



Park Hill School District

Building Successful Futures • Each Student • Every Day

5th Grade Math Curriculum

Scope and Sequence:

Quarter	Instructional Units
1	Unit 1: Math Is... Unit 2: Volume Unit 3: Place Value and Number Relationships Unit 4: Add and Subtract Decimals
2	Unit 5: Multiply Multi-Digit Whole Numbers Unit 6: Multiply Decimals Unit 7: Divide Whole Numbers
3	Unit 8: Divide Decimals Unit 9: Add and Subtract Fractions Unit 10: Multiply Fractions Unit 11: Divide Fractions (Start in Q3 but end in Q4)
4	Unit 12: Measurement and Data Unit 13: Geometry Unit 14: Algebraic Thinking

Unit 1: Math Is

Subject: Math

Grade: 5th Grade

Name of Unit: Math Is

Length of Unit: 7 lessons, 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 7 EEs to understand what you will be doing and why.
- *The Magical Yet* is referenced in EE 1 with a link to show the story. If you would prefer the book, find a copy in your library.
- *Hidden Figures: The True Story of Four Black Women and the Space Race* is referenced in EE 3 with a link. If you would prefer the book, find a copy in your library.
- Print the [5 Math Norms](#) for EE 4 and decide where you will hang them after the lesson for reference all year. See Coaches' Corner in Schoology in your Math folder for more versions of the Math Norms.
- You will need a deck of cards for EE 5. You will also decide whether or not to try vertical surfaces for students to work.
- For EE 6 you will be setting up expectations for how your students will use ALEKS. Read through that EE and practice finding the student view in ALEKS before doing this lesson.
- Print Greg Tang's Six Step Problem Solving [Model](#) for EE 7.

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 wise mathematicians value struggle.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to share struggle stories. You could read aloud [The Magical Yet](#) and discuss the following questions. What is something you can't do... yet? How does it feel to add that yet? Did the girl in the story learn how to ride her bike overnight or did it take practice? What is something you had to practice to learn? How did it feel when you learned how to do it? If you are having a hard time with something--like the girl did with her bike--what is something encouraging you could tell yourself? Tell about a time you made a mistake and tried again even though it was hard. How did it turn out? How did it feel?

Another way to do this in combination with the first option or instead of 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](#)"

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 this [article](#).*

Engaging Experience 2

Teaching Point: *Today I want to teach you how we can 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 asking students "What do we need in our math community?" Chart their answers. 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*

Another way to do this is to write on a piece of chart paper “In our math community, we promise to...” Then, 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 Pose the Problem scenario for lesson 1-2. Use the slide from ConnectEd for Pose the Problem rather than the student edition, which includes guided thinking. Give students sentence stems 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 3

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.*

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 and share their pictures and their thinking behind them, read or show the story of [Hidden Figures: The True Story of Four Black Women and the Space Race](#).

Another way to do this is to have students write about their Math Superpowers. You can use [My Math Superpowers](#) that also has brainstorming options on the back.

Suggestions: *You may teach students that wise learners make visualizing and imagining learning habits to help when learning how to connect new ideas to old ones.*

Engaging Experience 4

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: 1 day

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.**

Next, present an open-ended problem such as: A school is organizing chairs into equal rows for an assembly. They have 24 chairs. What are different ways they could arrange them?”

In pairs or groups, have students solve. As students finish, let them share their work and introduce the math norm: **Use multiple strategies and multiple representations.** Encourage students to talk about each other’s thinking and ask questions of other groups and introduce the math norms: **Talk about each other’s thinking** and **Ask questions until ideas make sense.** As you continue to debrief, make a point of valuing all of the different work you saw 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 number is doubled, then 6 is added. The answer is 14. What is the number?*” 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 they experienced. 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 EE2 about your math community.*

Engaging Experience 5

Teaching Point: *Today I want to give you an opportunity to experience some possible math struggles.*

Suggested Length of Time: 2 days

Detailed Description/Instructions:

One way to do this is to start by reviewing 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 and let students pick a card. Take cards out of the deck so that there are only 3 of each type of card possible. Let students know that the expectation of a supportive math community is to be happy to work with anyone and never boo or cheer, because that would hurt people’s feelings. You might want to refer to the work done as a class in EE2 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. Some possible tasks you could give students are 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: [Going Bowling](#), [Jellybeans](#), [Ice Cream Cones](#)

Another way to do this is to use the Math Circles Collaborative Inquiry structure with the options for problems listed above.

1. Launch the problem for the whole class - Ask, "*What do you notice? What do you wonder?*" to generate curiosity and allow students to make predictions or share initial thoughts.
2. Small group exploration - Group students into groups of 3 or 4 to explore the problem. Encourage discussion among the groups and for students to try multiple strategies. Groups should record their thinking using visuals or manipulatives. Everyone in the group should be able to explain the reasoning. The teacher walks around listening and asking guiding questions such as, "*How did you start? Can you explain that in a different way? What patterns do you see?*" The teacher should avoid giving direct answers and encourage deeper exploration.
3. Whole-class discussion and sharing - Groups share their strategies and thinking. Groups compare different methods and representations. The teacher should encourage students to ask each other questions.
4. Reflection - The teacher asks students to reflect on these questions, "*What did you learn? What questions do you still have?*"

Suggestions: *The goal of this engaging experience is to allow students to struggle as they work through an open-ended task. We suggest that you do more listening than talking as you move through the groups. If students ask a question, respond with a question that guides them back to their thinking and/or conversation. Spending too much time with any group will, more than likely, cause teachers to guide the work so we suggest you move quickly from group to group. You can choose some of the questions found in this [document](#) as you interact with students.*

Engaging Experience 6

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

Suggested length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to introduce 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 lessons. Use ALEKS [image #1](#), [image #2](#), [image #3](#), and the ALEKS [student sample](#) to show your students how to keep track of their work in their notebooks.

Another way to do this is to use the ALEKS student view to help students set up their work space in their notebooks as shown in the ALEKS student sample linked above.

To do this follow these steps:

1. On the top drop bar menu in ALEKS, click on your class
2. Click “Class tools” located towards the top right hand corner.
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. It 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 7

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 are often challenged to solve challenging word problems and then ask them if they know about how using a checklist of steps helps learners complete difficult tasks. Then, 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 formative assessment to begin learning the students’ ability and comfortability 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: *Last week nine cats were adopted from the animal shelter. There were three times as many dogs adopted as cats. How many dogs were adopted from the animal shelter last week?*

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, *There are two gray wolves at the zoo. The weight of the younger wolf is a certain number of pounds. The older wolf weighs a certain number of pounds. How much more does the older wolf weigh?*

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. *The older wolf weighs ____ more pounds than the younger wolf.*
3. Who or what is the problem about. Write it! *The problem is about two wolves at the zoo.*
4. Draw your model. *In this model, there will be three unknowns. One for how much the younger wolf weighs, a second for how much more the older wolf weighs, and a third for the difference. Have the students use blanks, question marks, or variables for these missing numbers in the equation.*
5. Write an equation. *At this point in time, students can choose any reasonable number for how much the younger wolf weighs and how much the older wolf weighs. 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 - National Council of Teachers of Mathematics](#).*

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 [here](#).

Unit 2: Volume

Subject: Math

Grade: 5th

Name of Unit: Volume

Length of Unit: 5 lessons, 9 days

Overview of Unit: In this unit, students explore measurable attributes of different figures and discover that all 3-dimensional figures have a measurable attribute of the space inside, which is called volume. They discover that volume can be measured by packing the figure with unit cubes and that there must be no gaps or overlaps of the unit cubes.

Students extend their understanding of multiplication as equal groups to discover that the volume of a rectangular prism can be calculated by multiplying the number of unit cubes in one layer by the number of layers. Students generalize methods for calculating volume of rectangular prisms to derive the formulas $V = l \times w \times h$ and $V = B \times h$.

Students discover that volume is additive. They can calculate the volume of composite solid figures by decomposing the figure into rectangular prisms, then add the volumes.

Students apply the volume formulas to solve real-world problems, including problems involving unknown dimensions.

Getting Ready for the Unit:

- Before each unit, 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.
- [Nets](#) Teaching Resource
- Centimeter cubes
- Rulers
- [Problem-Solving Tool](#) Teaching Resource

Essential Question:

- How can I find the volume of rectangular prisms?

Enduring Understandings:

- Volume is an attribute of 3-D figures.
- Volume can be determined by using counting cubes.
- Volume can be determined by using the formula $V = l \times w \times h$ or $V = B \times h$

Priority Standards:

- 5.GM.B Understand and compute volume.
 - 5.GM.B.4 Understand the concept of volume and recognize that volume is measured in cubic units.
 - 5.GM.B.4.a Describe a cube with edge length 1 unit as a “unit cube” and is said to have “one cubic unit” of volume and can be used to measure volume.
 - 5.GM.B.4.b Understand that the volume of a right rectangular prism can be found by stacking multiple layers of the base.

Supporting Standards:

- 5.GM.B Understand and compute volume.
 - 5.GM.B.5 Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for volume of right rectangular prisms with whole-number edge lengths.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.GM.B.4a	Understand the concept of volume. Know that volume is measured in cubic units. Understand that volume has three dimensions and how this is connected to an area which has two dimensions.	Describe a cube with an edge length of 1 unit as a “unit cube” and use the cube to measure volume.	Apply	2
5.GM.B.4b	Understand the concept of volume. Know that volume is measured in cubic units. Understand that the volume of a right rectangular prism can be found by stacking multiple layers of the base.	Make connections between the number of cubes on the bottom layer and the number of layers (height) to find the volume of a right rectangular prism.	Analyze	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
analyze establish debate suggest assert evaluate complex speculate relevant valid	rectangular prism unit cube volume cubic unit base (of a solid) formula composite solid figure equation unknown variable

Math Language Routines:

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

Number Routines:

- Would You Rather?
- Can You Make the Number?
- 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?

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station	Game Station 	Students build proficiency with finding the volume of rectangular prisms.	
		• Volume Sort	2-1
		• Volume Sort	2-2
		• Volume Showdown	2-3
		• Additive Volume Task Cards	2-4
		• Volume Situation Concentration	2-5
Digital Station	Digital Game 	Dino Dig Students practice multiplying to find area.	2-1
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card 	Developing and Using Models Students create a scale model of a kitchen cabinet.	2-5
	Connection Card 	Harvesting Water Students plan and build a model of a rainwater harvesting reservoir.	2-4
	Real World Card 	You Are a Computer Programmer Students design a computer program to find the volume of a rectangular prism.	2-3

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking our Unit 2 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 2 Assessment Form A for a preassessment and/or the Unit 2 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print Unit 2 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 find the volume of rectangular prisms? 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 find the volume of rectangular prisms? 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 2>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 2-1 Understand Volume

Teaching Point: *Today I'm going to teach you how rectangular prisms can be packed using unit cubes with no gaps or overlaps.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.B.4.a,b Understand the concept of volume (compute) and recognize that volume is measured in cubic units.

Supporting: 5.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 2-1 to teach that rectangular prisms have length, width, and height.

Another way to do this is to use the Activity-Based Exploration for 2-1 to provide students with hands-on experience in creating rectangular prisms from nets and filling them with objects.

Suggestions: *Consider student cutting skills, as precision is important. Students who have poor cutting skills will need support from a peer or pre-cut nets. Students might be grouped in triads to complete the activity.*

Bloom's Levels: Understand

DOK: 2

Engaging Experience 2: 2-2 Use Unit Cubes to Determine Volume

Teaching Point: *Today I am going to teach you how to determine volume by multiplying the number of unit cubes in one layer by the number of layers that fill a solid.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.B.4a,b Understand the concept of volume (compute) and recognize that volume is measured in cubic units.

Supporting: 5.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 2-2 to teach finding volume by finding the base and multiplying by the height. (Note the connection to finding the area of a 2-dimensional object and extending to 3-dimensional.)

Another way to do this is to use the Activity-Based Exploration for 2-2 to provide students with hands-on experience in creating rectangular prisms from nets and filling them with objects. (Note: This is the same activity-based exploration offered in lesson 2-1.)

Suggestions: *Consider your students' needs to determine if they will be best supported by completing both the activity-based and guided exploration.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 2-3 Use Formulas to Determine Volume

Teaching Point: *Today I am going to teach you how to find the volume of a rectangular prism using formulas.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: GM.B.4.a,b Understand the concept of volume (compute) and recognize that volume is measured in cubic units.

Supporting: 5.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 2-3 to teach finding volume using the formula $V = l \times w \times h$ and $V = B \times h$.

Another way to do this is to use the Activity-Based Exploration for 2-3 to help students derive the volume formulas by exploring patterns in the dimensions of rectangular prisms with the same volume.

Suggestions: *Using data from exit tickets determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 2-4 Determine the Volume of Composite Figures

Teaching Point: *Today I am going to teach you how to find the volume of composite figures.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.B.4.a,b Understand the concept of volume (compute) and recognize that volume is measured in cubic units.

Supporting: 5.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 2-4 to extend students' understanding of decomposing 2-dimensional composite figures to find area to decomposing composite solid figures to find volume.

Another way to do this is to use the Activity-Based Exploration for 2-4 to explore the concept of finding the volume of composite solid figures using nets.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 2-5 Solve Problems Involving Volume

Teaching Point: *Today I am going to teach you how to solve problems involving volume.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.B.4.a,b Understand the concept of volume (compute) and recognize that volume is measured in cubic units.

Supporting: 5.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the Activity-Based Exploration for 2-5 to teach students to apply the volume formula to solve real-world problems using the [Problem-Solving Tool](#) with the Pose the Problem.

Another way to do this is to use the Guided Exploration for 2-5 to teach how to apply the volume formula to solve real-world problems.

Bloom's Levels: Apply

DOK: 3

A Day for Review: Review finding volume

Teaching Point: *Today we are going to review how to solve problems involving volume.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.B.4.a,b Understand the concept of volume (compute) and recognize that volume is measured in cubic units.

