider having students group the information into parts to avoid them writing an incorrect equation.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review multiplication skills.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standards: 4.NBT.A.1, 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 6, pages 199-202 in the student workbook.

Another way to do this is to pull small groups based on needs determined through formative assessment and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Apply

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about multiplication.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.NBT.A.6

Supporting Standards: 4.NBT.A.1, 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 6 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 6 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

ThBloom's Level: Apply

Webb's DOK: 2

Engaging Scenario - Unit 6

Task: Let's Dig

Teacher's Edition page 198C

Students research archaeological digs to learn how archaeologists do their job. They use what they know about area to plan an excavation dig site. You can assign this Application Station digitally from Lesson 6-8>Differentiate>Application Station: Let's Dig?

Unit 7: Division Strategies with Multi-Digit Dividends and 1-Digit Divisors

Subject: Math

Grade: 4th

Name of Unit: Division Strategies with Multi-Digit Dividends and 1-Digit Divisors

Length of Unit: 14 days

Overview of Unit: In this unit, students will use their understanding of applying properties of operations to multiply and divide fluently within 100 to find whole number quotients and remainders with up to 4-digit dividends and 1-digit divisors. Students will extend their understanding of using compatible numbers to estimate products by using compatible numbers to estimate quotients. Students will also apply their prior understanding of using partial products and area models to find products of multi-digit numbers to using area models and partial quotients to divide with multi-digit numbers.

Students will begin the unit by using different strategies to divide multiples of 10, 100, and 1,000 by 1-digit divisors. At the end of the unit, students will interpret remainders in the context of a given problem and solve multi-step problems involving quotients and remainders.

Students will extend their ability to fluently multiply and divide within 100 learned in previous grades. These include:

- **Divide Multiples of 10, 100, and 1,000.** Students use basic facts, the relationship between multiplication and division, place value, and number patterns to divide multiples of 10 by 1-digit divisors.
- **Estimate Quotients:** Students use compatible numbers and ranges to estimate quotients to divide multi-digit dividends by 1-digit divisors.
- **Divide Multi-Digit Dividends by 1-Digit Divisors:** Students use partial quotients and area models to divide multi-digit dividends by 1-digit divisors.
- **Interpret Remainders:** Students interpret remainders in the context of a problem.
- **Solve Multi-Step Problems:** Students will solve multi-step word problems involving division.

Due to calendar pacing this unit will begin in Quarter 2 and will be completed in Quarter 3. You will report on these standards in Quarter 3. Please see suggestions on the bottom of lessons to know where to break the unit.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Base-ten blocks
 - Spinners labeled 2-9
 - Counters
 - Paper clips
 - Rectangular paper strips
 - Grid paper
 - Number cubes

Essential Question:

- How can I divide with multi-digit numbers?

Enduring Understandings:

- Division is a way to break a large quantity into equal parts or groups, and it can be represented using different strategies and models.
- Place value understanding helps you to decompose large numbers to divide them more efficiently.
- Remainders in division problems must be interpreted based on the situation, and they can affect the final answer or decision in real-world situations.
- Estimation and compatible numbers are useful tools for checking the reasonableness of division answers.

Priority Standards:

- 4.RA.A Use the four operations with whole numbers to solve problems.
 - 4.RA.A.2 Solve multi-step whole number problems involving the four operations and variables and use estimation to interpret the reasonableness of the answer.
 - 4.RA.A.3 Solve whole number division problems involving variables in which remainders need to be interpreted, and justify the solution.

Supporting Standards:

- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.1 Round multi-digit whole numbers to any place.
 - 4.NBT.A.4 Understand that in a multi-digit whole number, a digit represents 10 times what it would represent in the place to its right.
 - 4.NBT.A.7 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, and justify the solution.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.RA.A.2	How to use the four operations with whole numbers to solve problems.	Describe how to use estimation to assess the reasonableness of answers. Solve multi-step problems involving any of the four operations. Represent problems using equations with a letter or symbol standing for the unknown quantity.	Analyze	3
4.RA.A.3	How to use the four operations with whole numbers to solve problems	Solve whole number division problems with or without context. Interpret remainders. Represent problems with equations that use a letter standing for the unknown quantity. Justify the reasonableness of their solution.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Benchmark Assessment 2 • Unit Assessments Form B

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
consider	dividend
notice	divisor
develop	multiples
reasonable	quotient
examine	compatible numbers
represent	range
algorithm	equal sharing
process	partial quotients
modify	area model
indicate	remainder
recognize	variable
persuade	
assess	
effective	

Math Language Routines:

- MLR 7: Compare and Connect
- MLR 2: Collect and Display
- MLR 1: Stronger and Clearer Each Time
- MLR 5: Co-Craft Questions and Problems
- MLR 8: Discussion Supports
- MLR 6: Three Reads
- MLR 3: Critique, Correct, and Clarify

Number Routines:

- Find the Missing Values
- Can You Make the Number?
- Greater Than, Less Than

Sense-Making Routines:

- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: Tell me everything you can.
- Notice & Wonder: What could the question be?
- Numberless Word Problem: What math do you see?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group Activity Lesson • Online Take Another Look Lesson • Reinforce Understanding Page from Differentiation Resource Book • ALEKS Adventure	• Print & Digital Games • Online Interactive Additional Practice • Additional Practice page from Student Practice Book • Print or Digital Spiral Review • ALEKS Adventure	• Online Application Station-Extension Activity • Physical Application Station (Use It!) • Extend Thinking Page from Differentiation Resource Book • ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 7 Readiness Diagnostic or assign the online Unit 7 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 7 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

Webb's DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how to model division with base-ten blocks to reinforce the meaning of division, as well as discovering that sometimes division involves remainders.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I divide with multi-digit numbers? Play the STEM career video and then have students complete the Ignite! activity on page 206 of the workbook.

Another way to do this is to introduce the Focus Question: How can I divide with multi-digit numbers? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day*

and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 7>Targeted Intervention.

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 1: 7-1 Divide multiples of 10, 100, and 1,000.

Teaching Point: *Today I'm going to teach you how to divide multiples of 10, 100, or 1,000 by using the relationship between multiplication and division, and place value. I'm going to teach you to identify patterns with zeros in the quotients when dividing multiples of 10, 100 or 1,000 by a 1-digit divisor.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.4, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-1. Students use basic math facts and place value, and the relationship between multiplication and division to divide multiples of 10, 100 and 1,000. They identify a pattern between quotients and dividends that are multiples of 10, 100, and 1,000.

Another way to do this is to use the Activity-Based Exploration for 7-1. Students write multiplication equations involving multiples of 10, 100 and 1,000. They apply their understanding of the relationship between multiplication and division to write the related equations.

Suggestions: *Students may write the incorrect number of zeros in the quotient. Remind the students that a basic fact helps them find the size of groups but not necessarily the value of the group. For some students, rewriting divisors with words as groups of tens or hundreds may be helpful*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 7-2 Estimate Quotients (*Optional*)

Teaching Point: *Today I'm going to teach you how to estimate quotients using compatible numbers and related division facts. I'm going to teach you how to determine a range for the estimated quotient.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-2. Students use their understanding of compatible numbers to estimate quotients and to estimate a range for quotients of 3- or 4-digit divisors.

Another way to do this is to use the Activity-Based Exploration for 7-2. Students explore ways to estimate quotients by using compatible numbers.

Suggestions: *Make sure to address the idea of “Compatible Numbers” and the number sense behind that. For example, if I am finding the estimate for 420 divided by 5, a compatible number would be 400 divided by 5. Remind the students to use their basic multiplication and division facts to help them find compatible numbers. If you choose to not do this lesson, you can teach this skill during guided exploration throughout the other lessons OR since this is not the first time teaching estimation, this can be done with students who have not yet mastered this skill during differentiated time.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 7-3 Find Equal Shares

Teaching Point: *Today I'm going to teach you to divide 2-digit dividends by 1-digit divisors by using the equal sharing meaning of division. I'm going to explain how to find how many in each group by using equal sharing.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-3. Students extend their understanding of division to divide a 2-digit number by a 1-digit number by using equal shares.

Another way to do this is to use the Activity-Based Exploration for 7-3. Students explore distributing counters into equal groups and think about how to explain their strategy to share equally.

Suggestions:

- *Make sure students know that they can use repeated subtraction to keep track of numbers that they are distributing. Students can also use virtual counters on [Polypad](#) if they are distracted by regular manipulatives.*
- *Due to calendar pacing we recommend splitting the unit after lesson 7-3, please refer to the overview.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 4: 7-4 Understand Partial Quotients.

Teaching Point: *Today I'm going to teach you how to divide 3-digit dividends by 1-digit divisors by using partial quotients.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-4. Students extend their knowledge of division to divide a 3-digit dividend. Students will explain how to use partial quotients to solve a division problem with a 3-digit dividend by representing the steps with base-ten blocks, arrays, and partial quotients.

Another way to do this is to use the Activity-Based Exploration for 7-4. Students explore dividing a 3-digit dividend by distributing base-ten blocks into equal groups and creating a numerical representation of their steps.

Suggestions: *Some students may have difficulty identifying the numbers to add to find the final quotient. Recommend to those students that they line up numbers by place value to keep track of their “partial quotients” when adding to find their final answer.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 7-5 Divide 4-Digit Dividends by 1-Digit Divisors

Teaching Point: *Today I'm going to teach you how to divide 4-digit dividends by 1-digit divisors by using partial quotients. I'm going to teach you to explain how to use partial quotients to solve a division problem with a 4-digit dividend.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-5. Students will explain how to use partial quotients to solve a division problem with a 4-digit dividend using an area model and the partial quotients strategy.

Another way to do this is to use the Activity-Based Exploration for 7-5. Students explore using area models to represent and record division of 4-digit dividends by 1-digit divisors.

Suggestions:

- *Teachers can give the 2-3 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine can be used as the Launch portion of the lesson on Day 2.*
- *Review area model with multiplication to relate the division strategies. Give students extra paper for the practice page so that they can draw out the area model for division.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 7-6 Understand Remainders

Teaching Point: *Today I'm going to teach you how to divide multi-digit numbers and find quotients and remainders. I'm going to teach you to explain the meaning of the remainder in a division problem.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-6. Students will extend what they know about using the partial quotients strategy to division problems involving remainders.

Another way to do this is to use the Activity-Based Exploration for 7-6. Students solve different word problems involving division. They use the partial-quotient strategy to solve the problem and share how they used the problem situation to explain the meaning of the amount left over.

Suggestions:

- *Teachers can give the 2-3 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine can be used as the Launch portion of the lesson on Day 2.*
- *Continue to use manipulatives as needed. Keep reinforcing the term "remainders" and "partial quotients" and review what those terms mean.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 7: 7-7 Make Sense of a Remainder.

Teaching Point: *Today I'm going to teach you how to solve division problems by finding the quotient and the remainder. I'm going to teach you how to interpret the remainder based on the context of the problem.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-7. Students will extend what they have learned in previous lessons about division to interpret the meaning of a remainder in the context of the problem.

Another way to do this is to use the Activity-Based Exploration for 7-7. Students explore several division problems with a remainder. For each problem, they use the context of the problem to interpret the remainder.

Suggestions: *Continue to use manipulatives as needed. Keep reinforcing the term "remainders" and "partial quotients" and review what those terms mean. Students might need extra blank paper to complete the problems on the practice page.*

Bloom's Level: Apply

Webb's DOK: 3

Engaging Experience 8: 7-8 Solve Multi-Step Problems Using Division

Teaching Point: *Today I'm going to teach you to solve multi step word problems involving division by representing these problems using equations with a variable to represent the unknown.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-8. Students use their knowledge of problem solving and division to represent and solve a multi-step word problem using bar diagrams and equations.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion.

Another way to do this is to use the Activity-Based Exploration for 7-8. Students work to solve a multi-step word problem by representing it in different ways, including bar diagrams and equations.

Suggestions:

- *Continue to use manipulatives as needed. Make sure students are using the [6 step problem solving steps](#) from Greg Tang to break apart the word problems and solve for the correct answer. Students may need extra paper to solve problems.*
- *You can spend a second day on this EE if you did not do EE2.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include division strategies with remainders.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.4, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 7, pages 241-244 in the student workbook.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about division and interpreting remainders.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.RA.A.2, 4.RA.A.3

Supporting Standards: 4.NBT.A.1, 4.NBT.A.4, 4.NBT.A.7

Detailed Description/Instructions:

One way to do this is to assign the Benchmark Assessment 2. You can assess the priority standards of the unit while also spiraling in concepts from the previous units.

Another way to do this is to assign the Form B-Unit 7 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 7 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Scenario - Unit 7

Task: Move Forward 1 Block
Teacher's Edition page 210C

Students use block coding, patterns, and directional language to create a computer program. You can assign this Application Station digitally from Lesson 7-1>Differentiate>Application Station: Move Forward 1 Block.

Unit 8: Fraction Equivalence

Subject: Math

Grade: 4th

Name of Unit: Fraction Equivalence

Length of Unit: 10 Days

Overview of Unit: In this unit, students use visual representations to recognize equivalent fractions, noticing the relationship between the number of the parts in the whole and the number of parts that represent each fraction. They connect this relationship to the numerical process of multiplying and dividing a fraction by the same non-zero whole number to generate an equivalent fraction.

Students work with a few strategies for comparing fractions. They might use the benchmark numbers 0, $\frac{1}{2}$, or 1 to decide how the fractions compare to each other. Students can also generate equivalent fractions for one or both fractions so that the fractions have the same numerator or the same denominator.

Students will extend their understanding of fraction equivalence and comparison strategies learned in previous grades. These include:

- **Recognize and Generate Equivalent Fractions:** Students explain the numerical process of multiplying or dividing to generate an equivalent fraction using visual representations. They use this numerical process to recognize and generate equivalent fractions.
- **Comparing Fractions:** Students compare fractions with different numerators and different denominators.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - *Fraction Number Lines* Teaching Resource
 - *One-Fourth of the Whole* Teaching Resource
 - Scissors
 - Strips of paper
 - Fraction circles
 - Fraction tiles
 - Number cubes
 - *Benchmark Fraction Number Lines* Teaching Resource
 - Dominoes (optional - see science materials)
 - Index cards
 - Spinner (1-10)

Essential Questions:

- How can I use equivalent fractions to help me compare fractions?
- What does it mean to compare fractions?

Enduring Understandings:

- Fractions represent equal parts of a whole, a set, or a number on a number line.
- Different fractions can name the same amount; these are called equivalent fractions.
- Visual models help you compare and find equivalent fractions.
- Understanding the size of a fraction requires reasoning about the numerator and the denominator in relation to the whole.
- Finding common denominators or using benchmark fractions like $\frac{1}{2}$ can help compare and order fractions.

Priority Standards:

- 4.NF.A Extend understanding of fraction equivalence and ordering (Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, and 100.)
 - 4.NF.A.1 Explain and/or Illustrate why two fractions are equivalent.
 - 4.NF.A.2 Recognize and generate equivalent fractions.
 - 4.NF.A.3 Compare two fractions using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting Standards:

- N/A

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.NF.A.1	Extend understanding of fraction equivalence and ordering. (Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, and 100)	Demonstrate that two fractions are equivalent when there are equal parts of the same size whole. Explain, use drawings, models, or manipulatives, e.g., fraction bars, fraction circles. Use number lines to demonstrate that two fractions are equivalent if they are the same distance from zero.	Analyze	3
4.NF.A.2	Extend understanding of fraction equivalence and ordering. (Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, and 100)	Recognize and generate equivalent fractions of the same size whole. Generate equivalent	Apply	2

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
		fractions using words, numbers, or models, e.g., fraction bars, fraction circles, and number lines. Explain why the fractions are equivalent, including fractions that are equal to 1, e.g., $\frac{a}{a}$.		
4.NF.A.3	Extend understanding of fraction equivalence and ordering. (Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, and 100)	Compare two fractions with different numerators and/or denominators by creating common denominators or numerators. Compare two fractions with different numerators and/or denominators by comparing to a number such as $\frac{1}{2}$. Justify the comparison, e.g. using number lines, manipulatives, models. Communicate the results of the comparison using the symbols $<$, $>$, or $=$.		

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
generalize	equivalent fractions
represent	denominator
consider	numerator
state	benchmark fraction
notice	like denominator
recognize	like numerator
assume	
essential	

Math Language Routines:

- MLR7: Compare and Connect
- MLR2: Collect and Display
- MLR5: Co-Craft Questions and Problems
- MLR8: Discussion Supports
- MLR3: Critique, Correct, and Clarify

Number Routines:

- Where Does It Go?
- About How Much?

Sense-Making Routines:

- Notice & Wonder: How are they the same? How are they different?
- Which Doesn't Belong?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: What do you see?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS Adventure	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS Adventure	● Online Application Station-Extension Activity ● Physical Application Station (Use It!) ● Extend Thinking Page from Differentiation Resource Book ● ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 8 Readiness Diagnostic or assign the online Unit 8 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 8 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how to explore equivalent fractions through paper folding.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I use equivalent fractions to help me compare fractions? Play the STEM career video and then have students complete the Ignite! activity on page 2 of the workbook.

Another way to do this is to introduce the Focus Question: How can I use equivalent fractions to help me compare fractions? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 8>Targeted Intervention.*

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 8-1 Equivalent Fractions

Teaching Point: *Today I'm going to teach you how to recognize equivalent fractions based on the number of parts in the fraction and the number of parts in the whole. I'm going to teach you to use fraction models to explain why two fractions are equivalent.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NF.A.1, 4.NF.A.2

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-1. Students partition fraction models and number lines to show equivalent fractions. They think about the relationship between the number of parts in each whole and the relationship between the number of parts represented by each fraction.

Another way to do this is to use the Activity-Based Exploration for 8-1. Students examine various fraction models and number lines to identify and explain which fraction models represent an equivalent amount.

Suggestions: *Have fraction tiles available for all students to use. An alternative to fraction tiles is the [Polypad](#) virtual manipulatives. If you are going to do two days, we suggest doing the Activity-Based Exploration on day one and the Guided Exploration on day 2.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 8-2 Generate Equivalent Fractions Using Models

Teaching Point: *Today I'm going to teach you how to generate equivalent fractions by multiplying or dividing the numerator and denominator by the same non-zero whole number.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NF.A.1, 4.NF.A.2

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-2. Students use fraction models to generate an equivalent fraction with smaller parts and an equivalent fraction with larger parts. They look at the relationship between the numerators and denominators of the equivalent fractions and use the fraction model to explain the relationship.

Another way to do this is to use the Activity-Based Exploration for 8-2. Students use fraction models to explore the numerator and denominator of equivalent fractions.

Suggestions: *Have students use fraction tiles, fraction circles, or strips of paper to represent fractions.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 3: 8-3 Generate Equivalent Fractions Using Number Lines

Teaching Point: *Today I'm going to teach you to use number line representations with different intervals to show generating equivalent fractions by multiplying or dividing the numerator and denominator by the same non-zero whole number.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NF.A.1, 4.NF.A.2

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-3. Students use number lines to generate equivalent fractions. They notice the multiplication relationship

between the numerator and denominator of the equivalent fractions and use the number lines to explain the relationship.

Another way to do this is to use the Activity-Based Exploration for 8-3. Students fold strips of paper to explore how to generate equivalent fractions on a number line.

Suggestions: *Provide blank number lines to students. Continue to provide fraction tiles to students who might need the hands-on manipulatives.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 4: 8-4 Compare Fractions Using Benchmarks

Teaching Point: *Today I'm going to teach you how to compare fractions using benchmark numbers.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.NF.A.1, 4.NF.A.3

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-4. Students use the benchmark numbers 0, $\frac{1}{2}$, and 1 to reason about the size of fractions with different numerators and different denominations. They use this reasoning to compare the fractions.

Another way to do this is to use the Activity-Based Exploration for 8-4. Students think about the relative size of fractions using the benchmark numbers 0, $\frac{1}{2}$, and 1. They use the relative sizes to compare two fractions to each other.

Suggestions: *When comparing fractions, students may only compare the numerators. For example, students may think that $\frac{6}{12}$ is greater than $\frac{4}{8}$ because 6 is greater than 4. Remind the students this strategy worked when they compared fractions with the same denominator in grade 3 because the size of the parts in each fraction were the same.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 8-5 Other Ways to Compare Fractions *(Optional)*

Teaching Point: *Today I'm going to teach you how to compare two fractions by generating equivalent fractions to create like numerators or denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NF.A.1, 4.NF.A.2, 4.NF.A.3

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-5. Students recognize a relationship between the numerators and denominators of two fractions and generate an equivalent fraction, so the fractions have like numerators or like denominators. They reason about the size or the number of parts to compare the two fractions.

Another way to do this is to use the Activity-Based Exploration for 8-5. Students use fraction models to explore various strategies to compare fractions with different numerators and denominators.

Suggestions: *Students may try to compare fractions by comparing the numerators and denominators and not considering the denominators. Remind students to look for the relationship between the numerators and denominators. In some problems, the students may find it easier to make the numerators the same and compare.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include generating equivalent fractions and comparing fractions.*

Suggested Length of Time: 1 - 2 day

Standards Addressed

Priority Standards: 4.NF.A.1, 4. NF.A.2, 4.NF.A.3

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 8, pages 25-28 in the student workbook. Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion. Finish your time by having students complete the Fluency Practice as an additional spiral review.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Apply

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about generating equivalent fractions and comparing fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NF.A.1, 4.NF.A.2, 4.NF.A.3

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 8 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 8 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Scenario - Unit 8

Task: How Does That Measure Up?
Teacher's Edition page 22C (Volume 2)

Students find common denominators to make equivalent fractions from ingredients in a recipe. You can assign this Application Station digitally from Lesson 8-5>Differentiate>Application Station: How Does That Measure Up?