Supporting: 5.GM.B.5

Detailed Description/Instructions:

One way to do this is to use the math game stations using lesson 2-3 Volume Showdown and 2-4 Additive Volume Task Cards

Another way to do this is to use the student workbook Unit Review pages 55-58.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about finding volume.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.B.4.a,b Understand the concept of volume (compute) and recognize that volume is measured in cubic units.

Supporting: 5.GM.B.5

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 2 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is print the Unit 2 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Analyze

DOK: 3

Engaging Scenario - Unit 2

Use the 3-Act Math activity from Soup Du Jour: Will All of the Soup Fit? to investigate whether the volume of one container will fit in the volume of another.

Link—<https://tapintoteenminds.com/3act-math/soup-du-jour/>

Unit 3: Place Value and Number Relationships

Subject: Math

Grade: 5

Name of Unit: Place Value and Number Relationships

Length of Unit: 5 lessons, 9 days

Overview of Unit: Our number system is called a base 10 place-value system because it takes 10 of one unit to equal 1 unit in the place-value position to the left of the given unit.

Students in Grade 5 have several years of experience with whole-number place value and fraction concepts, and in Grade 4 students began to investigate decimals in tenths and hundredths. They learn that it takes 10 hundredths to equal 1 tenth, and it takes 10 tenths to equal 1.

As students learn more about decimals, they need every opportunity to tie current learning to established understanding. Lesson 3-1 of this unit reviews whole-number place value. Students are asked questions such as: “What pattern do you see as you move from one place to another?” “How does the value of the 3 in the thousands place compare to the value of the 3 in the hundreds place?”

Students learn that the value of a digit in a decimal, as its value in a whole number, depends upon its place in the number. So, the value of a digit is 10 times what it would be in the place to its right, and its value is $\frac{1}{10}$ what it would be to its left.

As students progress through the unit, you may want to provide them with place-value charts and digits cards to give them frequent opportunities to experience concrete correspondences among place values.

Getting Ready for the Unit:

- Before each unit, 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.
- [*10 x 10 Grids*](#) Teaching Resource
- [*Decimal Forms*](#) Teaching Resource
- [*Number Cards 0-10*](#) Teaching Resource
- Number cubes

Essential Questions:

- How can I extend my knowledge of place value to understand decimals?
- What can decimals be used for?

Enduring Understandings:

- Like whole numbers, the value of a digit in a decimal depends upon its place in the number.
- The value of a digit is 10 times what it would be in the place to its right, and its value is $\frac{1}{10}$ what it would be to its left.
- Decimals can be rounded using the same strategies used for whole numbers.

Priority Standards:

- 5.NF.A Understand the relationship between fractions and decimals (denominators that are factors of 100).
 - 5.NF.A.1 Understand that parts of a whole can be expressed as fractions and/or decimals.
 - 5.NF.A.2 Convert decimals to fractions and fractions to decimals.
 - 5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting Standards:

- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.1 Read, write and identify numbers from billions to thousandths using number names, base ten numerals, and expanded form.
 - 5.NBT.A.2 Compare two numbers from billions to thousandths using the symbols $>$, $=$ or $<$, and justify the solution.
 - 5.NBT.A.3 Understand that in a multi-digit number, a digit represents $\frac{1}{10}$ times what it would represent in the place to its left.
 - 5.NBT.A.5 Round numbers from billions to thousandths place.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.NF.A.1	Understand the relationship between fractions and decimals (denominators that are factors of 100). Understand that parts of a whole can be expressed as fractions and/or decimals. Understand that fractions and decimals are representations of specific numbers.	Demonstrate understanding of the relationship between equivalent fractions and decimals.	Apply	2
5.NF.A.2	Understand the relationship between fractions and decimals (denominators that are factors of 100).	Convert decimals to fractions and fractions to decimals.	Apply	2
5.NF.A.3	Understand the relationship between fractions and decimals (denominators that are factors of 100).	Compare and order fractions and/or decimals to the thousandths place. Justify their comparison using number lines, manipulatives, or drawings. Communicate the comparison using the symbols $<$, $>$, or $=$. Use and explain multiple strategies to solve problems involving comparing and ordering fractions and/or decimals to the thousandths 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 • Digital or Print Assessment Form A • Exit Tickets for each lesson • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
cite relationship contradiction infer expand quality address negate prove variation	digit place-value place-value chart decimal decimal point tenth hundredth thousandth expanded form standard form word form greater than ($>$) less than ($<$) estimate round

Math Language Routines:

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

Number Routines:

- Where Does It Go?
- Decompose It!
- Find the Pattern, Make a Pattern

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?

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use it.

	Activity	Description	Use After Lesson
Game Station	Game Station 	Students build proficiency with using decimal numbers.	
		• Value of a Digit Sort	3-1
		• Place Value with Decimals Sort	3-2
		• Reading and Writing Decimals Concentration	3-3
		• Decimal Showdown	3-4
		• Rounding Decimals Four in a Row	3-5
Digital Station	Digital Game 	Factory Sort Students practice adding and subtracting within 1,000,000.	3-1
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card 	How Far? Students research stars and create a model or drawing showing the stars and their distances from Earth.	3-5
	Connection Card 	On Your Mark, Get Set, Go! Students create a list of times in a swimming meet and compare the times to the results of Olympic swimming events.	3-4
	Real World Card 	State Sales Tax Student investigate and compare state sales tax rates.	3-5

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • STEM Activity • Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today we will be taking our Unit 3 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 3 Assessment Form A for a preassessment and/or the Unit 3 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 3 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 extend my knowledge of place value to understand decimals? Play the STEM career video and then have students complete the Ignite! activity on page 62 of their workbook.

Another way to do this is to introduce the Focus Question: How can I extend my knowledge of place value to understand decimals? 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 3>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 3-1 Generalize Place Value

Teaching Point: *Today I am going to teach you to recognize that the value of a digit represents ten times as much as it represents in a place to its right and one-tenth as much as the place to its left.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.A.1 Understand that parts of a whole can be expressed as fractions and/or decimals.

5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting: 5.NBT.A.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-1 to teach students to extend their understanding of whole-number place value to the relationships place values represent to the right and to the left.

Another way to do this is to use the Activity-Based Exploration for 3-1 to provide students with hands-on experience exploring the relationship between place-value positions.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 3-2 Extend Place Value to Decimals

Teaching Point: *Today I am going to teach you to extend the place value relationship to decimal numbers and to explain the relationship of place values in decimal numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.A.1 Understand that parts of a whole can be expressed as fractions and/or decimals.

5.NF.A.2 Convert decimals to fractions and fractions to decimals.

5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting: 5.NBT.A.2, 5.NBT.A.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-2 to teach students to extend their understanding of whole-number place value to decimal numbers.

Another way to do this is to use the Activity-Based Exploration for 3-2 where students will construct arguments to support their thinking about the values of the digits in decimal numbers.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 3-3 Read and Write Decimals

Teaching Point: *Today I am going to teach you to read and write decimals to thousandths using standard form, expanded form, and word form.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.A.1 Understand that parts of a whole can be expressed as fractions and/or decimals.

5.NF.A.2 Convert decimals to fractions and fractions to decimals.

5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting: 5.NBT.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-3 to teach students to extend their understanding of word-form, standard form, and expanded form to decimal numbers.

Another way to do this is to use the Activity-Based Exploration for 3-3 where students will use their understanding of different forms of whole numbers to identify different forms of decimals.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 3-4 Compare Decimals

Teaching Point: *Today I'm going to teach you to compare two decimals to the thousandths place using place value.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting: 5.NBT.A.2

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-4 to teach students to extend their understanding of comparing whole numbers using place value to decimal numbers.

Another way to do this is to use the Activity-Based Exploration for 3-4 where students extend their understanding of comparing whole numbers using place value to decimal numbers.

Suggestions: *Use data from exit tickets to determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 3

Engaging Experience 5: 3-5 Use Place Value to Round Decimals

Teaching Point: *Today I am going to teach you how to use rounding strategies to round decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 3-5 to teach students to extend their understanding of rounding whole numbers using place value to decimal numbers.

Another way to do this is to use the Activity-Based Exploration for 3-5 to provide students with a hands-on experience to look for patterns when rounding decimals.

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review place value and decimals

Teaching Point: *Today we are going to review what we have learned about using place value to compare and round decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.A.1 Understand that parts of a whole can be expressed as fractions and/or decimals.

5.NF.A.2 Convert decimals to fractions and fractions to decimals.

5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting: 5.NBT.A.1, 5.NBT.A.2, 5.NBT.A.3, 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the student workbook Unit Review, pages 85-88

Another way to do this is to differentiate based on data from formative assessments throughout the unit.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about decimal place value and number relationships.*

Suggested Length of Time: 1 day

Priority: 5.NF.A.1 Understand that parts of a whole can be expressed as fractions and/or decimals.

5.NF.A.2 Convert decimals to fractions and fractions to decimals.

5.NF.A.3 Compare and order fractions and/or decimals to the thousandths place using the symbols $>$, $=$ or $<$, and justify the solution.

Supporting: 5.NBT.A.1, 5.NBT.A.2, 5.NBT.A.3, 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 3 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is to print the Unit 3 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Analyze

DOK: 3

Engaging Scenario - Unit 3

Use the 3-Act Math activity from [Graham Fletcher: "Final Lap"](#) to investigate which car won the Daytona 500. Students can use [this recording sheet](#) as you move through the acts.

Unit 4: Add and Subtract Decimals

Subject: Math

Grade: 5th

Name of Unit: Add and Subtract Decimals

Length of Unit: 8 lessons, 13 days

Overview of Unit: As students approach learning to add and subtract decimals, they are equipped with the understanding of whole-number operations and decimal place value. They have experience with using number lines, grids, and other visual representations to help them add and subtract. Students build on this prior knowledge as they develop strategies for adding and subtracting decimals.

The explorations with multiple representations provide students opportunities to visualize and internalize how decimals behave during addition and subtraction. This allows for a much deeper understanding than merely memorizing and applying algorithms.

Students estimate sums and differences by using rounded numbers and compatible numbers. Estimation strategies are taught prior to finding exact results so that students have tools to use to check for reasonableness.

Students learn to find exact sums and differences using multiple representations including tenths and hundredths grids and number lines. Students also learn how to decompose decimals to perform operations on their parts.

Allow students plenty of time to explore the strategies in each lesson. When they ultimately use the standard algorithm for each decimal operation, this learning will give them a foundation of deeper understanding.

Getting Ready for the Unit:

- Before each unit, 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.
- [*Decimal Cards*](#) Teaching Resource
- Number cubes
- [*Tenths and Hundredths*](#) Teaching Resource
- Base-ten blocks
- Index cards
- [*10x10*](#) Teaching Resource
- [*Decimal Cards*](#) Teaching Resource
- [*Blank Number Lines*](#) Teaching Resource
- [*Explain and Show Your Strategies*](#) Teaching Resource

Essential Question:

- How do I add and subtract decimals?

Enduring Understandings:

- Place-value strategies help estimate sums and differences of decimals.
- Representations including decimals grids and number lines are tools to add and subtract decimals.
- Strategies including decomposition, partial sums, and partial differences are ways to add and subtract decimals.

Priority Standards:

- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting Standards:

- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.5 Round numbers from billions to thousandths place.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.NBT.A.6	How to use the place value system to perform operations with multi-digit whole numbers to billions and decimals to thousandths.	Add and subtract multi-digit whole numbers and decimals to the thousandths place. Use strategies based on properties, e.g. place value, partial sums, partial differences. Defend their solutions. Generate solutions to problems and explain their reasoning.	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 ● Digital or Print Assessment Form A ● Exit Tickets for all lessons ● Math Probe ● Fluency Check	● Digital or Print Assessment Form B ● Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
analyze infer reasonable benefit drawback evaluate debate emphasize procedure assert prove accurate	decimal estimate decimal grid hundredths tenths decompose decomposition partial sums

Math Language Routines:

- MLR 1: Strong and Clearer Each Time
- MLR 2: Collect and Display
- MLR 3: Critique, Correct, and Clarify
- MLR 4: Information Gap
- MLR 5: Co-Craft Questions and Problems
- MLR 7: Compare and Connect
- MLR 8: Discussion Supports

Number Routines:

- About How Much?
- Would You Rather?
- Which Benchmark Is It Closest To?
- Can You Make the Number?

Sense-Making Routines:

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

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use it.

	Activity	Description	Use After Lesson
Game Station	Game Station	Students build proficiency with adding and subtracting decimal numbers.	
		• Estimating Sums and Differences of Decimals Race	4-1
		• Represent Addition of Decimals Task Cards	4-2
		• Add Tenths and Hundredths Race	4-3
		• Decimal Addition Tic Tac Toe	4-4
		• Represent Subtraction of Decimals Task Cards	4-5
		• Subtract Tenths and Hundredths Race	4-6
		• Decimal Subtraction Tic Tac Toe	4-7
		• Add or Subtract Decimal Word Problems Race	4-8
	Digital Station	Digital Game	Batting Practice Students practice adding and subtracting decimals.
			
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card	Let's Get Organized! Students use decimals to measure and create organizers.	4-8
			
	Connection Card	Cost of Living Depends on Where You Live Students use equations to compare the cost of living in rural towns and urban cities.	4-8
			
	Real World Card	Balance a Checkbook Students research checking accounts and practice balancing a checkbook.	4-7
			

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • STEM Activity • Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today we will be taking our Unit 4 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 4 Assessment Form A for a preassessment and/or the Unit 4 Readiness Diagnostic. 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 is to print the Unit 4 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 do I add and subtract decimals? Play the STEM career video and then have students complete the Ignite! activity on page 92 of their workbook.

Another way to do this is to introduce the Focus Question: How do I add and subtract decimals? 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 4>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 4-1 Estimate Sums and Differences of Decimals

Teaching Point: *Today I am going to teach you how to estimate sums and differences of decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-1 to teach students to extend strategies they know for estimating sums and differences of whole numbers to estimating sums and differences of decimals.

Another way to do this is to use the Activity-Based Exploration for 4-1 to provide students with hands-on experience in estimating sums and differences of decimals.

Suggestions: *Using data from exit tickets to determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 3

Engaging Experience 2: 4-2 Represent Addition of Decimals

Teaching Point: *Today I am going to teach you how to represent addition of decimals using decimal grids.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-2 to help students use concrete models or drawings, such as decimal grids, to add decimal numbers with the same number of decimal places.

Another way to do this is to use the Activity-Based Exploration for 4-2 to help students write addition expressions and then use models to add the decimals.

Bloom's Levels: Apply

DOK: 3

Engaging Experience 3: 4-3 Represent Addition of Tenths and Hundredths

Teaching Point: *Today I am going to teach you how to choose from multiple strategies to add decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-3 to help students extend understanding of whole number addition to decimal numbers.

Another way to do this is to use the Activity-Based Exploration for 4-3 to help students explore using decimal grids to solve addition equations involving decimals with tenths and hundredths.

Suggestions: Print the [10 x 10](#) Teaching Resource for students.

Bloom's Levels: Apply

DOK: 3

Engaging Experience 4: 4-4 Use Partial Sums to Add Decimals

Teaching Point: *Today I am going to teach you how to find sums of decimals using partial sums.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-4 to extend student understanding of using partial sums to add whole numbers to using partial sums to add decimal numbers.

Another way to do this is to use the Activity-Based Exploration for 4-4 to explore different ways to decompose decimal addends.

Suggestions: *Based on formative assessments, consider differentiating additional learning experiences to either enrich or support students. One suggestion is using both the Activity-Based Exploration and the Guided Exploration and/or digital games and game stations and Extend Learning Activities.*

Bloom's Levels: Apply

DOK: 3

Engaging Experience 5: 4-5 Represent Subtraction of Decimals

Teaching Point: *Today I am going to teach you how to subtract decimals less than 1 containing tenths.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-5 to help students use number lines or decimal grids to represent subtraction equations involving decimals to the tenths or hundredths.

Another way to do this is to use the Activity-Based Exploration for 4-5 to help students write subtraction expressions and then use models to subtract the decimals.

Suggestions: *Print the [Blank Number Lines](#) and [Tenths and Hundredths](#) Teaching Resources.*

Bloom's Levels: Apply

DOK: 3

Engaging Experience 6: 4-6 Represent Subtraction of Tenths and Hundredths

Teaching Point: *Today I am going to teach you how to use regrouping to subtract tenths from hundredths and hundredths from tenths.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-6 to help students extend their understanding of representing subtraction of decimals with different numbers of decimal places.

Another way to do this is to use the Activity-Based Exploration for 4-6 to teach using decimal grids to solve subtraction equations involving decimals with tenths and hundredths.

Bloom's Levels: Apply

DOK: 3

Engaging Experience 7: 4-7 Strategies to Subtract Decimals

Teaching Point: *Today I am going to teach you to use strategies to subtract decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-7 to help students extend strategies learned for subtracting whole numbers by decomposing the second number. They also connect subtraction to addition by counting up on a number line to find the difference between decimals.

Another way to do this is to use the Activity-Based Exploration for 4-7 to explore different strategies to subtract decimal numbers.

Suggestions: *Based on formative assessments, consider differentiating additional learning experiences to either enrich or support students. One suggestion is using both the Activity-Based Exploration and the Guided Exploration and/or digital games and game stations and Extend Learning Activities.*

Bloom's Levels: Apply

DOK: 3

Engaging Experience 8: 4-8 Explain Strategies to Add and Subtract Decimals

Teaching Point: *Today I am going to teach you how to explain strategies for adding and subtracting decimals to solve problems.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 4-8 to help students extend their understanding of adding and subtracting decimals by using various strategies.

Another way to do this is to use the Activity-Based Exploration for 4-8 to explore strategies to solve real-world problems involving decimals.

Suggestions: *Based on formative assessments, consider differentiating additional learning experiences to either enrich or support students. One suggestion is using both the Activity-Based Exploration and the Guided Exploration and/or digital games and game stations and Extend Learning Activities.*

Bloom's Levels: Apply

DOK: 3

A Day for Review: Review Adding and Subtracting Decimals

Teaching Point: *Today we are going to review how to solve problems adding and subtracting decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to use the student workbook Unit Review, pages 127 - 130.

Another way to do this is to differentiate based on data from formative assessments throughout the unit.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 3

A Day for Assessment

Teaching Point: *Today you are going to show what you know about adding and subtracting decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NBT.A.6 Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.

Supporting: 5.NBT.A.5

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 4 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is to print the Unit 4 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Another way to do this is to administer the Benchmark Assessment 1 in either print or digital form. This assessment will assess the priority standard for this unit in addition to standards from the previous units.

Bloom's Levels: Apply

DOK: 3

Engaging Scenario - Unit 4

Performance Task: Cell Phone Shopping

Teacher's Edition page 132A

In this 4-part task, students draw on their understanding of using strategies to add and subtract decimals.

Unit 5: Multiply Multi-Digit Whole Numbers

Subject: Math

Grade: 5th

Name of Unit: Multiply Multi-Digit Whole Numbers

Length of Unit: 7 lessons, 12 days

Overview of Unit: In this unit, students are guided gradually from their previous understanding of place-value relationships to a concrete understanding of multi-digit multiplication. They begin by writing powers of 10 in exponential form and then work to identify patterns when multiplying by powers of 10.

Students then begin to estimate products, using compatible numbers and rounding. Estimation gives students a way to think about computation with larger numbers. For example, the magnitude of the product $5,136 \times 13$ may not be as easy for students to comprehend as $5,000 \times 10$. That may be because students may lose sense of the magnitude of the product when they work through the steps of finding $5,136 \times 13$. After they estimate products, students begin finding exact products by using area models and partial products.

Students then relate their understanding of partial products to an algorithm. Multiplying multi-digit numbers using an algorithm can be an abstract process. Even when students multiply the digits in the correct order and regroup accurately, they may not be fully aware of the actual quantities with which they are working.

Getting Ready for the Unit:

- Before each unit, 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.
- Number cubes
- Calculators
- Index cards
- Base-Ten Blocks
- [*Multiplication Algorithm*](#) Teaching Resource

Essential Question:

- How can I multiply multi-digit numbers?

Enduring Understandings:

- Whole number exponents denote powers of 10.
- Multiplying by 10 creates predictable patterns.
- The strategy of partial products shows what is happening in the standard algorithm in a more explicit way.
- Multi-digit whole numbers can be multiplied using an algorithm.

Priority Standards:

- 5.RA.C Use the four operations to represent and solve problems.
 - 5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.
- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting Standards:

- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.4 Evaluate the value of powers of 10 and understand the relationship to the place value system.
- 5.RA.B Write and interpret numerical expressions.
 - 5.RA.B.3 Write, evaluate and interpret numeric expressions using the order of operations.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.RA.C.5	How to use the four operations to represent and solve problems.	Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals. Use and explain multiple strategies. Solve problems with or without context.	Apply	3
5.NBT.A.7	How to use the place value system to perform operations with multi-digit whole numbers to billions and decimals to thousandths.	Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution. Use strategies based on properties, e.g. place value, partial products. Justify their solutions. Generate solutions to problems and explain their reasoning.	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
accurate cite establish relevant speculate analyze suggest note transition infer reasonable benefit drawback evaluate debate emphasize procedure assert prove	base exponent exponential form power of 10 factor estimate round area model decompose partial products algorithm regroup

Math Language Routines:

- MLR 1: Stronger and Clearer Each Time
- MLR 3: Critique, Correct, and Clarify
- MLR 4: Information Gap
- MLR 5: Co-Craft Questions and Problems
- MLR 6: Three Reads
- MLR 7: Compare and Connect
- MLR 8: Discussion Supports

Number Routines:

- About How Much?
- Find the Pattern, Make a Pattern
- Greater Than or Less Than
- What's Another Way to Write It?

Sense-Making Routines:

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

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station		Game Station	Students build proficiency with multiplying multi-digit whole numbers.
		• Powers of 10 Concentration	5-1
		• Multiplying by 10 Tic Tac Toe	5-2
		• Estimating Products Bingo	5-3
		• Area Model Task Cards	5-4
		• Partial Products Concentration	5-5
		• Multiplication Standard Algorithm Task Cards	5-6
		• Multiplication Showdown	5-7
Digital Station		Digital Game	Dino Dig Student multiply with area models.
			5-1
Application Station	Have students complete at least one of the Use It! activities for this unit.		
		STEM Project Card	Make a Pulley System Students use measurements to create a pulley system.
			5-7
		Connection Card	Washington Color School Movement—Color Field Painting Students create art to represent a base number with an exponent.
			5-1
		Real World Card	Let's Celebrate Students use charts to create a budget for a graduation celebration.
			5-3

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • STEM Activity • Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today we will be taking our Unit 5 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this digitally assign the Unit 5 Assessment Form A for a preassessment and/or the Unit 5 Readiness Diagnostic. 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 is to print the Unit 5 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 multi-digit numbers? Play the STEM career video and then have students complete the Ignite! activity on page 134 of their workbook.

Another way to do this is to introduce the Focus Question: How can I 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 5>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 5-1 Understand Powers and Exponents

Teaching Point: *Today I am going to teach you how to write a power of 10 using a base of 10 and exponents.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-1 to teach students to use the relationship between repeated multiplication and the product to develop an understanding of powers and exponents.

Another way to do this is to use the Activity-Based Exploration for 5-1 to provide students with hands-on experience in representing powers of 10 using small objects and compare what 10, 100, and 1,000 of the objects look like. They will use these findings to predict what 1,000,000 objects will look like.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 5-2 Patterns When Multiplying a Whole Number by Powers of 10

Teaching Point: *Today I am going to teach you how to determine the products of numbers multiplied by powers of 10 written with exponents.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-2 to teach students to examine the patterns that arise when multiplying a whole number by a power of 10.

Another way to do this is to use the Activity-Based Exploration for 5-2 to provide students with hands-on experience in exploring place-value patterns when multiplying by powers of 10 and use their patterns to multiply whole numbers by powers of 10.

Bloom's Levels: Apply

DOK: 3

Engaging Experience 3: 5-3 Estimate Products of Multi-Digit Factors

Teaching Point: *Today I am going to teach you how to estimate products of multi-digit factors and to determine if your calculations are reasonable.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Activity-Based Exploration for 5-3 to provide students with hands-on experience with estimating products of multi-digit factors using various strategies.

Another way to do this is lesson the Guided Exploration for 5-3 to teach students how to use two different strategies to estimate products of multi-digit factors.

Bloom's Levels: Apply

DOK: 3

Engaging Experience 4: 5-4 Use Area Models to Multiply Multi-Digit Factors

Teaching Point: *Today I am going to teach you how to use an area model and partial products to multiply multi-digit whole numbers.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-4 to teach students to expand their knowledge of multiplying with multi-digit factors by breaking down factors by place value, creating an area model, finding partial products, and adding partial products to find the product.

Another way to do this is to use the Activity-Based Exploration for 5-4 to help students explore area models to determine different ways to decompose them to form partial products.

Suggestions: *Based on formative assessments consider differentiating additional learning experiences to either enrich or support students. One suggestion is using both the Activity-Based Exploration and the Guided Exploration and/or digital games and game stations and Extend Learning Activities.*

Bloom's Levels: Apply

DOK: 3

Engaging Experience 5: 5-5 Use Partial Products to Multiply Multi-Digit Factors

Teaching Point: *Today I am going to teach you how to use partial products to help you multiply multi-digit factors.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-5 to teach students how to use partial products to multiply using multi-digit factors, while following along with an area model.

Another way to do this is to use the Activity-Based Exploration for 5-5 to help students explore ways to record their work when using partial products to multiply.

Bloom's Levels: Apply

DOK: 3

Engaging Experience 6: 5-6 Relate Partial Products to an Algorithm

Teaching Point: *Today I am going to teach you how to multiply using an algorithm.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-6 to teach students to apply what they know about solving equations using partial products to use an algorithm to solve multiplication equations.

Another way to do this is to use the Activity-Based Exploration for 5-6 to provide students a chance to explore using an algorithm to solve a multiplication problem.

Suggestions: *Using data from exit tickets determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 3

Engaging Experience 7: 5-7 Multiply Multi-Digit Factors Fluently

Teaching Point: *Today I am going to teach you how to use an algorithm to multiply multi-digit factors.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 5-7 to teach students to use an algorithm to multiply two multi-digit factors.

Another way to do this is to use the Activity-Based Exploration for 5-7 to help students explore extending a multiplication algorithm to multiply two multi-digit factors.

Suggestions: *Based on formative assessments consider differentiating additional learning experiences to either enrich or support students. One suggestion is using both the Activity-Based Exploration and the Guided Exploration and/or digital games and game stations and Extend Learning Activities. If you use the Activity-Based Exploration, print the [Multiplication Algorithm Teaching Resource](#).*

Bloom's Levels: Apply

DOK: 3

A Day for Review: Review Multiplying Multi-Digit Whole Numbers

Teaching Point: *Today we are going to review how to multiply multi-digit numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the student workbook Unit Review, pages 165 - 168.

Another way to do this is to differentiate based on data from formative assessments throughout the unit.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

A Day for Assessment

Teaching Point: *Today you are going to show what you know about multiplying multi-digit numbers.*

Suggested Length of Time: 1 day

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 5 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is to print the Unit 5 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Level: Apply

DOK: 3

Engaging Scenario - Unit 4

Performance Task: Movie Theaters
Teacher's Edition page 170A

In this 5-part task, students draw on their understanding of multiplying multi-digit numbers.