Unit 9: Addition and Subtraction Meanings and Strategies with Fractions

Subject: Math

Grade: 4th

Name of Unit: Addition and Subtraction Meanings and Strategies with Fractions

Length of Unit: 11 days

Overview of Unit: In this unit, students work with unit fractions to create and take apart non-unit fractions. They will determine that like denominators are needed to compose and decompose fractions. To add or subtract fractions, students need a strong understanding of the terms *numerator* and *denominator*.

Students will utilize number lines and fraction models to compose and decompose fractions. It is important for students to have a strong conceptual understanding that the denominators must be the same in order to add or subtract fractions. To help students gain fluency with this concept, fraction tiles and number lines are efficient tools to help students understand that it only makes sense to add or subtract fractions if they have like denominators.

Students will extend their understanding of representing fractions, composing and decomposing numbers learned in previous units and grades to adding and subtracting fractions. These include:

- **Fractions:** Students gained an understanding of fractions, which are formed when a whole is partitioned into equal parts.
- **Represent Numbers in a Different Form:** Students compose and decompose fractions to add and subtract.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - *Fraction Number Lines with Fifths* Teaching Resource
 - Fraction tiles
 - Number cubes
 - *Blank Open Number Lines* Teaching Resource
 - Fraction circles
 - *Fraction Number Lines* Teaching Resource

Essential Question:

- How can I add and subtract fractions with like denominators?

Enduring Understandings:

- When fractions have the same denominator, their numerators can be added or subtracted to find the total or difference.
- Addition and subtraction of fractions with like denominators involve combining or separating parts of the same-sized whole.
- The denominator in a fraction tells how many equal parts the whole is divided into, and it remains the same when adding or subtracting like fractions.

Priority Standards:

- 4.NF.B. Extend understanding of operations on whole numbers to fraction operations.
 - 4.NF.B.6 Solve problems involving adding and subtracting fractions and mixed numbers with like denominators.

Supporting Standards:

- 4.NF.B. Extend understanding of operations on whole numbers to fraction operations.
 - 4.NF.B.4 Understand addition and subtraction of fractions as joining/composing and separating/decomposing parts referring to the same whole.
 - 4.NF.B.5 Decompose a fraction into a sum of fractions with the same denominator and record each decomposition with an equation and justification.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.NF.B.6	How operations on whole numbers extend to fraction operations.	Solve problems, with or without context, involving adding and subtracting fractions. Use words, numbers, or models to support the sums and differences. Focus should include students recognizing various equivalent forms which may be better answers.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
● Readiness Diagnostic ● Exit Ticket ● Math Probe ● Fluency Check ● Unit Assessment Form A	● Performance Task ● Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
prediction represent contradict essential suppose persuade distinguish between focus generalize process	addend decompose like denominators sum unit fraction denominator difference numerator difference

Math Language Routines:

- MLR 7: Compare and Connect
- MLR 3: Critique, Correct, and Clarify
- MLR 6: Three Reads
- MLR 8: Discussion Supports
- MLR 4: Information Gap
- MLR 2: Collect and Display

Number Routines:

- What did you see?
- Which Benchmark Is It Closest To?

Sense-Making Routines:

- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What could the question be?
- Notice & Wonder: Is it always true?
- Notice & Wonder: Tell me everything you can.
- Notice & Wonder: What do you notice? What do you wonder?
- Numberless Word Problem: What math do you see?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group Activity Lesson • Online Take Another Look Lesson • Reinforce Understanding Page from Differentiation Resource Book • ALEKS Adventure	• Print & Digital Games • Online Interactive Additional Practice • Additional Practice page from Student Practice Book • Print or Digital Spiral Review • ALEKS Adventure	• Online Application Station-Extension Activity • Physical Application Station (Use It!) • Extend Thinking Page from Differentiation Resource Book • ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 9 Readiness Diagnostic or assign the online Unit 9 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 9 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I add and subtract fractions with like denominators? Play the STEM career video and then have students complete the Ignite! activity on page 32 of the workbook.

Another way to do this is to introduce the Focus Question: How can I add and subtract fractions with like denominators? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 9>Targeted Intervention.*

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 9-1 Understand Decomposing Fractions

Teaching Point: *Today I'm going to teach you how to decompose a fraction into a sum of fractions with the same denominator in more than one way.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-1. Students represent a fraction on a number line and use the representation to find different ways to decompose it. They determine the decomposition that contains the greatest number of parts, and then explore other decompositions with fewer addends.

Another way to do this is to use the Activity-Based Exploration for 9-1. Students use representations to find different ways to decompose a given fraction.

Suggestions: *Teachers could utilize number lines, fraction tiles, and online manipulatives to help support students with this work.*

Bloom's Level: Understand

Webb's DOK: 1

Engaging Experience 2: 9-2 Represent Adding Fractions

Teaching Point: *Today I'm going to teach you to use fraction models to represent addition of fractions with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-2. Students use fraction models to represent addition of fractions. They will conclude that to add fractions with like denominators, they join parts referring to the same whole.

Another way to do this is to use the Activity-Based Exploration for 9-2. Students explore how to represent solving a problem involving addition of fractions with like denominators.

Suggestions: *Teachers could utilize number lines, fraction tiles, and online manipulatives to help support students with this work. Make sure to address why the denominator does not change when adding fractions (the size of the pieces do not change, just the number of pieces).*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 3: 9-3 Add Fractions with Like Denominators

Teaching Point: *Today I'm going to teach you to add fractions with like denominators and use representations to explain how to add fractions with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-3. Students use representations to make a generalization about adding fractions with like denominators. They conclude that the sum of two or more fractions can be found by adding the numerators and keeping the denominators the same.

Another way to do this is to use the Activity-Based Exploration for 9-3. Students use fraction tiles to create equations that represent a given sum. They use these findings to predict that the numerator in the sum is equal to the sum of the numerators.

Suggestions: *Students do not have to change improper fractions to mixed numbers until Unit 10, but if you would like to introduce it early, you may.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 4: 9-4 Represent Subtracting Fractions

Teaching Point: *Today I'm going to teach you to use fraction models to represent subtraction of fractions with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-4. Students use fraction models and number lines to represent subtraction of fractions. They will conclude that to subtract fractions with like denominators, they take away or separate parts referring to the same whole.

Another way to do this is to use the Activity-Based Exploration for 9-4. Students explore subtracting fractions with like denominators by using representations such as fraction tiles and number lines.

Suggestions: *Students may need support with distinguishing the difference between the starting amount versus the amount taken away on the models. You could consider erasing the pieces taken away if using whiteboards.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 9-5 Subtract Fractions with Like Denominators

Teaching Point: *Today I'm going to teach you to subtract fractions with like denominators. I'm also going to teach you how to use representations to explain how to subtract fractions with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-5. Students use representations to make a generalization about subtracting fractions with like denominators.

Another way to do this is to use the Activity-Based Exploration for 9-5. Students explore how to write subtraction equations for given differences and make a generalization about subtracting fractions.

Suggestions: *If students subtract the denominators, you could use a number line to represent the difference as they count backwards to show how the denominator doesn't change.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 9-6 Solve Problems Involving Fractions

Teaching Point: *Today I'm going to teach you to solve word problems involving addition and subtraction of fractions using representations or equations.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-6. Students will apply what they learned in previous lessons about fraction addition and subtraction to solve two-step word problems involving fraction addition and/or subtraction.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion.

Another way to do this is to use the Activity-Based Exploration for 9-6. Students explore how to use fraction addition and subtraction to solve a two-step problem.

Suggestions: *Continue to use manipulatives as needed. Emphasize that there are two steps and students should avoid "plug and chug" where they just add/subtract numbers they see in the word problems.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include adding and subtracting fractions with like denominators.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 9, pages 59-62 in the student workbook.

Another way to do this is to pull small groups based on needs determined through formative assessment and assign the review online.

Bloom's Level: Apply

Webb's DOK: 2

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about numbers and number patterns.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 9 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 9 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Apply

Webb's DOK: 3

Engaging Scenario - Unit 9

Task: Measuring Tools

Teacher's Edition page 52C (Volume 2)

Students use different tools to measure, complete a table, and compare results. You can assign this Application Station digitally from Lesson 9-5>Differentiate>Application Station: Measuring Tools

Unit 10: Addition and Subtraction Strategies with Mixed Numbers

Subject: Math

Grade: 4th

Name of Unit: Addition and Subtraction Strategies with Mixed Numbers

Length of Unit: 11 days

Overview of Unit: In this unit, students are introduced to mixed numbers as numbers that have a whole-number part and a fraction part. They use this understanding to decompose a mixed number into a sum of whole numbers and/or fractions in different ways. They extend the idea that a fraction can be written as a sum of unit fractions to the idea that mixed numbers can be written as the sum of fractions.

Students extend their work with adding and subtracting fractions with like denominators to adding and subtracting mixed numbers with like denominators. They use representations to make sense of different addition and subtraction strategies. These strategies include decomposing one or both mixed numbers and writing the mixed numbers as fractions greater than 1 to add or subtract.

Students extend their understanding of fractions learned in previous grades. This understanding includes:

- **Fractions:** Students gained an understanding of fractions that are formed when a whole is partitioned into equal parts.
- **Representing Fractions:** Students represented fractions using number lines and models.
- **Equivalent Fractions:** Students expressed whole numbers as fractions.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Fraction tiles
 - Transparent spinner
 - *Blank Number Lines 2* Teaching Resource
 - Fraction circles
 - Index cards
 - Paper strips
 - Number cubes
 - *Problem Solving Tool* Teaching Resource

Essential Question:

- How can I add and subtract mixed numbers with like denominators?

Enduring Understandings:

- Mixed numbers represent quantities greater than one and include both whole numbers and fractions.
- Mixed numbers can be added or subtracted by separating them into whole numbers and fractional parts, then combining the results.
- When adding or subtracting fractions in mixed numbers, the denominators must be the same to combine or compare fractional parts.
- Sometimes it is necessary to rename a mixed number (regrouping) when subtracting to make the operation possible.

Priority Standard:

- 4.NB.B Extend understanding of operations on whole numbers to fraction operations.
 - 4.NF.B.6 Solve problems involving adding and subtracting fractions and mixed numbers with like denominators.

Supporting Standards:

- 4.NF.B. Extend understanding of operations on whole numbers to fraction operations.
 - 4.NF.B.4 Understand addition and subtraction of fractions as joining/composing and separating/decomposing parts referring to the same whole.
 - 4.NF.B.5 Decompose a fraction into a sum of fractions with the same denominator and record each decomposition with an equation and justification.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.NF.B.6	How operations on whole numbers extend to fraction operations.	Solve problems, with or without context, involving adding and subtracting fractions. Use words, numbers, or models to support the sums and differences. Focus should include students recognizing various equivalent forms which may be better answers.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Benchmark Assessment 3 • Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
confirm recognize approach vary method reasonable assumption represent check efficient method process	decompose mixed number sum equivalent fractions regroup difference bar diagram variable

Math Language Routines:

- MLR 7: Compare and Connect
- MLR 8: Discussion Supports
- MLR 6: Three Reads
- MLR 1: Stronger and Clearer Each Time
- MLR 2: Collect and Display

Number Routines:

- Decompose It
- Find the Missing Values
- Find the Pattern, Make a Pattern

Sense-Making Routines:

- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: Tell me everything you can.
- Notice & Wonder: What could the question be?
- Numberless Word Problem: What math do you see in this problem?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS Adventure	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS Adventure	● Online Application Station-Extension Activity ● Physical Application Station (Use It!) ● Extend Thinking Page from Differentiation Resource Book ● ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 10 Readiness Diagnostic or assign the online Unit 10 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 10 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how to explore adding fractions by creating a design using pattern blocks and to use fractions to find the total value of the design.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I add and subtract mixed numbers with like denominators? Play the STEM career video and then have students complete the Ignite! activity on page 66 of the workbook.

Another way to do this is to introduce the Focus Question: How can I add and subtract mixed numbers with like denominators? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 10>Targeted Intervention.*

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 10-1 Understand Decomposing Mixed Numbers

Teaching Point: *Today I'm going to teach you how to write mixed numbers as fractions and fractions greater than 1 as mixed numbers. I'm going to teach you how to decompose a mixed number in more than one way.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-1. Students use fraction models to represent a mixed number and the different ways it can be decomposed into whole numbers and/or fractions. They write equations to record their decompositions. They recognize a mixed number as another way to write a fraction greater than 1.

Another way to do this is to use the Activity-Based Exploration for 10-1. Students explore different ways they can decompose a mixed number into whole-number parts and fraction parts, using representations to support their thinking.

Suggestions: *Have fraction tiles available for all students to use. When decomposing fractions, make sure they understand that there are many ways that they can break apart the whole numbers and fractions. Take time to talk about mixed numbers and the difference between a fraction and a whole number.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 10-2 Represent Adding Mixed Numbers

Teaching Point: *Today I'm going to teach you how to represent the addition of mixed numbers with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-2. Students use a fraction model to add mixed numbers with like denominators. They explore the strategy of adding the whole number parts and the fraction parts of each addend to find the sum. They notice they can make another whole when the sum of the fraction parts is greater than 1.

Another way to do this is to use the Activity-Based Exploration for 10-2. Students explore using the fraction models to add mixed numbers with like denominators.

Suggestions: *Have students use fraction tiles, fraction circles, or strips of paper to represent fractions. Have the students add the whole numbers first and then the fractions. Use fractions tiles to show/represent a fraction larger than 1. For example, for the fraction $6/5$, the students need to get out 6, $\frac{1}{5}$ sized pieces. They can trade in 5 of their pieces to make a whole and they have $\frac{1}{5}$ left over ($6/5 = 1 \frac{1}{5}$).*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 10-3 Add Mixed Numbers

Teaching Point: *Today I'm going to teach you how to add mixed numbers with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-3 Students make connections between the representations used to add mixed numbers and the numerical process. They use strategies, such as decomposing the mixed numbers into the whole numbers and fractions and writing the mixed numbers as equivalent fractions.

Another way to do this is to use the Activity-Based Exploration for 10-3. Students explore various strategies they can use to add mixed numbers with like denominators.

Suggestions: *Remind students that when adding fractions or mixed numbers, the denominator is not added. Have students use fraction tiles to help reinforce understanding.*

Bloom's Level: Apply

Webb's DOK: 3

Engaging Experience 4: 10-4 Represent Subtracting Mixed Numbers

Teaching Point: *Today I'm going to teach you how to represent the subtraction of mixed numbers with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-4. Students use a fraction model to subtract mixed numbers with like denominators. They explore the strategy of subtracting the whole number parts and the fraction parts to find the difference. Students will regroup whole-number parts as fractional parts to subtract.

Another way to do this is to use the Activity-Based Exploration for 10-4. Students explore using fraction models to subtract mixed numbers with like denominators.

Suggestions: *Remind students that when adding fractions or mixed numbers, the denominator is not added. Have students use fraction tiles to help reinforce understanding. If students are still struggling with turning an improper fraction into a mixed number, have them get out fraction tiles and regroup with the fraction tiles. You can also relate this to division. An improper fraction of $12/3$ can be looked at like 12 divided by 3.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 10-5 Subtract Mixed Numbers

Teaching Point: *Today I'm going to teach you how to subtract mixed numbers with like denominators.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-5. Students use their understanding of various subtraction strategies and writing mixed numbers as fractions to subtract mixed numbers with like denominators.

Another way to do this is to use the Activity-Based Exploration for 10-5. Students explore various strategies they can use to subtract mixed numbers with like denominators.

Suggestions: *If students are still struggling with subtracting a mixed number such as $2\frac{1}{3} - 1\frac{2}{3}$, have them draw a visual representation of $2\frac{1}{3}$, break apart the two wholes into thirds and then take away $1\frac{2}{3}$. Students can also be given a number line to represent subtraction.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 10-6 Solve Problems Involving Mixed Numbers

Teaching Point: *Today I'm going to teach you how to solve word problems involving addition and subtraction of mixed numbers with like denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-6. Students apply what they learned in previous lessons about adding and subtracting mixed numbers to solve a two-step word problem involving mixed numbers.

Another way to do this is to use the Activity-Based Exploration for 10-6. Students explore how to use their knowledge of adding and subtracting mixed numbers to solve a two-step word problem.

Suggestions: *When problem solving, encourage students to use a bar diagram or an equation to show the relationships for each comparison statement.*

Bloom's Level: Apply

Webb's DOK: 3

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include adding and subtracting with mixed numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 10, pages 93-96 in the student workbook.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion. Finish your time by having students complete the Fluency Practice as an additional spiral review.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Bloom's Level: Apply

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about generating equivalent fractions and comparing fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.6

Supporting Standards: 4.NF.B.4, 4.NF.B.5

Detailed Description/Instructions:

One way to do this is to assign the Benchmark Assessment 3. You can assess the priority standards of the unit while also spiraling in concepts from the previous units.

Another way to do this is to assign the Form B-Unit 10 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 10 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Apply

Webb's DOK: 3

Engaging Scenario - Unit 10

Task: Make a Pillow

Teacher's Edition page 90C (Volume 2)

Students practice subtraction of mixed numbers while designing pillows from a given amount of fabric. You can assign this Application Station digitally from Lesson 10-6>Differentiate>Application Station: Make A Pillow

Unit 11: Multiply Fractions by Whole Numbers

Subject: Math

Grade: 4th

Name of Unit: Multiply Fractions by Whole Numbers

Length of Unit: 10 days

Overview of Unit: In this unit, students apply what they learned in Grade 3 and earlier in Grade 4 about composing fractions, together with their understanding of multiplication, to multiply fractions and mixed numbers by whole numbers. They see that multiplication of one factor by a whole number involves combining that number of copies of the factor. They represent this using visual fraction models and number lines. Then they symbolically represent the multiplication of any fraction by a whole number. 11- 4 and 11-5 are intentionally omitted due to being above the priority standard skill. Teachers could choose to use these lessons as an extension during differentiated time.

Students will extend their ability to add and subtract fractions and compare fractions, including:

- **Multiply a Unit Fraction by a Whole Number:** Students use fraction models to represent a fraction as a multiple of a unit fraction.
- **Multiply a Fraction by a Whole Number:** Students use visual fraction models to multiply a fraction by a whole number.
- **Understand Multiplication of a Fraction by a Whole Number:** Students use their understanding of fractions as multiples of unit fractions to multiply a fraction by a whole number.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Fraction tiles
 - Index cards number cubes
 - *Blank Number Lines* Teaching Resource
 - Fraction circles
 - spinner

Essential Question:

- How can I multiply a fraction by a whole number?

Enduring Understandings:

- Multiplying a fraction by a whole number is like adding the fraction to itself repeatedly.
- Visual models help represent and make sense of multiplying fractions by whole numbers.
- The product of a whole number and a fraction is another fraction that represents parts of a whole or a value greater than one.

Priority Standard:

- 4.NF.B. Extend understanding of operations on whole numbers to fraction operations.
 - 4.NF.B.8 Solve problems involving multiplication of a fraction by a whole number.

Supporting Standard:

- 4.NF.B. Extend understanding of operations on whole numbers to fraction operations.
 - 4.NF.B.7 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.NF.B.8	How operations on whole numbers extend to fraction operations.	Solve problems with or without context involving multiplication of a fraction by a whole number. Justify the solution. Focus on recognizing various equivalent forms.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
● Readiness Diagnostic ● Exit Ticket ● Math Probe ● Fluency Check ● Unit Assessment Form A	● Performance Task ● Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
efficient	denominator
process	multiple
approach	numerator
representation	unit fraction
effective	equal groups
method	associative Property of Multiplication
check	distributive Property of Multiplication
utilize	mixed number
indicate	fraction
represent	

Math Language Routines:

- MLR 7: Compare and Connect
- MLR 2: Collect and Display
- MLR 4: Information Gap
- MLR 8: Discussion Supports
- MLR 6: Three Reads

Number Routines:

- Find a Pattern, Make a Pattern
- What's Another Way to Write It?

Sense-Making Routines:

- Notice & Wonder: What could the question be?
- Notice & Wonder: What do you see?
- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: What math do you see?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS Adventure	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS Adventure	● Online Application Station-Extension Activity ● Physical Application Station (Use It!) ● Extend Thinking Page from Differentiation Resource Book ● ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 11 Readiness Diagnostic or assign the online Unit 11 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 11 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I multiply a fraction by a whole number? Play the STEM career video and then have students complete the Ignite! activity on page 100 of the workbook.

Another way to do this is to introduce the Focus Question: How can I multiply a fraction by a whole number? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 11>Targeted Intervention.*

Bloom's Level: Analyze

DOK: 3

Engaging Experience 1: 11-1 Represent Multiplication of a Unit Fraction by a Whole Number

Teaching Point: *Today I'm going to teach you to multiply a unit fraction by a whole number the same way you multiply whole numbers. I'm also going to teach you to represent a fraction as a multiple of a unit fraction.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.8

Supporting Standard: 4.NF.B.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-1. Students use their knowledge of repeated addition, multiplication, and unit fractions to explore how to represent and multiply unit fractions by whole numbers.

Another way to do this is to use the Activity-Based Exploration for 11-1. Students represent two word problems, and notice that multiplying fractions has the same meaning as multiplying whole numbers.

Suggestions: *Teachers could emphasize how many groups of the unit fraction are represented to help avoid misconceptions around this skill such as adding or multiplying the denominator.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 11-2 Understand Multiplying a Fraction by a Whole Number

Teaching Point: *Today I'm going to teach you to multiply a fraction by a whole number using visual fraction models. I'm also going to teach you to write a multiple of a fraction as a multiple of a unit fraction.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standard: 4.NF.B.8

Supporting Standard: 4.NF.B.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-2. Students use fraction models to represent multiplying a fraction by a whole number. They use what they know about expressing multiples of unit fractions to express multiples of fractions.

Another way to do this is to use the Activity-Based Exploration for 11-2. As students explore multiplying fractions by whole numbers, they use what they know about fraction models and multiples of unit fractions to solve word problems. Students use equations to find solutions.