Unit 6: Multiply Decimals

Subject: Math

Grade: 5th

Name of Unit: Multiply Decimals

Length of Unit: 6 lessons, 13 days

Overview of Unit: In this unit, students extend on their understanding from Grade 4 of multiplying whole numbers and fractions to multiplying decimals. They use estimation to determine the reasonableness of their answers. Students apply their understanding of multiplying decimals to solve problems in real-world context.

Students apply their knowledge of decimal fractions, place value, and the properties of operations to multiply decimals. Later in the unit, students revisit and make use of the pattern they discovered to make a generalization about the placement of the decimal in the product.

Students discover that place value and multiplication strategies work the same way with decimal operations as they do with whole number operations.

- Students can extend their understanding based on these explorations with decimal grids to generalize their methods and understanding. They move to the generalized area model, which serves as a template for their thinking and use of the Distributive Property and partial products. For example, consider 0.25×73 .
- Students can decompose the factors by place value and set up the following area representation of the product. Now, if students explore further by finding the products 25×73 , 2.5×73 , 2.5×7.3 , and 0.25×7.3 , they can see that the number of decimal places in the product equals the total decimal places in the factors.

Getting Ready for the Unit:

- Before each unit, 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.
- Calculator
- Number Cubes, 1 whole, 1 decimal
- [*10x10 Grids*](#) Teaching Resource (page 1 of 3)
- [*Blank Open Number Lines*](#) Teaching Resource (page 2 of 3)
- [*Tenths and Hundredths*](#) Teaching Resource (page 3 of 3)
- Place-Value Charts
- Base-Ten Blocks
- 0.5 cm Grid Paper
- [*Show and Explain Your Reasoning*](#) Teaching Resource

Essential Questions:

- What strategies can I use to multiply decimals?
- How can I use what I know about multiplying whole numbers to help me multiply decimals?

Enduring Understandings:

- The value of a decimal digit follows predictable patterns based on place value.
- Multiplying decimals is an extension of whole number multiplication and follows the same properties.
- Decimal multiplication can be represented using decimal grids.
- Estimating before multiplying decimals helps assess whether an answer makes sense.

Priority Standards:

- 5.RA.C Use the four operations to represent and solve problems.
 - 5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.
- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting Standards:

- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.4 Evaluate the value of powers of 10 and understand the relationship to the place value system.
- 5.RA.B Write and interpret numerical expressions.
 - 5.RA.B.3 Write, evaluate and interpret numeric expressions using the order of operations.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.RA.C.5	How to use the four operations to represent and solve problems.	Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals. Use and explain multiple strategies. Solve problems with or without context.	Apply	3
5.NBT.A.7	How to use the place value system to perform operations with multi-digit whole numbers to billions and decimals to thousandths.	Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution. Use strategies based on properties, e.g. place value, partial products. Justify their solutions. Generate solutions to problems and explain their reasoning.	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
analyze reflect cite speculate complex negate complement evaluate assert expand relevant suggest	exponent factor product estimate range round decimal grid partition area area model decompose decomposition partial product digit unknown

Math Language Routines:

- MLR 1: Strong and Clearer Each Time
- MLR 2: Collect and Display
- MLR 5: Co-Craft Questions and Problems
- MLR 6: Three Reads
- MLR 7: Compare and Connect
- MLR 8: Discussion Supports

Number Routines:

- What's Another Way to Write It?
- About How Much?
- Find the Missing Values
- Where Does It Go?

Sense-Making Routines:

- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: How are they the same? How are they different?
- Which Doesn't Belong?
- Is It Always True?
- Numberless Word Problem

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use it.

	Activity	Description	Use After Lesson
Game Station	Game Station	Students build proficiency with multiplying decimals.	
		• Multiply by Powers of 10 Showdown	6-1
		• Estimating Decimal Products Bingo	6-2
		• Decimal Multiplication Task Cards	6-3
		• Decimal Multiplication Tic Tac Toe	6-4
		• Related Decimal Multiplication Task Cards	6-5
		• Related Decimal Multiplication Task Cards	6-6
Digital Station	Digital Game	Mad Lab Mix-Up Students multiply multi-digit numbers.	6-1
			
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card	Rock Garden Students use metric measurements to create a model of a rock garden.	6-6
			
	Connection Card	School Spirit Students use area and multiplication to create a school wall mural.	6-4
			
Application Station	Real World Card	Move to the Left. Now Right! Students create a maze and write step-by-step directions for getting through it.	6-3
			

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • STEM Activity • Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today we will be taking our Unit 6 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 6 Assessment Form A for a preassessment and/or the Unit 6 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 6 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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: What strategies can I use to multiply decimals? Play the STEM career video and then have students complete the Ignite! activity on page 172 of their workbook.

Another way to do this is to introduce the Focus Question: What strategies can I use to multiply decimals? 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 6>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 6-1 Patterns When Multiplying Decimals by Powers of 10

Teaching Point: *Today I am going to teach you how to use patterns to multiply a decimal by a power of 10.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-1 to write out the factors of 10 to multiply a decimal by a power of 10 to explore and recognize patterns.

Another way to do this is to use the Activity-Based Exploration for 6-1 to use calculators to multiply by powers of 10 and predict outcome before they press enter.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 6-2 Estimate Products of Decimals

Teaching Point: *Today I am going to teach you how to estimate products of two decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-2 to help students build on their understanding of multiplication of whole numbers to estimate products of two decimals.

Another way to do this is to use the Activity-Based Exploration for 6-2 to explore whether an estimated product is greater than or less than an actual product based on comparing factors.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 6-3 Represent Multiplication of Decimals

Teaching Point: *Today I am going to teach you how to use decimal grids to represent and solve multiplication equations involving decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration in 6-3 to help students build on their understanding of multiplication to find products of decimals using decimal grids.

Another way to do this is to use the Activity-Based Exploration for 6-3 to help students develop strategies for multiplying decimals.

Suggestions: *Using data from exit tickets, determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 6-4 Use an Area Model to Multiply Decimals

Teaching Point: *Today I am going to teach you how to use an area model to determine partial products and how to add the partial products to calculate the product of two decimals.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-4 to use an area model to understand and solve a problem

Another way to do this is to use the Activity-Based Exploration for 6-4 to help students explore area models to determine different ways to decompose them to form partial products..

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 6-5 Generalizations About Multiplying Decimals

Teaching Point: *Today I am going to teach you how to use patterns based on place value concepts and properties of operations to make generalizations about multiplying decimals.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 6-5 to help students extend their understanding of multiplying decimals to make a generalization using place value patterns.

Another way to do this is to use the Activity-Based Exploration for 6-5 to help students analyze products of related decimal factors to identify place value patterns when multiplying decimals.

Suggestions: *Based on formative assessments, consider differentiating additional learning experiences to either enrich or support students. One suggestion is using both the Activity-Based Exploration and the Guided Exploration and/or digital games and game stations and Extend Learning Activities.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 6: 6-6 Explain Strategies to Multiply Decimals

Teaching Point: *Today I am going to teach you how to choose a strategy to solve multiplication equations involving decimals.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use lesson the Guided Exploration for 6-6 to consider strategies for solving real-world problems involving decimal products.

Another way to do this is to use lesson the Activity-Based Exploration for 6-6 to help students to explain strategies for solving real-world problems involving decimal products.

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Multiplying Decimals

Teaching Point: *Today we are going to review how to solve problems multiplying decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

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

Another way to do this is to differentiate based on data from formative assessments throughout the unit.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 2

A Day for Assessment

Teaching Point: *Today you are going to show what you know about multiplying decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers.

5.NBT.A.7 Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 6 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is to print the Unit 6 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Apply

DOK: 2

Engaging Scenario - Unit 6

Performance Task: Welcome to the Neighborhood
Teacher's Edition page 204A

In this 5-part task, students draw on their understanding of multiplying decimals.

Unit 7: Divide Whole Numbers

Subject: Math

Grade: 5th

Name of Unit: Divide Whole Numbers

Length of Unit: 7 lessons, 11 days

Overview of Unit: In this unit, students build on their understanding of multiplication and division from grade 4. Students have previously worked with division of up to four-digit dividends and one-digit divisors, including situations involving remainders. They continue to use equations, rectangular arrays, and area models to extend their knowledge of division to include up to four-digit dividends and two-digit divisors. They use estimation techniques to determine the reasonableness of solutions.

Students apply their understanding of dividing multi-digit whole numbers to solve problems in real-world contexts.

When possible, students use area models to represent and solve problems. By reasoning with the blocks for multiple cases, they develop a general process for approaching problems, which they know as the partial quotients algorithm.

Students discover that place value and division strategies work the same way with multi-digit whole number divisors as they do with division by one-digit divisors.

- **Use place-value patterns:** Students can identify and use place-value patterns to divide multi-digit whole numbers.
- **Use models:** Students use models to represent division problems and relate the problem to multiplication. They use their understanding of place-value and multiplication to decompose an area model by factors and use partial quotients to identify the quotient.
- **Solve word problems:** Students use their understanding of equations and models to solve word problems involving division.

Getting Ready for the Unit:

- Before each unit, 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.
- Base-ten blocks
- Index cards
- Digit card

Essential Questions:

- How can I divide multi-digit numbers?
- How does knowing multiplication facts help me divide?

Enduring Understandings:

- Division is a process of breaking a whole into parts and can be used to solve real-world problems.
- The relationship between multiplication and division helps in understanding and solving division problems.
- Both partial quotients and the standard algorithm are strategies to divide multi-digit whole numbers.
- Estimating before dividing helps determine whether a quotient is reasonable.

Priority Standards:

- 5.RA.C Use the four operations to represent and solve problems.
 - 5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.
- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting Standards:

- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.4 Evaluate the value of powers of 10 and understand the relationship to the place value system.
- 5.RA.B Write and interpret numerical expressions.
 - 5.RA.B.3 Write, evaluate and interpret numeric expressions using the order of operations.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.RA.C.5	How to use the four operations to represent and solve problems.	Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals. Use and explain multiple strategies. Solve problems with or without context.	Apply	3
5.NBT.A.8	How to use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths. Division could result in situations with a remainder.	Divide multi-digit whole numbers up to two-digit divisors and four-digit dividends. Justify solutions. Use strategies based on properties such as place value and partial quotients. Generate solutions to problems with or without context.	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
accurate evaluate suggest variation analyze establish reflect speculate condition draw back address advantage note transition	dividend divisor quotient estimate partial quotient remainder

Math Language Routines:

- MLR 1: Stronger and Clearer Each Time
- MLR 2: Collect and Display
- MLR 4: Information Gap
- MLR 5: Co-Craft Questions and Problems
- MLR 6: Three Reads
- MLR 7: Compare and Connect
- MLR 8: Discussion Supports

Number Routines:

- Where Does It Go?
- Which Benchmark Is It Closest To?
- Find the Pattern, Make a Pattern
- Decompose It

Sense-Making Routines:

- Notice & Wonder: What question could you ask?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: Tell me everything you can.
- Numberless Word Problem

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station	Game Station 	Students build proficiency with dividing multi-digit numbers by 2-digit numbers.	
		• Multi-Digit Division Tic Tac Toe	7-1
		• Estimating Quotients Showdown	7-2
		• Multi-Digit Division Tic Tac Toe	7-3
		• Division with 2-Digit Divisors Task Cards	7-4
		• Division with 2-Digit Divisors Race	7-5
		• Remainder Showdown	7-6
		• Dividing with Remainders Bump	7-7
Digital Station	Digital Game 	Batting Practice Students add and subtract decimals.	7-1
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card 	That Is Astronomical Students practice finding quotients, rounding, and writing equations by researching the hours in a day for each planet.	7-7
	Connection Card 	Estimate High School Density Students research the density of schools in 10 U.S. states.	7-2
	Real World Card 	Online Learning: Is It Safe? Students write rules for safely using electronic devices and practice their rules by researching how to divide multi-digit numbers.	7-6

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Batting Practice Digital Game • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking our Unit 7 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 7 Assessment Form A for a preassessment and/or the Unit 7 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 7 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 divide with multi-digit numbers? Play the STEM career video and then have students complete the Ignite! activity on page 206 of their 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 7>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 7-1 Division Patterns with Multi-Digit Numbers

Teaching Point: *Today I'm going to teach you how to use patterns to determine the quotient when dividing by a multiple of 10.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-1 to teach students to use what they know about place value to use patterns that will help them divide multi-digit numbers that are multiples of 10.

Another way to do this is to use the Activity-Based Exploration to help students explore patterns in division equations involving multiples of 10.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 7-2 Estimate Quotient

Teaching Point: *Today I am going to teach you how to estimate quotients of multi-digit numbers to determine if your calculations are reasonable.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-2 to estimate quotients and compare the estimates to a calculated quotient to assess if it is reasonable.

Another way to do this is to use the Activity-Based Exploration for 7-2 to help students explore strategies for estimating quotients.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 7-3 Relate Multiplication and Division of Multi-Digit Numbers

Teaching Point: *Today I am going to teach you how to use the relationship between multiplication and division to determine the quotient when dividing by a 2-digit divisor.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-3 to teach students to solve a division problem using the relationship between multiplication and division.

Another way to do this is to use the Activity-Based Exploration for 7-3 to help students explore using multiplication concepts, such as equal groups, to solve a division problem.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 7-4 Represent Division of 2-Digit Divisors

Teaching Point: *Today I am going to teach you how to use an area model to determine partial quotients and add them to calculate the quotient.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-4 to teach students to extend their understanding of division to dividing by 2-digit divisors using area models.

Another way to do this is to use the Activity-Based Exploration for 7-4 to help students explore using an area model to divide by 2-digit divisors by extending their understanding of using an area model to divide by 1-digit divisors..

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 7-5 Use Partial Quotients to Divide

Teaching Point: *Today I am going to teach you how to record partial quotients using a strategy.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-5 to teach students to extend their understanding of division by 2-digit divisors.

Another way to do this is to use the Activity-Based Exploration for 7-5 to help students explore using the partial quotients strategy to divide by 2-digit divisors by extending their understanding of using the partial quotients strategy to divide by 1-digit divisors.