Suggestions:

- *Teachers can give the 11-2 online exit ticket on Day 1. On Day 2, teachers can pull small groups and assign differentiated practice based on Day 1's exit ticket. The teacher manual includes many physical and digital options for differentiation. The Number Routine can be used as the Launch portion of the lesson on Day 2.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 11-3 Multiply a Fraction by a Whole Number

Teaching Point: *Today I'm going to teach you to multiply a fraction by a whole number by representing the fraction as a multiple of a unit fraction.*

Suggested Length of Time: 2 days

Standards Addressed

Priority Standard: 4.NF.B.8

Supporting Standard: 4.NF.B.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-3. Students use what they know about finding multiples of unit fractions to find the product of a whole number and a fraction. They apply the Associative Property of Multiplication and use decomposition of the fraction to find the product. Students make a generalization about multiplying a fraction by a whole number.

Another way to do this is to use the Activity-Based Exploration for 11-3. Students create representations to solve a problem involving multiplying a fraction by a whole number.

Suggestions: *If your students do not need 2 days of 11-2 and 11-3, you could consider teaching the 11-4 and 11-5 lessons. This is an extension of the work as students practice multiplying whole numbers by mixed numbers. We do not assess this in 4th grade in Missouri, but you could do this as an enrichment group or with the class if you feel they are ready for this skill.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review the skill of multiplying a whole number by a fraction.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standard: 4.NF.B.8

Supporting Standard: 4.NF.B.7

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 11, pages 123-126 in the student workbook.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion. Finish your time by having students complete the Fluency Practice as an additional spiral review.

Another way to do this is to pull small groups based on needs determined through formative assessment and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about multiplying a whole number by a fraction.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.B.8

Supporting Standard: 4.NF.B.7

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 11 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 11 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

Webb's DOK: 3

Engaging Scenario - Unit 11

Task: Baking Soda and Vinegar

Teacher's Edition page108C (Volume 2)

Students research to find five ways to make green household cleaners from baking soda and vinegar. You can assign this Application Station digitally from Lesson 11-2>Differentiate>Application Station: Baking Soda and Vinegar.

Unit 12: Decimal Fractions

Subject: Math

Grade: 4th

Name of Unit: Decimal Fractions

Length of Unit: 11 days

Overview of Unit: In this unit, students will use decimal grids, number lines, and coins to model fractions with denominators of 10 and 100. They will use models to help generate equivalent fractions with denominators of 10 and 100 and to add two fractions with unlike denominators of 10 and 100. Students apply their understanding of decimal fractions to write a fraction with a denominator of 10 or 100 as a decimal and vice versa. Students will also locate decimals on a number line and use models and place value to compare decimals.

Students apply the representation and comparison of decimal fractions to solve word problems involving money and extend their ability to add and subtract fractions and compare fractions including:

- **Understand Tenths and Hundredths:** Students use fraction models to represent fractions with denominators of 10 and 100.
- **Understand Decimal Notation:** Students use place-value reasoning to understand decimal notation.
- **Compare Decimals:** Students use representations, such as decimal grids and number lines, to compare two decimals.
- **Adding Decimals:** Students use equivalent fractions to add decimals with denominators of 10 and 100.
- **Solve Problems Involving Decimal Fractions:** Students solve word problems involving decimal fractions using dollars, dimes, and pennies.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - *Tenths and Hundredths Representations* Teaching Resource
 - *Bills, Dimes, and Pennies* Teaching Resource
 - *Decimal Place-Value Charts* Teaching Resource
 - Spinner
 - *10 x 10 Grids* Teaching Resource
 - *Blank Number Lines* Teaching Resource
 - Number cubes
 - Colored pencils

Essential Question:

- How can I represent and compare decimal fractions?

Enduring Understandings:

- A decimal fraction is another way to represent parts of a whole, using a base-ten place value system.
- Tenths and hundredths can be written as fractions or as decimals, and they describe the same quantities in different forms.
- Fractions with denominators of 10 or 100 can be written as decimals and compared using place value reasoning.
- Fractions with denominators of 10 can be written as equivalent fractions with denominators of 100.
- Understanding decimal fractions builds a foundation for working with money, measurement, and real-world problem solving.

Priority Standards:

- 4.NF.C Understand decimal notation for fractions, and compare decimal fractions (denominators of 10 or 100).
 - 4.NF.C.10 Understand that fractions and decimals are equivalent representations of the same quantity.
 - 4.NF.C.12 Compare two decimals to the hundredths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting Standards:

- 4.NF.C Understand decimal notation for fractions, and compare decimal fractions (denominators of 10 or 100).
 - 4.NF.C.9 Use decimal notation for fractions with denominators of 10 or 100.
 - 4.NF.C.11 Read, write and identify decimals to the hundredths place using number names, base ten numerals and expanded form.
- 4.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic with numbers up to one million.
 - 4.NBT.A.4 Understand that in a multi-digit whole number, a digit represents 10 times what it would represent in the place to its right.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.NF.C.10	That fractions and decimals are equivalent representations of the same quantity.	Show that fractions and decimals of the same quantity are equivalent representations. Explain with words, numbers, or models how the representations are equivalent to demonstrate their understanding. Develop an understanding of decimal notation using decimal fractions with denominators of 10 or 100. Work with decimal fractions that are less than one.	Analyze	3
4.NF.C.12	Understand decimal notation for fractions.	Compare decimal fractions (denominators of 10 or 100). Compare two decimals to the hundredths place by reasoning about their quantity. Justify comparison, e.g., using number lines, one hundred grids, manipulatives, or drawings. Communicate the results of comparisons using the symbols $<$, $=$, or $>$. Use and explain multiple strategies to solve problems with or without context involving comparing two decimals to the hundredths place.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
notice represent essential vary confirm represent clarify suppose approach argue	equivalent fractions hundredths one-hundredths one-tenth tenths decimal decimal point cents dollars

Math Language Routines:

- MLR 7: Compare and Connect
- MLR 2: Collect and Display
- MLR 1: Stronger and Clearer Each Time
- MLR 8: Discussion Supports
- MLR 6: Three Reads

Number Routines:

- Which Benchmark Is It Closest To?
- Greater Than or Less Than

Sense-Making Routines:

- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: What could the question be?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group Activity Lesson • Online Take Another Look Lesson • Reinforce Understanding Page from Differentiation Resource Book • ALEKS Adventure	• Print & Digital Games • Online Interactive Additional Practice • Additional Practice page from Student Practice Book • Print or Digital Spiral Review • ALEKS Adventure	• Online Application Station-Extension Activity • Physical Application Station (Use It!) • Extend Thinking Page from Differentiation Resource Book • ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 12 Readiness Diagnostic or assign the online Unit 12 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 12 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

Webb's DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I represent and compare decimal fractions? Play the STEM career video and then have students complete the Ignite! activity on page 130 of the workbook.

Another way to do this is to introduce the Focus Question: How can I represent and compare decimal fractions? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 12>Targeted Intervention.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 1: 12-1 Understand Tenths and Hundredths

Teaching Point: *Today I'm going to teach you how to represent fractions with a denominator of 10 and 100 using fraction models.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.NF.C.10, 4.NF.C.12

Supporting Standard: 4.NF.C. 11

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-1. Student connect what they know about the value of dimes and pennies to express the values as fraction of a dollar. They use representations to write a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100.

Another way to do this is to use the Activity-Based Exploration for 12-1. Students explore ways to represent equivalent fractions with denominators of 10 and 100.

Suggestions: *Frontload students with some money review. Remind them of the value of a penny, dime, and dollar. You could also get out place value blocks to represent hundredths, tenths, and whole numbers.*

Bloom's Level: Understand

Webb's DOK: 1

Engaging Experience 2: 12-2 Understand Decimal Notation

Teaching Point: *Today I'm going to teach you how to represent fractions with denominators of 10 or 100 using decimal notation.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.NF.C.10, 4.NF.C.12

Supporting Standards: 4.NF.C.9, 4.NF.C.11

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-2. Students extend their understanding of fractions to think about how a decimal can be used to represent the same fraction.

Another way to do this is to use the Activity-Based Exploration for 12-2. Students explore different ways to represent a part of a whole.

Suggestions: *Print off decimal place value charts and place in pocket protectors for each student. This will be helpful as the students start comparing tenths to hundredths.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 12-3 Compare Decimals

Teaching Point: *Today I'm going to teach you to compare two decimals to hundredths using different representations and tools.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.NF.C.10, 4.NF.C.12

Supporting Standards: 4.NF.C.9, 4.NF.C. 11

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-3. Students use strategies they used to compare fractions to now compare decimals. They use representations, such as number lines and equivalent fractions, to compare two decimals.

Another way to do this is to use the Activity-Based Exploration for 12-3. Students use decimal grids to reason about the size of decimals and make comparisons between two decimals

Suggestions: *Continue to have students represent the decimals pictorially to ensure they have the understanding of the difference between tenths and hundredths. For example, you could have them use number lines or grids to represent each decimal. You could also use the place value chart from yesterday.*

Bloom's Level: Apply

Webb's DOK: 3

Engaging Experience 4: 12-4 Adding Decimals Using Fractions *(Optional)*

Teaching Point: *Today I'm going to teach you how to add two fractions that have denominators of 10 and 100.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.NF.C.10

Supporting Standard: 4.NF.C.9

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-4. Students use representations and strategies such as using equivalent fractions to add fractions with denominators 10 and 100. They use benchmark numbers to estimate the sum of the two fractions to determine the reasonableness of the answer.

Another way to do this is to use the Activity-Based Exploration for 12-4. Students use decimal grids to find the sum of two fractions with denominators of 10 and 100.

Suggestions: *This lesson is above the priority standard. Teachers can choose to use it as an extension during differentiated time. Students may want to add both the denominators and numerators of the fractions. Discuss the process of adding fractions with like denominators and the reasoning behind the process. You could use grid paper to represent adding the fractions and decimals.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 12-5 Solve Problems Involving Money *(Optional)*

Teaching Point: *Today I'm going to teach you how to solve problems involving money using the relationship between tenths and hundredths by representing dollars, dimes, and pennies.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 4.NF.C.10

Supporting: 4.NF.C.11, 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-5. Students will extend strategies they previously learned about money to represent amounts using dollars, dimes and pennies. They will also use a place value chart to help them write amounts using a dollar sign.

Another way to do this is to use the Activity-Based Exploration for 12-5. Students will use their understanding of tenths and hundredths to represent the amount using dollars, dimes, and pennies and use a place-value chart to write the amount as a decimal.

Suggestions: *This lesson is above the priority standard. Teachers can choose to use it as an extension during differentiated time. Continue having the students use their place value chart to represent the money amounts. Review coin and dollar amounts for the students who need a little extra support with the physical manipulatives.*

Bloom's Level: Apply

Webb's DOK: 2

Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include decimal fractions.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.NF.C.10, 4.NF.C.12

Supporting Standards: 4.NF.C.9, 4.NF.C.11, 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 12, pages 153-156 in the student workbook.

Another way to do this is to use the math probe on pages 143-144. This can be used in a collaborative setting like vertical white boards.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Analyze

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about comparing and adding decimals and fractions within tenths and hundredths.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.NF.C.10, 4.NF.C.12

Supporting Standards: 4.NF.C.9, 4.NF.C.11, 4.NBT.A.4

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 12 post-assessment online and the performance task.