Bloom's Levels: Apply

DOK: 3

Engaging Experience 6: 7-6 Divide Multi-Digit Whole Numbers

Teaching Point: *Today I am going to teach you how to use partial quotients to solve division problems, which sometimes include a remainder.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-6 to teach students to extend their understanding of division by 2-digit divisors using partial quotients to divide.

Another way to do this is to use the Activity-Based Exploration for 7-6 to help students explore using the partial quotients strategy with remainders.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 7: 7-7 Solve Problems Using Division

Teaching Point: *Today I am going to teach you how to solve word problems involving division, including interpreting remainders.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 7-7 to teach students to extend their understanding of solving division word problems.

Another way to do this is to use the Activity-Based Exploration for 7-7 to help students solve division word problems.

Suggestions: *Using data from exit tickets, determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Dividing Whole Numbers

Teaching Point: *Today we are going to review how to solve division problems.*

Suggested Length of Time: 1 day

Standards Addressed:

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the math game stations using lesson 7-6 Remainder Showdown and 7-7 Dividing with Remainders Bump.

Another way to do this is to use the student workbook Unit Review pages, 237-240.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about dividing whole numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 7 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is to print the Unit 7 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Another way to do this is to assign Benchmark Assessment 2 either digitally or in print form. This assessment will assess the priority standards for this unit in addition to standards from the previous units.

Bloom's Levels: Apply

DOK: 2

Engaging Scenario - Unit 7

Performance Task: Locked Cashbox
Teacher's Edition page 242A

In this 5-part task, students draw on their understanding of dividing whole numbers.

Unit 8: Divide Decimals

Subject: Math

Grade: 5th

Name of Unit: Divide Decimals

Length of Unit: 6 lessons, 11 days

Overview of Unit: Dividing by a (positive) decimal less than 1 is not always intuitive. When children first learn about the effect of each operation, they see that addition and multiplication have answers that are generally greater than the first addend or factor, whereas subtraction and division generally have answers that are less than the minuend or dividend.

The unit opens with use of different-sized glasses and jugs to illustrate division by decimals. This is an important opportunity to help students form a concrete understanding that dividing does *not* always “make smaller.” When you ask, for example, how many small (0.2-liter) glasses are in a 2-liter jug, students better understand the nature of division: not simply making numbers smaller--but finding out how many of one quantity “fit into” another.

As the unit progresses, even when size is not involved, provide frequent “how many fit into” prompts, to consistently remind students that they are to find out how many of a certain decimal are in a given number.

Models may be helpful when making informal connections to dividing a whole number by a decimal. Models may help students understand that dividing something into smaller-size pieces produces *more*. For example, a ruler can be used to show that twenty 0.1-centimeter segments fit into 2 centimeters. Thus $2 \div 0.1 = 20$ is an example where the quotient is greater than the dividend.

A strategy used to divide a number by a decimal is to multiply the dividend and the divisor by the same power of 10 so that the divisor becomes a whole number. Students can use representations to show that the quotient does not change as a result of this process. For example, students can use decimal grids to show that $1 \div 0.2 = 5$ (5 groups of 0.2 are in 1 full grid), and $0.6 \div 0.15 = 4$ (4 groups of 0.15 are in 0.6 grid). Those quotients can then be compared to $10 \div 2 = 5$ and $60 \div 15 = 4$ for students to conclude that the respective quotients (based on decimals and whole numbers) are the same.

Getting Ready for the Unit:

- Before each unit, 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.
- Base-ten blocks
- Calculators
- Hundred grids
- Number cubes
- Bills and coins manipulatives
- Index cards
- Number cubes
- [*10 x 10 Grids*](#) Teaching Resource
- [*Tenths and Hundredths Representations*](#) Teaching Resource

Essential Question:

- What strategies can I use to divide decimals?

Enduring Understandings:

- The place value system extends to decimals, and patterns in place value help us understand how to divide numbers accurately.
- Dividing does not always make smaller but rather is more about how many of something fit into another.
- Dividing something into smaller-size pieces produces more.
- You can multiply the dividend and the divisor by the same power of 10 so that the divisor becomes a whole number.
- Estimating quotients helps determine the reasonableness of answers when dividing decimals.

Priority Standards:

- 5.RA.C Use the four operations to represent and solve problems.
 - 5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.
- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting Standards:

- 5.NBT.A Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.
 - 5.NBT.A.4 Evaluate the value of powers of 10 and understand the relationship to the place value system.
- 5.RA.B Write and interpret numerical expressions.
 - 5.RA.B.3 Write, evaluate and interpret numeric expressions using the order of operations.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.RA.C.5	How to use the four operations to represent and solve problems.	Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals. Use and explain multiple strategies. Solve problems with or without context.	Apply	3
5.NBT.A.8	How to use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths. Division could result in situations with a remainder.	Divide multi-digit whole numbers up to two-digit divisors and four-digit dividends. Justify solutions. Use strategies based on properties such as place value and partial quotients. Generate solutions to problems with or without context.	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
expand reflect suggest negate variation analyze infer transition reflect address advantage assert disadvantage	power of 10 dividend divisor estimate quotient partial quotients decimal place value

Math Language Routines:

- MLR 1: Stronger and Clearer Each Time
- MLR 2: Collect and Display
- MLR 5: Co-Craft Questions and Problems
- MLR 6: Three Reads
- MLR 7: Compare and Connect

Number Routines:

- Decompose It
- About How Much
- Where Does It Go?

Sense-Making Routines:

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

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station	Game Station	Students build proficiency in dividing with decimals.	
		• Divide by 0.1 and 0.01 Race	8-1
		• Estimating Quotients Bump	8-2
		• Represent Decimal Division Four in a Row	8-3
		• Dividing Decimals by Whole Numbers Task Cards	8-4
		• Divide by Whole Numbers Tic Tac Toe	8-5
		• Divide Decimals by Decimals Task Cards	8-6
Digital Station	Digital Game	Factory Sort Students add and subtract within 1,000,000.	8-1
			
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card	That is Tasty! Students use decimal division to size up and down a recipe.	8-6
			
	Connection Card	Leave a Trail! Students create a poster showing how they divide decimals while making trail mix.	8-6
			
Application Station	Real World Card	Red Block White Block Road Block Students use a looping code to move a dog through a maze and then make their own maze and code.	8-1
			

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking the Unit 8 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 8 Assessment Form A for a preassessment and/or the Unit 8 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 8 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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: What strategies can I use to divide decimals? Play the STEM career video and then have students complete the Ignite! activity on page 2 of their volume 2 workbook.

Another way to do this is to introduce the Focus Question: What strategies can I use to divide decimals? 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 8>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 8-1 Division Patterns with Decimals and Powers of 10

Teaching Point: *Today I'm going to teach you to use place-value patterns to divide a decimal by a power of 10.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-1 to teach students to use the relationship between place-value positions to solve division problems involving decimals divided by powers of 10.

Another way to do this is to use the Activity-Based Exploration for 8-1 to provide students practice exploring place-value patterns when dividing by powers of 10 and use their patterns to divide decimals by powers of 10.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 8-2 Estimate Quotients of Decimals

Teaching Point: *Today I am going to teach you how to estimate quotients of decimals to determine if your calculations are reasonable.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-2 to teach students how to use compatible numbers to estimate the quotients of decimals.

Another way to do this is to use the Activity-Based Exploration for 8-2 to provide students with experience in exploring estimating quotients by extending estimation strategies used for estimating quotients of whole numbers.

Suggestions: *Consider your students' needs to determine if they will be best supported by completing both the activity-based and guided exploration.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 8-3 Represent Division of Decimals by a Whole Number

Teaching Point: *Today I am going to teach you how to represent division of decimals by whole numbers using equal sharing or equal grouping.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-3 to teach students how to use decimal grids to solve a division word problem with a decimal as the dividend and a whole number as the divisor.

Another way to do this is to use the Activity-Based Exploration for 8-3 to provide students with experience exploring using representations to divide a decimal by a whole number.

Suggestions: *Using data from exit tickets, determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 8-4 Divide Decimals by Whole Numbers

Teaching Point: *Today I am going to teach you how to use place-value understanding and equivalent representations to divide a decimal by a whole number.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-4 to teach students how to use what they already know about equivalent representations and place-value understanding to solve an equation that involves dividing a decimal by a whole number.

Another way to do this is to use the Activity-Based Exploration for 8-4 to provide students with experience analyzing related division expressions to develop a strategy for dividing decimals by whole numbers.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 8-5 Divide Whole Numbers by Decimals

Teaching Point: *Today I am going to teach you how to use decimal grids to represent and solve a division equation and how to write an equivalent equation with a whole-number divisor to solve a division equation.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-5 to teach students to build on their understanding of division to find quotients of whole numbers divided by decimals using decimal grids.

Another way to do this is to use the Activity-Based Exploration for 8-5 to provide students with experience exploring using a representation to divide whole numbers by decimals. They will use their representation to develop other strategies for dividing whole numbers by decimals.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 6: 8-6 Divide Decimals by Decimals

Teaching Point: *Today I am going to teach you how to write an equivalent equation containing whole numbers to solve a division equation.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 8-6 to teach students to build on their understanding of division to find quotients of decimals divided by decimals using powers of 10, area models, and partial quotients.

Another way to do this is to use the Activity-Based Exploration for 8-6 to provide students with experience using a representation to divide decimals. They will use their representations to develop other strategies for dividing whole numbers by decimals.

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Dividing Decimals

Teaching Point: *Today we are going to review how to divide decimals.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to differentiate based on data from formative assessments throughout the unit.

Another way to do this is to give the Math Probe for this unit and use the Teacher's Edition page 28A to analyze student work and offer feedback.

Another way to do this is to use the student workbook Unit Review pages 29-32.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about dividing decimals*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.C.5 Solve and justify multi-step problems involving variables and whole numbers, and decimals.

5.NBT.A.8 Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.

Supporting: 5.NBT.A.4, 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 8 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is print the Unit 8 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Analyze

DOK: 3

Engaging Scenario - Unit 8

Performance Task: Baseball
Teacher's Edition page 34A

In this 5-part task, students draw on their understanding of dividing decimals to find batting averages.

Unit 9: Add & Subtract Fractions

Subject: Math

Grade: 5th

Name of Unit: Add and Subtract Fractions

Length of Unit: 10 lessons, 13 days

Overview of Unit: In this unit students begin by estimating sums and differences of fractions. Estimates are used by mathematically proficient students to check the reasonableness of answers. Since halves and ones are easy to work with, students use these benchmarks to help them estimate. They can round each number they are working with to a benchmark and get a quick idea of what the sum or difference should be. Students learn that they can round to a half if the numerator is about half of the denominator. If the numerator is very close to the denominator, the fraction rounds to 1. If the numerator is much less than the denominator, the fraction rounds to 0.

Students extend the work they did in grade 4 as they work with fractions with unlike denominators. To start, they apply concepts from grade 3 to determine how the fractions can be written using a single denominator. They know the denominator tells the unit fraction used to build it. Fractions with unlike denominators are built using different unit fractions. Students get a sense of this and what to do about it by working with physical representations, such as fractions circles and fraction tiles.

Moving from the visual/physical to symbolic manipulations, students use what they learned in grade 4 about equivalent fractions. They use this relationship to obtain equivalent fractions with common denominators. They are exposed to problems for which only one of the fractions must be rewritten with a common denominator as well as those where both fractions need to be rewritten with a common denominator. The student's task is to find a common multiple of the denominators. After fractions are written with a common denominator, students can add and subtract fractions as they have done previously, by adding and subtracting the numerators, respectively.

They further apply this process with mixed numbers, recognizing that the fractional parts need to be expressed with a common denominator to add or subtract. However, regrouping might be necessary if the sum of the fractional parts is greater than 1 or the first fractional part in a subtraction expression is less than the second fractional part. In these cases, students regroup 1 from the fractional part or the whole part as necessary.

Getting Ready for the Unit:

- Before each unit, 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.
- Fraction tiles
- Number cubes
- [*Benchmark Fraction Number Line*](#) Teaching Resource
- [*Blank Open Number Line*](#) Teaching Resource
- Ruler
- [*Fraction Number Lines*](#) Teaching Resource
- Index cards
- Blank spinners
- [*Explain and Show Your Strategies*](#) Teaching Resource
- [*Problem Solving Tool*](#) Teaching Resource

Essential Question:

- How can I add and subtract fractions?

Enduring Understandings:

- The denominator tells the unit fraction used to build the fraction size.
- Fractions need to have a common denominator in order to add or subtract the numerators.
- Mixed numbers may need to be regrouped to add or subtract fractions.
- Benchmark numbers can be used to estimate the reasonableness of sums and differences of fractions.

Priority Standards:

- 5.NF.B Perform operations and solve problems with fractions and decimals.
 - 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.
 - 5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, 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
5.NF.B.4	How to perform operations and solve problems with fractions and decimals.	Estimate results of sums, differences and products with fractions and decimals to the thousandths. Justify thinking using words or models. Estimate results with or without context. Use and explain multiple strategies.	Apply	2
5.NF.B.6	How to perform operations and solve problems with fractions and decimals.	Solve problems with or without context involving adding and subtracting fractions and mixed numbers with unlike denominators. Justify the sums and differences. Explain the reasonableness of an answer including if the justification is valid and identify any mistake in the process used to solve the problem. Use and explain multiple strategies.	Analyze	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
eliminate suggest correspond accurate condition establish valid reflect relevant assert debate	benchmark number estimate denominator equivalent fractions fraction tiles like denominators numerator multiple mixed number

Math Language Routines:

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

Number Routines:

- What's Another Way to Write It?
- Which Benchmark Is It Closest To?
- Would You Rather?

Sense-Making Routines:

- Which doesn't belong?
- Notice & Wonder: How are they the same? How are they different?
- Is it always true?
- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: What questions can you ask?
- Notice & Wonder: What question could it be?