Another way to do this is to print the Form B-Unit 12 post-assessment and the performance task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Scenario - Unit 12

Task: Ten-Letter Words

Teacher's Edition page 148C (Volume 2)

Students use decimals to represent the letters in ten-letter words. You can assign this Application Station digitally from Lesson 12-4>Differentiate>Application Station: Ten-Letter Words.

Unit 13: Units of Measurement and Data

Subject: Math

Grade: 4th

Name of Unit: Units of Measurement and Data

Length of Unit: 19 days

Overview of Unit: In this unit, students extend their earlier work with metric units of length, liquid volume, and mass to work with relative sizes of units and to perform conversions within the metric system. Students will learn that using base units helps them comprehend relative sizes of measurements expressed in larger or smaller units. Students will learn that a larger metric unit can be converted to a smaller metric unit by using multiplication.

After working with metric units, students will use a similar approach to learn about customary units. Students will convert using units of time and extend their knowledge of area, perimeter, and line plots that show fractional measurements.

Students will extend their ability to work with units of measurement and data, including:

- **Relate Metric and Customary Units:** Students use place value understanding to relate metric units and equivalence tables to relate customary units.
- **Convert Units of Time:** Students use equivalence tables to convert units of time.
- **Create and Interpret Line Plots:** Students create line plots and use them to solve problems involving the addition and subtraction of fractional measurements.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Base-ten blocks
 - Metric sticks
 - *Metric Conversion Tables* Teaching Resource
 - *Customary Conversion Tables* Teaching Resource
 - [DESE Mathematics Reference Sheet 3-5](#)
 - Number cubes
 - Color tiles (optional or use connecting cubes)
 - Graph paper
 - Rectangles with side lengths labeled
 - *Blank Number Lines 2* Teaching Resource
 - Rulers

Essential Question:

- How can I use and compare units of measurement?

Enduring Understandings:

- Using appropriate units for measuring length, mass, volume, and time is essential for accurately describing and comparing objects and events.
- You can use multiplication and equivalence tables to convert from a larger unit of measure to a smaller unit of measure.
- Data in frequency tables, line plots, or other data helps in visualizing information and drawing meaningful conclusions.
- Using the area and perimeter of rectangles helps you to make sense of the size and shape of objects.

Priority Standards:

- 4.GM.C Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
 - 4.GM.C.7 Use the four operations to solve problems involving distances, intervals of time, liquid volume, weight of objects and money.
 - 4.GM.C.8 Apply the area and perimeter formulas for rectangles to solve problems.
- 4.DS.A Represent and analyze data.
 - 4.DS.A.3 Analyze the data in a frequency table, line plot, bar graph, or picture graph.

Supporting Standards:

- 4.DS.A Represent and analyze data.
 - 4.DS.A.1 Create a frequency table and/or line plot to display measurement data.
 - 4.DS.A.2 Solve problems involving addition and subtraction by using information presented in a data display

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.GM.C.7	How to solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	Use the four operations to solve problems with or without context involving distances, elapsed time, liquid volume, money, and weight of objects, including problems involving fractions or decimals. Solve problems with mixed units, e.g. 3 yards and 2 feet plus 2 yards and 2 feet with the focus being on understanding the relationship and not putting the solution in a	Analyze	3

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
		particular form. Use and explain multiple strategies to solve problems with or without context involving distances, intervals of time, liquid volume, with objects and money.		
4.GM.C.8	How to apply the area and perimeter formulas for rectangles to solve problems.	Apply the area and perimeter formulas for rectangles in problems with or without context. Use and explain multiple strategies to solve problems with or without context involving the use of area and perimeter formulas for rectangles.	Analyze	3
4.DS.A.3	How to represent and analyze data.	Analyze the data in a frequency table, line plot, bar graph, or picture graph and identify characteristics in the data. Identify characteristics that include how often the values occur, observing patterns in the data, developing questions from the data, making predictions using the data and determining the mode and range. Use and explain multiple strategies to solve problems with or without context with or without context involving analyzing the data in a frequency table, line plot, bar graph or picture graph.	Analyze	3

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
argue efficient represent utilize process vary confirm modify logical prediction indicate reasonable examine distinguish between utilize argue display	centimeters convert grams kilograms kiloliters liters meters metric units milliliters millimeters customary unit equivalence table ounces pound ton weight capacity cup gallon pint quart days hours minutes seconds bar diagram number line elapsed time time interval

	formula length perimeter width area rectangle square units unit squares variable data eighth(s) fourth(s) interval line plot scale like denominators
--	---

Math Language Routines:

- MLR 8: Discussion Supports
- MLR 6: Three Reads
- MLR 5: Co-Craft Questions and Problems
- MLR 2: Collect and Display
- MLR 7: Compare and Connect
- MLR 4: Information Gap
- MLR 1: Stronger and Clearer Each Time

Number Routines:

- What Did You See?
- Decompose It
- Which Benchmark Is It Closest To?
- About How Much?
- Where Does It Go?

Sense-Making Routines:

- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What do you notice? What do you wonder?
- Which Doesn't Belong?
- Numberless Word Problem: What math do you see in this problem?
- Notice & Wonder: What could the question be?
- Notice & Wonder: What do you see?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group Activity Lesson • Online Take Another Look Lesson • Reinforce Understanding Page from Differentiation Resource Book • ALEKS Adventure	• Print & Digital Games • Online Interactive Additional Practice • Additional Practice page from Student Practice Book • Print or Digital Spiral Review • ALEKS Adventure	• Online Application Station-Extension Activity • Physical Application Station (Use It!) • Extend Thinking Page from Differentiation Resource Book • ALEKS Adventure

Diagnostic Assessment

Teaching Point: *Today I want to teach you to show what you know about measurement and data.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 13 Readiness Diagnostic or assign the online Unit 13 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 13 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

Webb's DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I use and compare units of measurement? Play the STEM career video and then have students complete the Ignite! activity on page 160 of the workbook.

Another way to do this is to introduce the Focus Question: How can I use and compare units of measurement? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 13>Targeted Intervention.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 1: 13-1 Relate Metric Units

Teaching Point: *Today I want to teach you how to convert larger metric units of length, liquid volume, and mass to smaller equivalent units.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.7

Supporting Standard: 4.GM.C.6a

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-1. Students use representations, metric conversion tables, and place-value structure to convert larger metric units to smaller units.

Another way to do this is to use the Activity-Based Exploration for 13-1. Students convert a larger metric unit to a smaller metric unit using multiplication and their understanding of place value.

Suggestions: *Consider providing the [DESE Mathematics Reference Sheet 3-5](#) that students will use on MAP testing for conversion practice, so they are familiar with the resource.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 2: 13-2 Relate Customary Units of Weight

Teaching Point: *Today I want to teach you how to convert larger customary units of weight to smaller equivalent units.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.7

Supporting Standard: 4.GM.C.6a

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-2. Students extend what they learned about using conversion charts and multiplication to convert metric units to convert large customary units to equivalent smaller customary units.

Another way to do this is to use the Activity-Based Exploration for 13-2. Students convert a larger customary unit of weight to a smaller unit using a conversion table to identify the multiplicative relationship to solve a real-world problem.

Suggestions: *Consider providing the [DESE Mathematics Reference Sheet 3-5](#) that students will use on MAP testing for conversion practice, so they are familiar with the resource.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 13-3 Relate Customary Units of Capacity

Teaching Point: *Today I want to teach you how to convert larger customary units of capacity to smaller equivalent units.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.7

Supporting Standard: 4.GM.C.6a

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-3. Students use a customary conversion table and multiplication to convert larger units of capacity to smaller units.

Another way to do this is to use the Activity-Based Exploration for 13-3. Students convert larger customary units of capacity to smaller units using an equivalence table to solve real-world problems.

Suggestions: Consider providing the [*DESE Mathematics Reference Sheet 3-5*](#) that students will use on MAP testing for conversion practice, so they are familiar with the resource. You can utilize the capacity manipulatives during this lesson.

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 4: 13-4 Convert Units of Time

Teaching Point: *Today I want to teach you how to convert larger units of time to smaller equivalent units.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.7

Supporting Standard: 4.GM.C.6a

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-4. Students use multiplication to convert larger units of time to smaller units to solve a real-world problem.

Another way to do this is to use the Activity-Based Exploration for 13-4. Students use a conversion table to convert a larger unit of time to a smaller unit to solve a real-world problem.

Suggestions: Consider providing the [*DESE Mathematics Reference Sheet 3-5*](#) that students will use on MAP testing for conversion practice, so they are familiar with the resource.

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 5: 13-5 Solve Problems That Involve Units of Measure

Teaching Point: *Today I want to teach you how to solve word problems that require converting larger metric units of measure to smaller units.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.7

Supporting Standard: 4.GM.C.6a

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-5. Students convert larger metric units to smaller units and use a bar diagram to solve a word problem.

Another way to do this is to use the Activity-Based Exploration for 13-5. Students use a conversion table to convert larger metric units to smaller units and create a representation to solve a word problem.

Suggestions: Consider providing the [DESE Mathematics Reference Sheet 3-5](#) that students will use on MAP testing for conversion practice, so they are familiar with the resource. You can utilize meter sticks and rulers with centimeters to help students visualize conversions.

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 13-6 Solve More Problems That Involve Units of Measure

Teaching Point: *Today I want to teach you how to solve word problems that require converting larger units of measure to smaller units.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.7

Supporting Standard: 4.GM.C.6a

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-6. Students convert larger units of time to smaller units and use an open number line to solve a word problem.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion.

Another way to do this is to use the Activity-Based Exploration for 13-6. Students use an equivalence chart and a representation to solve a word problem that involves converting units of time.

Suggestions: Consider providing the [DESE Mathematics Reference Sheet 3-5](#) that students will use on MAP testing for conversion practice, so they are familiar with the resource. You can have measurement tools out for students to help visualize the variety of conversions they will complete today.

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 7: 13-7 Solving Problems Using a Perimeter Formula

Teaching Point: *Today I want to teach you how to use the formula for the perimeter of a rectangle to solve real-world problems.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.8

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-7. Students are presented with side lengths of a rectangle and asked to find the perimeter. They investigate adding and multiplying to find the perimeter and use formulas using variables for

length (l), width (w), and perimeter (p).

Another way to do this is to use the Activity-Based Exploration for 13-7. Students are presented with a perimeter and determine possible length and width combinations. They build on their understanding of perimeter to use a formula.

Suggestions: Consider providing the [DESE Mathematics Reference Sheet 3-5](#) that students will use on MAP testing for the perimeter formula, so they are familiar with the resource. You could also provide graph paper where students can draw the rectangles and see the unit connection for length and width.

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 8: 13-8 Solve Problems Using an Area Formula

Teaching Point: *Today I want to teach you how to use the formula for the area of a rectangle to solve real-world problems.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.8

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-8. Students are presented with side lengths of a rectangle and find the area. They use a formula using length (l), width (w), and perimeter (p).

Another way to do this is to use the Activity-Based Exploration for 13-8. Students are presented with an area and determine possible length and width combinations. They build on their understanding of area to use a formula.

Suggestions: Consider providing the [DESE Mathematics Reference Sheet 3-5](#) that students will use on MAP testing for the area formula, so they are familiar with the resource. You could also provide graph paper where students can draw the rectangles and see the unit connection for length and width, as they can count the number of square units in the area. They could also see why the unit is squared.

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 9: 13-9 Solve Problems Involving Perimeter and Area

Teaching Point: *Today I want to teach you how to solve real-world problems involving area and perimeter.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.C.8

Supporting Standard: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-9. Students are presented with the area and the length of a rectangle. Using the area and perimeter formulas for a rectangle, they find the width and perimeter of the rectangle.

Another way to do this is to use the Activity-Based Exploration for 13-9. Students are presented with a real-world situation involving a rectangle with a given perimeter.

They use formulas to determine possible combinations of length, width, and area.
Suggestions: Consider providing the [DESE Mathematics Reference Sheet 3-5](#) that students will use on MAP testing for the area and perimeter formulas, so they are familiar with the resource. You could also provide graph paper where students can draw the rectangles as they solve.

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 10: 13-10 Display and Interpret Data on a Line Plot

Teaching Point: *Today I want to teach you how to display and interpret measurement data on a line plot.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.DS.A.3

Supporting Standards: 4.DS.A.1, 4.DS.A.2

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-10. Students create a line plot using one-eighth intervals from data provided in a table. Students then analyze and interpret the line plot data

Another way to do this is to use the Activity-Based Exploration for 13-10. Students collect, record, and display data in a line plot.

Suggestions: *Students may make a line plot without placing the data in numerical order. Remind students that the number line portion of the line plot should be from least to greatest going left to right. You can also use resources from 13-11 as it also covers line plots.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 11: 13-11 Solve Problems Involving Data on a Line Plot

Teaching Point: *Today I'm going to teach you how to analyze data in line plots to solve problems.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.DS.A.3

Supporting Standards: 4.DS.A.1, 4.DS.A.2

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-11. Students interpret and analyze line plots to solve real-world word problems.

Another way to do this is to use the Activity-Based Exploration for 13-11. Students analyze line plot data and create addition and subtraction problems involving the data.

Suggestions: *Lessons 13-10 and 13-11 in Reveal meet part of Missouri's 4.DS.A.3 standard but not all of it. Use EE 12 to meet the other parts of that standard.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 12 (Additional--not in Reveal): Analyzing Data (Frequency Tables, Line Plots, Bar Graphs, & Picture Graphs)

Teaching Point: *Today I want to teach you how to analyze data in other types of tables and graphs. I also want to teach you how to determine the mode, median, and range of data.*

Suggested Length of Time: 2 - 3 days

Standards Addressed

Priority Standard: 4.DS.A.3

Supporting Standards: 4.DS.A.1, 4.DS.A.2

Detailed Description/Instructions:

One way to do this is to use the [Analyzing Data Powerpoint](#) to introduce a variety of tables, graphs, and vocabulary terms related to analyzing data. The ice cream flavor survey referenced on Slide 3 can be found in Coaches' Corner (Frequency Table Practice - Favorite Ice Cream).

Another way to do this is to use the handouts and websites provided in Coaches' Corner to allow students to practice answering questions and analyzing the data.

Suggestions:

- *We added this lesson to address all the parts of Missouri Priority Standard 4.DS.A.3.*
- *Print mean, median, and mode slides (Slide 15-21) in a smaller format and allow students to glue in their math notebooks to refer back to.*

Bloom's Level: Apply

Webb's DOK: 2

Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills about measurement and analyzing data.*

Suggested Length of Time: 1 - 2 days

Standards Addressed

Priority Standards: 4.GM.C.7, 4.GM.C.8, 4.DS.A.3

Supporting Standards: 4.GM.C.6a, 4.DS.A.1, 4.DS.A.2

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 13, pages 207-210 in the student workbook. You also use the additional materials in Coaches' Corner to practice frequency tables, bar graphs, and picture graphs.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Analyze

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about measurement and analyzing data.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.GM.C.7, 4.GM.C.8, 4.DS.A.3

Supporting Standards: 4.GM.C.6a, 4.DS.A.1, 4.DS.A.2

Detailed Description/Instructions:

One way to do this is to assign the Form B-Unit 13 post-assessment and Performance Task online. Consider using a paper copy of questions #2 and #4 from the [DESE 4th Grade Released Practice Form, Day 2](#), questions 2 and 4 to assess frequency table as well as mode and range.

Another way to do this is to print the Form B-Unit 13 post-assessment and the Performance Task. Consider using the [DESE 4th Grade Released Practice Form, Day 2](#), questions 2 and 4 to assess frequency table as well as mode and range.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Scenario - Unit 13

Task: Wildlife Sanctuary
Teacher's Edition page 198C (Volume 2)

Students design and build a model of a wildlife sanctuary for 5 animals. You can assign this Application Station digitally from Lesson 13-9>Differentiate>Application Station: Wildlife Sanctuary.

Unit 14: Geometric Figures

Subject: Math

Grade: 4th

Name of Unit: Geometric Figures

Length of Unit: 12 days

Overview of Unit: In this unit, students will build on and formalize their understanding of shapes as they learn to define and name the building blocks of geometric figures, describe and classify shapes in more complex ways, and apply geometric concepts and properties to solve problems.

Students will work and build on a framework of founding geometric concepts and skills by addressing the following objectives:

- **Understand Points, Lines, Line Segments, and Rays:** Students identify and draw points, lines, line segments, and rays.
- **Classify Angles:** Students classify angles as right, acute, or obtuse.
- **Draw and Measure Angles:** Students use a protractor to measure angles and draw angles of a specified measure.
- **Understand Parallel and Perpendicular Lines:** Students apply angle concepts to recognize parallel and perpendicular lines.
- **Add and Subtract Angle Measures:** Students use equations to find unknown angle measures. Students apply this understanding to solve problems involving unknown angle measures.
- **Classify Polygons:** Students use properties of shapes to classify polygons, including triangles and quadrilaterals.
- **Understand and Draw Lines of Symmetry:** Students develop an understanding of lines of symmetry and apply this understanding to draw lines of symmetry on 2-dimensional shapes.

Getting Ready for the Unit:

- Before each topic, watch the Expert Insights video to learn additional important information about the content of the unit. Send home the Unit Family Letter to give your families insight on the upcoming unit. These can be found within the online Unit Resources within each unit.
- Materials needed for this unit:
 - Geoboards
 - Chart paper (lessons ask for poster board)
 - Student clocks
 - Full-circle protractor
 - Half-circle protractor
 - Images of circular objects
 - Magazines
 - Newspapers
 - Images of objects with 90 degree angles
 - Rulers
 - Pattern blocks

- *Dot Paper* Teaching Resource
- Scissors
- Index cards
- *Alphabet Letters* Teaching Resource
- Construction paper
- Mirrors (use laptop camera or mirrors in science materials)

Essential Question:

- How can I solve problems involving geometric figures?

Enduring Understandings:

- 2-dimensional figures can be described, named, and classified based on their attributes--including sides, angles, and lines.
- Understanding how to draw and label points, lines, line segments, and rays helps us communicate and think about shapes.
- Measuring angles and identifying lines of symmetry deepen our understanding of 2-dimensional figures.

Priority Standards:

- 4.GM.A Classify 2-dimensional shapes by properties of their lines and angles.
 - 4.GM.A.2 Classify two-dimensional shapes by their sides and/or angles.
- 4.GM.B Understand the concepts of angle and measure angles.
 - 4.GM.B.4 Identify and estimate angles and their measures.

Supporting Standards:

- 4.GM.A Classify 2-dimensional shapes by properties of their lines and angles.
 - 4.GM.A.1 Draw and identify points, lines, line segments, rays, angles, perpendicular lines and parallel lines.
 - 4.GM.A.3 Construct lines of symmetry for a two-dimensional figure.
- 4.GM.B Understand the concepts of angle and measure angles.
 - 4.GM.B.5 Draw and measure angles in whole-number degrees using a protractor.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
4.GM.A.2	How to classify two-dimensional shapes by their sides and/or angles.	Classify two-dimensional shapes by their sides and/or angles, e.g., acute equilateral triangle; if a quadrilateral has two pairs of parallel sides it would be classified as a parallelogram. Identify which two-dimensional shapes are regular, or shapes where each side and angle are equivalent to each other, e.g., equilateral triangle, square. Focus shapes: triangles (equilateral, scalene, isosceles, right, acute, obtuse) and quadrilaterals (parallelogram, rectangle, rhombus, square). Be able to identify and describe a trapezoid.	Analyze	3
4.GM.B.4	Understand the concepts of angle and how to measure angles.	Identify and estimate angles and their measure in problems with or without context. Understand angles as geometric shapes that are formed whenever two rays share a common endpoint. Understand angles with reference to the degrees of a circle. Classify angles as right, acute, obtuse, or straight in both isolation, in a two-dimensional figure, or in some problem situation. Use and explain multiple strategies to solve	Analyze	3

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
		problems with or without context involving identifying and estimating angle measures.		

Assessment Options:

Formative Assessment Options <i>(Administered before or during a unit, topic or lesson to guide instruction and give feedback to students.)</i>	Summative Assessment Options <i>(Administered at the end of a unit or topic to assess mastery of learning objectives.)</i>
• Readiness Diagnostic • Exit Ticket • Math Probe • Fluency Check • Unit Assessment Form A	• Performance Task • Summative Assessment • Unit Assessments Form B available

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
examine indicate distinguish between notice confirm process focus highlight utilize prediction consider recognize	endpoint line(s) line segment point ray acute angle angle obtuse angle right angle degrees protractor parallel lines perpendicular lines parallelogram trapezoid acute triangle equilateral triangle isosceles triangle obtuse triangle right triangle scalene triangle line of symmetry symmetrical

Math Language Routines:

- MLR 8: Discussion Supports
- MLR 3: Critique, Correct, and Clarify
- MLR 2: Collect and Display
- MLR 1: Stronger and Clearer Each Time
- MLR 5: Co-Craft Questions and Problems
- MLR 7: Compare and Connect
- MLR 4: Information Gap
- MLR 6: Three Reads

Number Routines:

- Where Does It Go?
- Find the Missing Values
- About How Much?
- Can You Make the Number?

Sense-Making Routines:

- Which Doesn't Belong?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What question could you ask?

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
● Small Group Activity Lesson ● Online Take Another Look Lesson ● Reinforce Understanding Page from Differentiation Resource Book ● ALEKS	● Print & Digital Games ● Online Interactive Additional Practice ● Additional Practice page from Student Practice Book ● Print or Digital Spiral Review ● ALEKS	● Online Application Station-Extension Activity ● Physical Application Station (Use It!) ● Extend Thinking Page from Differentiation Resource Book ● ALEKS

Diagnostic Assessment

Teaching Point: *Today I'm going to teach you that good mathematicians review skills to prepare for the upcoming unit.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to print the Unit 14 Readiness Diagnostic or assign the online Unit 14 Readiness Diagnostic on ConnectEd. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking. This is taken independently.