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station	Game Station 	Students build proficiency with adding and subtracting fractions and mixed numbers. • Estimating Sums and Differences Race • Adding Fractions Task Cards • Fraction Addition Concentration • Subtracting Fractions Task Cards • Fraction Subtraction Tic Tac Toe • Mixed Number Addition Concentration • Fraction and Mixed Number Addition Race • Mixed Number Addition Concentration • Subtracting Mixed Numbers Task Cards	9-1 9-2 9-3 9-4 9-5 9-6 9-7 9-8 9-9
	Digital Game 	Submarine Plunge Students practice dividing multi-digit numbers.	9-1
	Have students complete at least one of the Use It! activities for this unit.		
	STEM Project Card 	Get Moving Students design a car and measure the distance it travels.	9-8
	Connection Card 	How Do You Say—Fractions? Students research to find how to say words related to adding and subtracting fractions in other languages.	9-4
	Real World Card 	Create and Solve Students create a multi-step problem that adds and subtracts mixed numbers to solve. Then they use a digital tool to present the problem.	9-9

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking our Unit 9 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 9 Assessment Form A for a preassessment and/or the Unit 9 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 9 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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? Play the STEM career video and then have students complete the Ignite! activity on page 36 of their volume 2 workbook.

Another way to do this is to introduce the Focus Question: How can I add and subtract 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 9>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 9-1 Estimate Sums and Differences of Fractions

Teaching Point: *Today I am going to teach you to use benchmark fractions to estimate sums and differences of fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-1 to teach benchmark fractions on a number line to estimate a sum of fractions to solve a problem.

Another way to do this is to use the Activity-Based Exploration for 9-1 to guide student exploration using benchmark fractions to estimate the sum of two fractions.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 9-2 Represent Addition of Fractions with Unlike Denominators

Teaching Point: *Today I am going to teach you how to use a representation, or model, to add fractions with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-1 to teach using a representation to understand addition of fractions having unlike denominators.

Another way to do this is to explore using a representation to add fractions that have unlike denominators.

Bloom's Levels: Apply

DOK: 2

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

Teaching Point: *Today I am going to add fractions with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-3 to teach adding fractions with unlike denominators by writing equivalent fractions with like denominators.

Another way to do this is to use the Activity-Based Exploration for 9-3 to explore adding fractions with unlike denominators.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 9-4 Represent Subtraction of Fractions with Unlike Denominators

Teaching Point: *Today I am going to teach you how to use a representation to subtract fractions with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-4 to teach using a representation to subtract fractions with unlike denominators.

Another way to do this is to use the Activity-Based Exploration for 9-4 to guide student exploration using a representation to subtract fractions with unlike denominators.

Bloom's Levels: Apply

DOK: 2

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

Teaching Point: *Today I am going to teach you how to subtract fractions with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-5 to teach writing equivalent fractions to subtract fractions with unlike denominators.

Another way to do this is to use the Activity-Based Exploration for 9-5 to explore strategies for subtracting fractions with unlike denominators.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 6: 9-6 Add Mixed Numbers with Unlike Denominators

Teaching Point: *Today I am going to teach you how to add mixed numbers with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-6 to teach adding mixed numbers by decomposing them into a whole number and fraction.

Another way to do this is to use the Activity-Based Exploration for 9-6 to help students explore how to extend the partial sums strategy to add mixed numbers.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 7: 9-7 Subtract Mixed Numbers with Unlike Denominators

Teaching Point: *Today I am going to teach you how to subtract mixed numbers with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-7 to teach students to subtract mixed numbers having unlike denominators by decomposing the mixed numbers and by writing equivalent fractions that are greater than one.

Another way to do this is to use the Activity-Based Exploration for 9-7 to help students explore strategies to subtract mixed numbers.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 8: 9-8 Add and Subtract Mixed Numbers with Regrouping

Teaching Point: *Today I am going to teach you how to add and subtract mixed numbers with regrouping.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-8 to teach students how to solve a subtraction equation involving mixed numbers and regrouping.

Another way to do this is to use the Activity-Based Exploration for 9-8 to help students explore different strategies to subtract mixed numbers that involve regrouping.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 9: 9-9 Solve Problems Involving Fractions and Mixed Numbers

Teaching Point: *Today I am going to teach you how to solve word problems involving fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 9-9 to teach students to solve a word problem involving fractions and mixed numbers by choosing and using known strategies.

Another way to do this is to use the Activity-Based Exploration for 9-9 to help students explore known strategies to solve a real-world word problem involving mixed numbers.

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Adding and Subtracting Fractions

Teaching Point: *Today we are going to review how to solve problems involving adding and subtracting fractions and mixed numbers with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to differentiate based on data from formative assessments throughout the unit.

Another way to do this is to give the Math Probe for this unit and use the Teacher's Edition page 42A to analyze student work and offer feedback.

Another way to do this is to use the student workbook Unit Review pages 75-78.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about adding and subtracting fractions and mixed numbers with unlike denominators.*

Suggested Length of Time: 1 day

Standards Addressed

Standards Addressed

Priority: 5.NF.B.4 Estimate results of sums, differences and products with fraction and decimals to the thousandths.

5.NF.B.6 Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 9 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is print the Unit 9 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Apply

DOK: 3

Engaging Scenario - Unit 9

Performance Task: Valentina's Celebration!

Teacher's Edition page 80A

In this 4-part task, students draw on their understanding of addition and subtraction of fractions and mixed numbers with unlike denominators to plan a party.

Unit 10: Multiply Fractions

Subject: Math

Grade: 5th

Name of Unit: Multiply Fractions

Length of Unit: 9 lessons, 14 days

Overview of Unit: In this unit, students review and build on their work from Grade 4, when they multiplied fractions and mixed numbers by whole numbers using models. That work is extended to give students a generalized understanding of multiplication with whole numbers, fractions, and mixed numbers in any combination.

Throughout the unit, students continue the practice of estimating to check the reasonableness of answers. They use tools such as drawings, fraction tiles, and area models to make connections to multiplication of whole numbers and to make sense of what it means to multiply fractions. Students use that understanding to develop efficient strategies.

To start, students build their understanding of multiplying a fraction by a whole number and develop two processes for approaching the concept.

Scaling is essentially the resizing of a number. Understanding this concept enables students to reason about the size of a product without having to multiply. Multiplying a number by a factor greater than 1 generates a product that is greater than the number, and multiplying a number by a factor less than 1 generates a product that is less than the number. Multiplying two (positive) fractions that are both less than 1 generates a product less than either of the two factors. The idea that it is possible for a product to be less than one or both factors is a difficult concept.

Getting Ready for the Unit:

- Before each unit, 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.
- Counters
- Fraction tiles
- Grid paper
- Index cards
- Blank spinners
- [*Problem-Solving Tool*](#) Teaching Resource

Essential Question:

- How can I multiply fractions?

Enduring Understandings:

- Products of multiplication are not always larger than their factors.
- Multiplying a number by a factor greater than 1 creates a product that is greater.
- Multiplying a number by a factor less than 1 creates a product that is less.
- Multiplying two positive fractions that are both less than 1 creates a product that is less than either of the two factors.

Priority Standards:

- 5.NF.B Perform operations and solve problems with fractions and decimals.
 - 5.NF.B.5 Justify the reasonableness of a product when multiplying with fractions.
 - 5.NF.B.5.a Estimate the size of the product based on the size of the two factors.
 - 5.NF.B.5.b Explain why multiplying a given number by a fraction greater than 1 results in a product larger than the given number.
 - 5.NF.B.5.c Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number.
 - 5.NF.B.5.d Explain why multiplying the numerator and denominator by the same number is equivalent to multiplying the fraction by 1.
 - 5.NF.B.7 Extend the concept of multiplication to multiply a fraction or whole number by a fraction.
 - 5.NF.B.7.a Recognize the relationship between multiplying fractions and finding the areas of rectangles with fractional side lengths.
 - 5.NF.B.7.b Calculate and interpret the product of a fraction by a whole number and a whole number by a fraction.
 - 5.NF.B.7.c Calculate and interpret the product of two fractions less than one.

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
5.NF.B.5.a	How to perform operations and solve problems with fractions and decimals.	Justify the reasonableness of a product when multiplying with fractions. Estimate the size of the product based on the size of the two factors. Justify the reasonableness of a product when multiplying with fractions using models or strategies. Use and explain multiple strategies with or without context.	Analyze	3
5.NF.B.5.b	How to perform operations and solve problems with fractions and decimals.	Justify the reasonableness of a product when multiplying with fractions. Explain why multiplying a given number by a fraction greater than 1 results in a product larger than the given number.	Analyze	3
5.NF.B.5.c	How to perform operations and solve problems with fractions and decimals.	Justify the reasonableness of a product when multiplying with fractions. Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number.	Analyze	3
5.NF.B.5.d	How to perform operations and solve problems with fractions and decimals.	Justify the reasonableness of a product when multiplying with fractions. Explain why multiplying the numerator and denominator by the same number is equivalent to multiplying the fraction by 1.	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
5.NF.B.7.a	How to perform operations and solve problems with fractions and decimals.	Extend the concept of multiplication to multiply a fraction or whole number by a fraction. Recognize the relationship between multiplying fractions and finding the area of rectangles with fractional side lengths.	Apply	2
5.NF.B.7.b	How to perform operations and solve problems with fractions and decimals.	Extend the concept of multiplication to multiply a fraction or whole number by a fraction. Calculate and interpret the product of a fraction by a whole number and a whole number by a fraction.	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
reflect suggest citation complex procedure speculate arguably expand accurate establish transition complex infer assert	fraction model multiplication partition denominator numerator area square unit area model decompose mixed number partial products scaling equation unknown variable

Math Language Routines:

- MLR 1: Stronger and Clearer Each Time
- MLR 2: Collect and Display
- MLR 3: Critique, Correct, and Clarify
- MLR 4: Info Gap
- MLR 5: Co-Craft Questions and Problems
- MLR 6: Three Reads
- MLR 8: Discussion Supports

Number Routines:

- Decompose It
- Which Benchmark Is It Closest To?
- Find the Pattern, Make a Pattern
- Greater Than or Less Than

Sense-Making Routines:

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

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station		Game Station	Students build proficiency with multiplication of fractions and mixed numbers.
		• Fraction Multiplication Tic Tac Toe	10-1
		• Representing Fraction Multiplication Task Cards	10-2
		• Fraction Multiplication Task Cards	10-3
		• Fraction Multiplication Showdown	10-4
		• Mixed Number Task Cards	10-5
		• Mixed Number Concentration	10-6
		• Area with Fractions Task Cards	10-7
		• Product Size Sort	10-8
		• Fraction Problem Race	10-9
Digital Station		Digital Game	Mad Lab Mix-Up Students practice multiplying multi-digit numbers.
			10-1
Application Station		Have students complete at least one of the Use It! activities for this unit.	
		STEM Project Card	This or That Students follow instructions to measure and cut materials.
		Connection Card	Fraction of a Fraction Students use fractions to follow and change a recipe.
		Real World Card	If, Then Students use if/then statements to write a problem in which they make a true or false statement that uses multiplication of fractions.

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking the Unit 10 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 10 Assessment Form A for a preassessment and/or the Unit 10 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 10 Assessment Form A

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 fractions? Play the STEM career video and then have students complete the Ignite! activity on page 82 of their volume 2 workbook.

Another way to do this is to introduce the Focus Question: How can I multiply 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 10>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 10-1 Represent Multiplication of a Whole Number by a Fraction

Teaching Point: *Today I'm going to teach you to use a representation to multiply a whole number by a fraction.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-1 to teach students to extend their understanding of multiplication and fractions to represent multiplication of a whole number by a fraction.

Another way to do this is to use the Activity-Based Exploration for 10-1 to provide students with experience to exploring how to represent multiplication of a whole number by a fraction.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 10-2 Multiply a Whole Number by a Fraction

Teaching Point: *Today I am going to teach you how to multiply a whole number by a fraction.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-2 to teach students to extend their understanding of multiplication with fractions using equations.

Another way to do this is to use the Activity-Based Exploration for 10-2 to provide students with experience exploring efficient strategies for multiplying a whole number by a fraction.

Suggestions: *Consider your students' needs to determine if they will be best supported by completing both the activity-based and guided exploration.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 10-3 Represent Multiplication of a Fraction by a Fraction

Teaching Point: *Today I am going to teach you how to use a representation to multiply a fraction by a fraction.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-3 to teach students to extend their understanding of multiplication with fractions to represent multiplication of a fraction by a fraction.

Another way to do this is to use the Activity-Based Exploration for 10-3 to provide students with hands-on experience to explore how to represent the multiplication of two fractions.

Suggestions: *Using data from exit tickets, determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 10-4 Multiply a Fraction by a Fraction

Teaching Point: *Today I am going to teach you how to multiply a fraction by a fraction.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-4 to teach students to extend their understanding of multiplying fractions to using equations to find the product.

Another way to do this is to use the Activity-Based Exploration for 10-4 to provide students with experience exploring efficient strategies for multiplying two fractions.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 10-5 Determine the Area of Rectangles with Fractional Side Lengths

Teaching Point: *Today I am going to teach you how to find the area of a rectangle with fractional side lengths by multiplying the side lengths.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-5 to teach students to extend their understanding of multiplication with fractions to multiply with a mixed number to find the area of a rectangle.

Another way to do this is to use the Activity-Based Exploration for 10-5 to provide students with hands-on experience to explore how to find the area of a rectangle that has fractional side lengths

Bloom's Levels: Apply

DOK: 2

Engaging Experience 6: 10-6 Represent Multiplication of Mixed Numbers

Teaching Point: *Today I am going to teach you how to use an area model to find partial products when multiplying mixed numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-6 to teach students how to represent a multiplication equation involving mixed numbers using an area model and partial products.

Another way to do this is to use the Activity-Based Exploration for 10-6 to provide students with hands-on experience to explore area models for multiplication to extend to multiplying two mixed numbers.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 7: 10-7 Multiply Mixed Numbers

Teaching Point: *Today I am going to teach you how to multiply mixed numbers by writing the mixed numbers as fractions and then multiplying fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-7 to transition students from using area models to multiply mixed numbers to writing mixed numbers as fractions and then multiplying.

Another way to do this is to use the Activity-Based Exploration for 10-7 to provide students with experience exploring different strategies for multiplying two mixed numbers.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 8: 10-8 Multiplication as Scaling

Teaching Point: *Today I am going to teach you why the product of a given number and a fraction greater than 1 is greater than the given number and why the product of a given number and a fraction less than 1 is less than the given number.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-8 to teach students how to explain the size of a product using the size of factors in a multiplication equation.

Another way to do this is to use the Activity-Based Exploration for 10-8 to provide students with experience exploring how the size of factors impacts the size of a product in a multiplication equation.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 9: Solve Problems Involving Fractions

Teaching Point: *Today I am going to teach you how to solve word problems involving fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 10-9 to teach students how to use multiplication strategies that are familiar to them to solve problems involving the multiplication of fractions.

Another way to do this is to use the Activity-Based Exploration for 10-9 to provide students with experience exploring solving word problems involving fractions.

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Multiplying Fractions and Mixed Numbers

Teaching Point: *Today we are going to review how to multiply fractions and mixed numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to differentiate based on data from formative assessments throughout the unit.

Another way to do this is to use the student workbook Unit Review pages 121-124.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about multiplying fractions and mixed numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.5.a-d Multiply Fractions greater than and less than one.

5.NF.B.7.a-c Multiply Fractions

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 10 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is to print the Unit 10 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Another way to do this is to assign Benchmark Assessment 3 either digitally or in print form. This assessment will assess the priority standards for this unit in addition to standards from the previous units.

Bloom's Levels: Apply

DOK: 2

Engaging Scenario - Unit 10

Performance Task: Animal Rescue

Teacher's Edition page 126A

In this 5-part task, students draw on their understanding of multiplying with fractions to solve problems at an animal shelter.

Unit 11: Divide Fractions

Subject: Math

Grade: 5th

Name of Unit: Divide Fractions

Length of Unit: 7 lessons, 11 days

Overview of Unit: This unit builds on earlier work with division and fractions to establish that a fraction describes an indicated division. Students divide fractions, limited to division of a whole number by a unit fraction and division of a unit fraction by a non-zero whole number. They explore situations involving *equal sharing division* and *equal grouping division*. Students use models to help determine quotients. Formal procedures for dividing fractions and mixed numbers are developed in Grade 6. In making connections between division and fractions, students write equations with fractions to describe division situations.

Students use different representations when they find the quotient of a unit fraction divided by a whole number in equal-sharing situations.

They observe patterns, but some still have difficulty comprehending how a quotient can be greater than the dividend. The use of simple models illustrates how dividing a whole number (the dividend) by a unit fraction (the divisor) involves finding the number of small pieces that fit into a larger piece (the whole). In such situations, the number of little pieces that fit in is greater than the dividend. A common misconception is that students may interpret a problem such as $8 \div \frac{1}{4}$ as 8 being equally divided into 4 parts. To verify their results, students can use the relationship between multiplication and division to check their answers.

Getting Ready for the Unit:

- Before each unit, 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.
- Fraction tiles
- Number cubes
- Number cards
- [Problem-Solving Tool](#) Teaching Resource
- Spinners
- [Unit Fractions & Whole Numbers](#) Teaching Resource
- [Dividing Fractions Puzzle](#) Teaching Resource

Essential Questions:

- How can I divide fractions?
- What does it mean to divide?

Enduring Understandings:

- A fraction represents a division situation.
- When a whole number is divided by a unit fraction, the quotient is greater than the dividend.
- The relationship between multiplication and division can be used to check answers when dividing fractions.

Priority Standards:

- 5.NF.B Perform operations and solve problems with fractions and decimals.
 - 5.NF.B.8 Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations.
 - 5.NF.B.8.a Calculate and interpret the quotient of a unit fraction by a non-zero whole number.
 - 5.NF.B.8.b Calculate and interpret the quotient of a whole number by a unit fraction.

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
5.NF.B.8.a	How to perform operations and solve problems with fractions and decimals.	Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations. Calculate and interpret the quotient of a unit fraction by a non-zero whole number. Use and explain multiple strategies. Solve problems with or without context.	Apply	2
5.NF.B.8.b	How to perform operations and solve problems with fractions and decimals.	Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations. Calculate and interpret the quotient of a whole number by a unit fraction. Use and explain multiple strategies. Solve problems with or without context.	Apply	2

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
prove reflect analyze evaluate arguably speculate suggest accurate establish relevant	denominator dividend divisor division numerator quotient mixed number remainder fraction model unit fraction equation unknown variable

Math Language Routines:

MLR 1: Stronger and Clearer Each Time

MLR 2: Collect and Display

MLR 3: Critique, Correct, and Clarify

MLR 5: Co-Craft Questions and Problems

MLR 7: Compare and Connect

MLR 8: Discussion Supports

Number Routines:

- Greater Than or Less Than
- Where Does It Go?
- About How Much?
- What's Another Way to Write It?

Sense-Making Routines:

- Is it always true?
- Notice & Wonder: How are they the same? How are they different?
- Notice & Wonder: What do you notice? What do you wonder?
- Numberless Word Problem
- Which doesn't belong?

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station	Game Station 	Students build proficiency with the division of fractions and whole numbers.	
		• Fractions as Division Four in a Row	11-1
		• Fractions as Division Four in a Row	11-2
		• Represent Division of Whole Numbers by Unit Fractions Concentration	11-3
		• Dividing Whole Numbers by Unit Fractions Bingo	11-4
		• Fraction Division Match, Concentration, and Showdown	11-5
		• Fraction Division Bingo	11-6
		• Dividing Fractions Race	11-7
Digital Station	Digital Game 	Dino Dig Students practice multiplying using area models.	11-1
	Have students complete at least one of the Use It! activities for this unit.		
Application Station	STEM Project Card 	How Fast Is Your Robot? Students create a robot and measure the distance it travels. They experiment with techniques to increase the distance and speed.	11-4
	Connection Card 	Potluck with a Twist Students use whole numbers, fractions, and division to create a 14-dish menu for a potluck.	11-7
	Real World Card 	Can You Hear Me? Students compare and contrast face-to-face and online communication.	11-1

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking our Unit 11 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 11 Assessment Form A for a preassessment and/or the Unit 11 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 11 Assessment Form A

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 divide fractions? Play the STEM career video and then have students complete the Ignite! activity on page 128 of their volume 2 workbook.

Another way to do this is to introduce the Focus Question: How can I divide 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 11>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 11-1 Relate Fractions to Division

Teaching Point: *Today I'm going to teach you how to represent the quotient of a division equation as a fraction or mixed number.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-1 to teach students how division of whole numbers can be related to fractions.

Another way to do this is to use the Activity-Based Exploration for 11-1 to provide students with a hands-on experience to explore how to express a division equation involving whole numbers using fraction circles and equations.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 11-2 Solve Problems Involving Division

Teaching Point: *Today I am going to teach you how to determine whether a quotient should be written with a remainder or as a mixed number.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-2 to teach students how they can use the context of a word problem to know whether to write the quotient with a remainder or as a mixed number.

Another way to do this is to use the Activity-Based Exploration for 11-2 to provide students with an experience exploring how the context of a word problem impacts the quotient.

Suggestions: *Consider your students' needs to determine if they will be best supported by completing both the activity-based and guided exploration.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 11-3 Represent Division of Whole Numbers by Unit Fractions

Teaching Point: *Today I am going to teach you how to use a representation to divide whole numbers by unit fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-3 to teach students how to represent division of whole numbers by unit fractions.

Another way to do this is to use the Activity-Based Exploration for 11-3 to provide students with a hands-on experience to explore extending the meaning of division to divide a whole number by a unit fraction.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 11-4 Divide Whole Numbers by Unit Fractions

Teaching Point: *Today I am going to teach you how to use the meaning of multiplication as equal groups to divide whole numbers by unit fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-4 to teach students how to use the relationship between multiplication and division to divide whole numbers by unit fractions.

Another way to do this is to use the Activity-Based Exploration for 11-4 to provide students with a hands-on experience to explore efficient strategies for dividing a whole number by a unit fraction.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 11-5 Represent Division of Unit Fractions by Non-Zero Whole Numbers

Teaching Point: *Today I am going to teach you how to use a representation to divide unit fractions by non-zero whole numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-5 to teach students how to represent division of unit fractions by non-zero whole numbers.

Another way to do this is to use the Activity-Based Exploration for 11-5 to provide students with a hands-on experience to explore using representations to divide unit fractions by non-zero whole numbers.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 6: 11-6 Divide Unit Fractions by Non-Zero Whole Numbers

Teaching Point: *Today I am going to teach you how to divide unit fractions by non-zero whole numbers.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-6 to teach students how to use the relationship between multiplication and division to divide unit fractions by non-zero whole numbers.

Another way to do this is to use the Activity-Based Exploration for 11-6 to provide students with a hands-on experience to explore efficient strategies for dividing a unit fraction by a non-zero whole number.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 7: 11-7 Solve Problems Involving Fractions

Teaching Point: *Today I am going to teach you how to solve word problems involving division of fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 11-7 to teach students how to choose and use strategies to solve multi-step word problems that involve fractions and whole numbers.

Another way to do this is to use the Activity-Based Exploration for 11-7 to provide students with a hands-on experience to explore solving problems involving division of fractions.

Suggestions: *Using data from exit tickets, determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Dividing Fractions

Teaching Point: *Today we are going to review how to solve problems involving division of fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to differentiate based on data from formative assessments throughout the unit.

Another way to do this is to use the student workbook Unit Review pages 159-162.

Suggestions: *Teachers can use the Fluency Practice as an additional review.*

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about the representation and division of fractions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.NF.B.8.a, b Extend the concept of division to divide unit fractions and whole numbers.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 11 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is print the Unit 11 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Apply

DOK: 2

Engaging Scenario - Unit 11

Performance Task: Field Day Fun!

Teacher's Edition page 164A

In this 5-part task, students draw on their understanding of solving problems involving division with fractions for a field day event.

Unit 12: Measurement and Data

Subject: Math

Grade: 5th

Name of Unit: Measurement and Data

Length of Unit: 5 lessons, 11 days

Overview of Unit: In Kindergarten and Grade 1, students become familiar with categorical data and ways to display it, such as picture graphs and bar graphs. In Grade 2, they are introduced to measurement data. They generate measurement data by measuring and recording lengths to the nearest whole unit and representing the data on a line plot. In Grade 3, they work with measurements in fractions of a unit, and in Grades 4 and 5, they create line plots for a variety of data sets and solve problems based on the data using operations appropriate for the grade. A line plot uses an appropriately scaled number line to present the values of the measurements in a data set. Each measurement is represented by an X or dot placed above the number line, directly over the location of its value.

The line plot is an efficient way to display, compare, and interpret the data. When students are proficient at constructing line plots, they can be presented with line plots for a variety of measurement contexts and asked to interpret them. The work in this unit has connections to the fraction expectations for Grade 5, which also call for solving problems using computations with fractions and mixed numbers.

Students also learn that the same measure can be expressed in different units. Students learn to convert between units within a measurement system using their previously-learned skills in multiplication and division.

Getting Ready for the Unit:

- Before each unit, 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.
- [*Customary Conversion Tables*](#) Teaching Resource
- Base-ten blocks (one and tens)
- [*Metric Conversion Tables*](#) Teaching Resource
- Number cubes
- [*Problem-Solving Tool*](#) Teaching Resource
- Dry spaghetti noodles
- Blank number cubes
- Index cards

Essential Question:

- How can I convert measurement units and represent measurement data?

Enduring Understandings:

- A line plot uses an appropriately scaled number line with dots or Xs to show the values of the measurements in a data set.
- The same measure can be expressed in different units.
- Multiplication and division are tools used to convert between units within a measurement system.

Priority Standards:

- 5.DS.A Represent and analyze data.
 - 5.DS.A.2 Create a line plot to represent a given or generated data set, and analyze the data to answer questions and solve problems, recognizing the outliers and generating the median.
- 5.GM.D Solve problems involving measurement and conversions within a measurement system.
 - 5.GM.D.9 Solve multi-step problems that require measurement conversions.

Supporting Standards:

- 5.GM.D Solve problems involving measurement and conversions within a measurement system.
 - 5.GM.D.8 Convert measurements of capacity, length and weight within a given measurement system.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.DS.A.2	How to represent and analyze data.	Create a line plot to represent a given or generated data set. Analyze the data to answer questions and solve problems, Recognize the outliers, generate the median, and identify the range.	Analyze	3
5.GM.D.9	How to solve problems involving measurement and conversion within a measurement system. Inches, feet, yards, miles, millimeters, centimeters, meters, kilometers, milligrams, grams, kilograms, ounces, pounds, tons, milliliters, liters, cups, pints, quarts, gallons.	Solve multi-step problems that require measurement conversions. Convert from a smaller unit to a larger unit or larger unit to a smaller unit within a single system (customary or metric).	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 ● Digital or Print Assessment Form A ● Exit Tickets for all lessons ● Math Probe ● Fluency Check	● Digital or Print Assessment Form B ● Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
accurate infer emphasize note analyze reflect	capacity convert customary system length weight mass metric system data line plot mean range mode median

Math Language Routines:

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

Number Routines:

- Find the Pattern, Make a Pattern
- Decompose It
- Which Benchmark Is It Closest To?