Another way to do this after administering the Unit 14 Readiness Diagnostic, give the Form A assessment as a pre-assessment.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. The Readiness Diagnostic shows us how students have mastered the skills from 3rd grade. The pre-assessment assesses the skills they are about to learn in 4th grade. You can assign either the Readiness Diagnostic and/or the Form A assessment online so data goes into MH Plus.*

Bloom's Level: Apply

Webb's DOK: 2

Ignite!

Teaching Point: *Today I want to teach you how our math connects to the real world.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce the Focus Question: How can I solve problems involving geometric figures? Play the STEM career video and then have students complete the Ignite! activity on page 214 of the workbook.

Another way to do this is to introduce the Focus Question: How can I solve problems involving geometric figures? Play the STEM career video then pull small groups based on data from the Readiness Diagnostic.

Suggestions: *Teachers can use this day after the Readiness Diagnostic to implement differentiated groups based on data. This allows the teacher to front load and fill gaps before officially starting the unit. This could be done during independent work on this Ignite! Day and continued through differentiation in the unit. There are targeted intervention teacher directed lessons and worksheets in ConnectEd> Browse This Course>Unit 14>Targeted Intervention.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 1: 14-1 Understand Line, Line Segments, and Rays

Teaching Point: *Today I'm going to teach you how to identify and draw points, lines, line segments and rays.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.GM.A.2, 4.GM.B.4

Supporting Standard: 4.GM.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-1. Students identify properties of points, lines, line segments and rays. They learn how to label these geometric figures using points

Another way to do this is to use the Activity-Based Exploration for 14-1. Students explore properties of points, lines, line segments and rays.

Suggestions: *Students may think that a line is the same thing as a line segment. Remind the students that a line segment is part of a line.*

Bloom's Level: Understand

Webb's DOK: 1

Engaging Experience 2: 14-4 Understand Parallel and Perpendicular Lines

**This EE purposely skips from 14-1 to 14-4 to go along with the line work in 14-1 before moving on to angles in 14-2.*

Teaching Point: *Today I'm going to teach you how to identify and draw perpendicular and parallel lines.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.GM.A.2, 4.GM.B.4

Supporting Standard: 4.GM.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-4. Students extend their understanding of lines and line segments to identify parallel and perpendicular lines. They learn that parallel lines never intersect. Perpendicular lines intersect at right angles.

Another way to do this is to use the Activity-Based Exploration for 14-4. Students explore ways to identify the relationship between two pairs of lines. They identify parallel and perpendicular lines and find out whether they meet or not.

Suggestions: *This lesson is not part of the priority standard so it can be optional. It can be used as an extension activity during differentiated time. Students may confuse the terms: perpendicular lines and parallel lines. Remind students that parallel lines never intersect. Provide examples such as the opposite edges of a desk or the opposite sides of a door.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 3: 14-2 Classify Angles

Teaching Point: *Today I'm going to teach you to recognize angles as geometric shapes and understand the concepts of angle measurement. I'm going to teach you how to classify angles as right, acute, or obtuse.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.GM.B.4

Supporting Standards: 4.GM.A.1, 4.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-2. Students develop understanding of angle measure as the amount of rotation along a circle from one ray

to another ray. They use the amount of rotation to classify angles as right, acute, or obtuse.

Another way to do this is to use the Activity-Based Exploration for 14-2. Students develop understanding of angles as two rays that share the same endpoint. They explore the amount of turn or rotation along a circle, and think of ways to classify and group angles.

Suggestions: *Students may think that acute, right, and obtuse angles must be in an upright position. Remind students that angles may appear in different orientations and will still be classified according to the amount of rotation from one ray of the angle to the other ray.*

Bloom's Level: Understand

Webb's DOK: 1

Engaging Experience 4: 14-3 Draw and Measure Angles

Teaching Point: *Today I'm going to teach you how to measure angles in whole-number degrees using a protractor.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.B.4

Supporting Standards: 4.GM.A.1, 4.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-3. Students extend their understanding of angle measurement as the amount of rotation, or turning along a circle to measure and draw angles using a protractor.

Another way to do this is to use the Activity-Based Exploration for 14-3. Students explore ways to measure angles using a tool that has the same attribute.

Suggestions: *Students may think that they always need to line up one of the rays with 0 degrees when measuring the angles. Explain to students that while it makes it easier to measure an angle when one of the rays is lined up with 0 degrees, they can line up one of the rays with any tick mark then subtract or count the number of degrees to the tick mark that aligns with the other ray to find the measure of the angle.*

Bloom's Level: Analyze

Webb's DOK: 3

Engaging Experience 5: 14-5 Add and Subtract Angle Measures *(Optional)*

Teaching Point: *Today I'm going to teach you how to decompose an angle into two or more angles.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.B.4

Supporting Standard: 4.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-5. Students extend their understanding of drawing and measuring angles to adding and subtracting angle measures.

Another way to do this is to use the Activity-Based Exploration for 14-5. Students explore ways to add and subtract angle measures.

Suggestions: *This lesson is not part of the priority standard so it can be optional. It can be used as an extension activity during differentiated time. Students may think that an angle measure should always be subtracted from 360 or 180 degrees. Remind students that the measure of an angle is equal to the sum of the measures of the smaller angles into which it was composed.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 6: 14-6 Solve Problems Involving Unknown Angle Measures *(Optional)*

Teaching Point: *Today I'm going to teach you how to represent problems involving unknown angle measures using an equation.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.B.4

Supporting Standard: 4.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-6. Students extend their understanding of adding and subtracting angle measures to write equations that may be used to solve for an unknown angle measure.

Another way to do this is to use the Activity-Based Exploration for 14-6. Students explore ways to solve problems involving unknown angle measures.

Suggestions: *This lesson is not part of the priority standard so it can be optional. It can be used as an extension activity during differentiated time. Students may subtract the angle measure from 90 degrees. Remind students that half turn of a circle or straight line has an angle that is 180 degrees, also known as straight angles. Show some examples of real-world objects with angles that measure 180 degrees.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 7: 14-7 Classify Polygons

Teaching Point: *Today I'm going to teach you how to classify quadrilaterals by the presence or absence of parallel and perpendicular lines.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.A.2

Supporting Standard: 4.GM.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-7. Students use their understanding of parallel and perpendicular lines to classify quadrilaterals based on the absence or presence of these lines.

Another way to do this is to use the Activity-Based Exploration for 14-7. Students classify quadrilaterals based on the absence or presence of parallel and perpendicular lines.

Suggestions: *Students may think that opposite sides of a quadrilateral are always parallel. Show students an example of an isosceles trapezoid so that they can see that the sides connected to the bases are opposite sides, but are not parallel.*

Bloom's Level: Understand

Webb's DOK: 1

Engaging Experience 8: 14-8 Classify Triangles

Teaching Point: *Today I'm going to teach you to classify triangles by the length of the sides and the size of the angles*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.GM.A.2, 4.GM.B.4

Supporting Standard: 4.GM.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-8. Students classify triangles according to their angle measure, side lengths, and both angle measure and side lengths. Students are introduced to formal names used to classify triangles.

Another way to do this is to use the Activity-Based Exploration for 14-8. Students analyze triangles and classify them by the measure of their angles and side lengths. After students classify the triangles, they are introduced to formal names used to classify the triangles.

Suggestions: *Make sure you are always referring back to the triangle reference guide on page 244 of the student workbook when the students are determining which type of triangle they are identifying.*

Bloom's Level: Apply

Webb's DOK: 1

Engaging Experience 9: 14-9 Understand Line Symmetry

Teaching Point: *Today I'm going to teach you to recognize a line of symmetry for a 2-dimensional figure as a line that divides a figure into matching parts.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.A.2

Supporting Standard: 4.GM.A.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-9. Students determine if letter shapes can be folded into matching parts. They identify the letter shapes that are symmetrical.

Consider starting with the Probe and as students finish working in groups, there are review activities that can be assigned online. After all students complete their Probe work, bring them together for a whole class discussion.

Another way to do this is to use the Activity-Based Exploration for 14-9. Students use mirrors to determine whether the letters can be folded into matching parts. Then they fold the letters to show the line that divides the letters into matching parts.

Suggestions: *Some students may draw the exact same image along the line of symmetry. To make a matching half, students must draw the mirror image. Suggest using a mirror to help students visualize the matching half.*

Bloom's Level: Apply

Webb's DOK: 2

Engaging Experience 10: 14-10 Draw Lines of Symmetry

Teaching Point: *Today I'm going to teach you to recognize figures that are symmetrical. I am also going to teach you to draw multiple lines of symmetry on 2-dimensional figures.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standard: 4.GM.A.2

Supporting Standard: 4.GM.A.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-10. Students consider quadrilaterals and explore if they have the same number of lines of symmetry.

Another way to do this is to use the Activity-Based Exploration for 14-10. Students cut and fold 2-dimensional figures to determine if the shape has one, two, three, or no lines of symmetry.

Suggestions: *This lesson is not part of the priority standard so it can be optional. It can be used as an extension activity during differentiated time. Students may draw only 1 or 2 lines of symmetry for an equilateral triangle. Ask these students to trace the triangle onto paper and then cut the shape out and fold it multiple ways to make matching parts.*

Bloom's Level: Apply

Webb's DOK: 2

Unit Review and Fluency Check

Teaching Point: *Today I want to teach you strategies to review skills that include geometric figures.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.GM.A.2, 4.GM.B.4

Supporting Standards: 4.GM.A.1, 4.GM.A.3, 4.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Unit Review for Unit 14, pages 257-260 in the student workbook.

Another way to do this is to pull small groups based on needs determined through formative assessments in the unit and assign the review online.

Suggestions: *Finish your time by having students complete the Fluency Practice as an additional spiral review.*

Bloom's Level: Apply

Webb's DOK: 3

Unit Assessment and Performance Task

Teaching Point: *Today I want to teach you to show what you know about geometric figures.*

Suggested Length of Time: 1 day

Standards Addressed

Priority Standards: 4.GM.A.2, 4.GM.B.4

Supporting Standards: 4.GM.A.1, 4.GM.A.3, 4.GM.B.5

Detailed Description/Instructions:

One way to do this is to assign the Grade 4 Summative Assessment and the Performance Task. You can assess the priority standards of the unit while also spiraling in concepts from the previous units.

Another way to do this is to assign the Form B-Unit 14 post-assessment and the Performance Task online.

Another way to do this is to print the Form B-Unit 14 post-assessment and the Performance Task.

Suggestions: *Assessments are editable. Teachers can edit the test to focus on the priority standards. Teachers can pass out paper for student work when assigning online. These assessments can be assigned online so data goes into the MH Plus data. Use the Summative Assessment as a teaching tool for MAP testing prep.*

Bloom's Level: Apply

Webb's DOK: 3

Engaging Scenario - Unit 14

Task: Vibrating Strings

Teacher's Edition page 230 C (Volume 2)

Students analyze string instruments and classify their shapes, lines, angles, and symmetry.

*You can assign this online: Lesson 14-4>Differentiate>Application Station: Vibrating Strings.