Sense-Making Routines:

- Notice & Wonder: Tell me everything you can
- Notice & Wonder: What do you see?
- Which doesn't belong?
- Numberless Graph: What's the question?
- Notice & Wonder

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station	Game Station	Students build proficiency with converting measurement units and creating line plots.	
		• Product Size Sort • Convert Metric Units Race • Metric Units of Measurement Race • Create a Line Plot Task Cards • Line Plot Task Cards	12-1 12-2 12-3 12-4 12-5
	Digital Game	Space Race Students practice finding volume.	12-1
			
	Have students complete at least one of the Use It! activities for this unit.		
Application Station	STEM Project Card	Environmentally Friendly Students use measurements to create 5 environmentally friendly home improvements.	12-3
			
	Connection Card	City of Trees Students create a line plot for plant growth data.	12-5
			
	Real World Card	Find a Pattern and Repeat Students use a repeat function to loop computer code.	12-1
			

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking our Unit 12 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 12 Assessment Form A for a preassessment and/or the Unit 12 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 12 Assessment Form A

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 convert measurement units and represent measurement data? Play the STEM career video and then have students complete the Ignite! activity on page 166 of their volume 2 workbook.

Another way to do this is to introduce the Focus Question: How can I convert measurement units and represent measurement data? 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 12>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 12-1 Convert Customary Units

Teaching Point: *Today I am going to teach you how to convert customary units of measure and time.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.GM.D.9 Solve multi-step problems that require measurement conversions.

Supporting: 5.GM.D.8

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-1 to teach students how to convert units of capacity and time using multiplication and division.

Another way to do this is to use the Activity-Based Exploration for 12-1 to provide students with a hands-on experience to explore converting customary units of measurement.

Suggestions: *1. Converting units of time is not a 5th grade standard, so you could skip those problems or use them as a review. 2. It is strongly suggested you provide copies of the [DESE measurement tool](#) for students to use during the unit and on the test. (Students have access to this tool on the MAP test so should have the opportunity to learn how to use it.) 3. This lesson only focuses on units of capacity and time. However, converting units of capacity, length, and weight are priority. Focus on the concept of how to convert units and that the process applies to length and weight.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 12-2 Convert Metric Units

Teaching Point: *Today I am going to teach you how to convert metric units of measurement.*

Suggested Length of Time: 1-2 days

Standards Addressed

Priority: 5.GM.D.9 Solve multi-step problems that require measurement conversions.

Supporting: 5.GM.D.8

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-2 to teach students how to use division to convert metric units of measurement.

Another way to do this is to use the Activity-Based Exploration for 12-2 to provide students with a hands-on experience to explore measuring objects using base-ten blocks.

Suggestions: *Students should continue to use the [DESE measurement conversion tool](#).*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 12-3 Solve Multi-Step Problems Involving Measurement Units

Teaching Point: *Today I am going to teach you how to solve multi-step problems by identifying and answering a hidden question and using that answer to solve the initial problem.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.D.9 Solve multi-step problems that require measurement conversions.

Supporting: 5.GM.D.8

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-3 to teach students to use what they know about converting units of measurement to solve a multi-step word problem.

Another way to do this is to use the Activity-Based Exploration for 12-3 to provide students with an experience solving multi-step problems involving units of measurement.

Suggestions: *You may wish to provide copies of the [Customary Conversion Tables](#) Teaching Resource for students to use*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 12-4 Represent Measurement Data on a Line Plot

Teaching Point: *Today I am going to teach you how to create line plots of data sets involving measurement data.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.DS.A.2 Create a line plot to represent a given or generated data set, and analyze the data to answer questions and solve problems, recognizing the outliers and generating the median.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-4 to teach students how to use a line plot to help them solve a problem involving data. See suggestions for additional notes.

Another way to do this is to use the Activity-Based Exploration for 12-4 to provide students with an experience exploring making line plots from data in tables and interpreting data from the line plot. See suggestions for additional notes.

Suggestions: *Reveal lessons do not include the vocabulary mean, median, mode, and range, although students will perform these tasks when analyzing the data in both lessons 12-4 and 12-5. The vocabulary should be added when note taking. One way to do this is to take notes with the Pose the Problem identifying range. Demonstrating mean with fractions can be difficult, so decide if you need to give another example. [This video](#) is also suggested.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 12-5 Solve Problems Involving Measurement Data on Line Plots

Teaching Point: *Today I am going to teach you how to solve problems using data in a line plot and perform operations on the data.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.DS.A.2 Create a line plot to represent a given or generated data set, and analyze the data to answer questions and solve problems, recognizing the outliers and generating the median.

Supporting: N/A

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 12-5 to teach students how to interpret information given in a line plot and then use it to solve a problem.

Another way to do this is to use the Activity-Based Exploration for 12-5 to provide students with experience using information given in a line plot to solve problems.

Suggestions: *Using data from exit tickets, determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Converting Units of Measurement and Line Plots

Teaching Point: *Today we are going to review how to convert customary and metric units of measurement and how to interpret information on a line plot.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.DS.A.2 Create a line plot to represent a given or generated data set, and analyze the data to answer questions and solve problems, recognizing the outliers and generating the median.

5.GM.D.9 Solve multi-step problems that require measurement conversions.

Supporting: 5.GM.D.8

Detailed Description/Instructions:

One way to do this is to differentiate based on data from formative assessments throughout the unit.

Another way to do this is to use the student workbook Unit Review pages 189-192.

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about converting measurements and line plots.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.DS.A.2 Create a line plot to represent a given or generated data set, and analyze the data to answer questions and solve problems, recognizing the outliers and generating the median.

5.GM.D.9 Solve multi-step problems that require measurement conversions.

Supporting: 5.GM.D.8

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 12 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is print the Unit 12 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Apply

DOK: 2

Engaging Scenario - Unit 12

Performance Task: Track and Field
Teacher's Edition page 194A

In this 4-part task, students draw on their understanding of line plots and converting measurement at a track and field event.

Unit 13: Geometry

Subject: Math

Grade: 5th

Name of Unit: Geometry

Length of Unit: 6 lessons, 10 days

Overview of Unit: Using an ordered pair of numbers called coordinates identifies the location of a point on the coordinate plane. The point of intersection of the two axes on a coordinate plane has coordinates (0, 0) and is called the origin. By convention, the horizontal axis is called the x-axis; the vertical axis, the y-axis. The first coordinate in an ordered pair, the x-coordinate, tells the point's distance from the origin along the x-axis. The second coordinate, the y-coordinate, tells the point's distance from the origin along the y-axis. Students graph ordered pairs, interpret coordinate values of points in the context of a situation, and draw a line to connect points. Students make predictions about data points that are not specifically graphed on a line.

Then students build on their earlier work of classifying two-dimensional shapes based on properties. Students now look for structure as they classify two-dimensional figures in a hierarchy.

A hierarchy classifies figures into categories according to properties. Most often, a hierarchy includes a diagram showing relationships among categories and subcategories--with the most general category at the top. Each subcategory is more specific than the one above it--and has all the properties of the category above with at least one additional property. Students build hierarchies of two-dimensional triangles and quadrilaterals. Triangles are sorted and classified by the lengths of their side (equilateral, isosceles, scalene) and the sizes of their angles (acute, right, obtuse). A special case is noted as an isosceles triangle is one with at least two sides that are the same length, which makes an equilateral triangle a special case or subcategory of isosceles.

Quadrilaterals are placed into hierarchies based on side length, congruency, and angle type. These hierarchies reinforce an understanding as to why a given polygon might have multiple names.

Getting Ready for the Unit:

- Before each unit, 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.
- [*Understanding the Coordinate Plane*](#) Teaching Resource
- Blank number cubes
- [*Coordinate Plane*](#) Teaching Resource
- Plastic straws
- [*Properties of Triangles*](#) Teaching Resource
- [*Classifying Quadrilaterals*](#) Teaching Resource
- [*Venn Diagram*](#) Teaching Resource

Essential Question:

- How can I use the coordinate plane and identify and classify two-dimensional figures?

Enduring Understandings:

- The coordinate plane is made up of an x-axis (horizontal) and a y-axis (vertical).
- The point of intersection of the x- and y-axis is called the origin.
- Ordered pairs can be graphed on a coordinate plane by first counting the x-axis and then counting the y-axis and placing the point there.
- Two-dimensional shapes can be classified in a hierarchy that moves from general to specific.
- Polygons can fit into multiple categories in a hierarchy and have multiple names.

Priority Standards:

- 5.GM.A Classify two- and three-dimensional geometric shapes.
 - 5.GM.A.2 Classify figures in a hierarchy based on properties.
- 5.GM.C Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.
 - 5.GM.C.6 Define a first quadrant Cartesian coordinate system.
 - 5.GM.C.6.a Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin.
 - 5.GM.C.6.b Identify any point on the Cartesian coordinate plane by its ordered pair coordinates.
 - 5.GM.C.6.c Define the first number in an ordered pair as the horizontal distance from the origin.
 - 5.GM.C.6.d Define the second number in an ordered pair as the vertical distance from the origin.

Supporting Standards:

- 5.GM.A Classify two- and three-dimensional geometric shapes.
 - 5.GM.A.1 Understand that attributes belonging to a category of figures also belong to all subcategories.
- 5.GM.C Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.
 - 5.GM.C.7 Plot and interpret points in the first quadrant of the Cartesian coordinate plane.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.GM.A.2	How to classify two- and three-dimensional geometric shapes. Circles, polygons (triangles, all quadrilaterals, pentagons, hexagons, octagons), prisms, and pyramids.	Classify figures in a hierarchy based on properties. Justify/explain reasoning for classifications. Identify multiple categories to which a figure belongs.	Analyze	3
5.GM.C.6.a	How to graph points on the Cartesian coordinate plane within the first quadrant to solve problems.	Define a first quadrant Cartesian coordinate system. Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin.	Apply	2
5.GM.C.6.b	How to graph points on the Cartesian coordinate plane within the first quadrant to solve problems.	Identify any point on the Cartesian coordinate plane by its ordered pair coordinates.	Apply	2
5.GM.C.6.c	How to graph points on the Cartesian coordinate plane within the first quadrant to solve problems.	Define the first number in an ordered pair as the horizontal distance from the origin.	Apply	2
5.GM.C.6.d	How to graph points on the Cartesian coordinate plane within the first quadrant to solve problems.	Define the second number in an ordered pair as the vertical distance from the origin.	Apply	2

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
correspond emphasize quality accurate interpret evaluate suggest establish analyze	coordinate plane ordered pair origin x-axis x-coordinate y-axis y-coordinate category equilateral triangle hierarchy isosceles triangle property scalene triangle subcategory attribute parallelogram quadrilateral rectangle rhombus square trapezoid Venn diagram

Math Language Routines:

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

Number Routines:

- Find the Missing Values
- Greater Than or Less Than
- Would You Rather?

Sense-Making Routines:

- Notice & Wonder: What do you notice? What do you wonder?
- Notice & Wonder: What questions can you ask?
- Notice & Wonder: What could the question be?

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station		Students build understanding of graphing in the coordinate plane and classification of triangles and quadrilaterals.	
		• Coordinate Plane Race	13-1
		• Coordinate Plane Task Cards	13-2
		• Coordinate Plane Representation Race	13-3
		• Classifying Triangles Four in a Row	13-4
		• 2-Dimensional Figures Sort	13-5
		• Hierarchy Sort	13-6
Digital Station	Digital Game 	Submarine Plunge Students practice dividing multi-digit numbers.	13-1
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card 	Drafting Tools for Accuracy Students create their own drafting triangles and create a model of a covered bridge.	13-5
	Connection Card 	How Was That Created? Students use Venn diagrams to research the properties of triangles and quadrilaterals in artwork.	13-6
	Real World Card 	Is This for Real? Students research and use the TAARP method to determine website credibility.	13-1

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking the Unit 13 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 13 Assessment Form A for a preassessment and/or the Unit 13 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print Unit 13 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 the coordinate plane and identify and classify two-dimensional figures? Play the STEM career video and then have students complete the Ignite! activity on page 196 of their volume 2 workbook.

Another way to do this is to introduce the Focus Question: How can I use the coordinate plane and identify and classify two-dimensional 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 13>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 13-1 Understand the Coordinate Plane

Teaching Point: *Today I'm going to teach you how to identify and describe features of a coordinate plane and how to use a coordinate plane to determine the ordered pair associated with a given point.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.C.6.a-d Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin; Identify any point on the Cartesian coordinate plane by its ordered pair coordinates; Define the first number in an ordered pair as the horizontal distance from the origin; Define the second number in an ordered pair as the vertical distance from the origin.

Supporting: 5.GM.C.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-1 to teach students how to understand the coordinate plane and find the ordered pair for a given point.

Another way to do this is to use the Activity-Based Exploration for 13-1 to provide students an opportunity to explore describing locations on the coordinate plane.

Bloom's Levels: Understand

DOK: 1

Engaging Experience 2: 13-2 Plot Ordered Pairs on the Coordinate Plane

Teaching Point: *Today I am going to teach you how to plot pairs on a coordinate plane.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.C.6.a-d Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin; Identify any point on the Cartesian coordinate plane by its ordered pair coordinates; Define the first number in an ordered pair as the horizontal distance from the origin; Define the second number in an ordered pair as the vertical distance from the origin.

Supporting: 5.GM.C.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-2 to teach students how to plot points on the coordinate plane when given ordered pairs.

Another way to do this is to use the Activity-Based Exploration for 13-2 to provide students with experience using ordered pairs to plot points on the coordinate plane.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 3: 13-3 Represent Problems on a Coordinate Plane

Teaching Point: *Today I am going to teach you how to plot points that represent real-world situations.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.C.6.a-d Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin; Identify any point on the Cartesian coordinate plane by its ordered pair coordinates; Define the first number in an ordered pair as the horizontal distance from the origin; Define the second number in an ordered pair as the vertical distance from the origin.

Supporting: 5.GM.C.7

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-3 to teach students how to plot points on the coordinate plane when given real-world data in a table and make conclusions about the data.

Another way to do this is to use the Activity-Based Exploration for 13-3 to provide students with experience making conclusions about real-world data after plotting the data points on the coordinate plane.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 4: 13-4 Classify Triangles by Properties

Teaching Point: *Today I am going to teach you how to classify triangles based on their properties into categories and subcategories.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.A.2 Classify figures in a hierarchy based on properties.

Supporting: 5.GM.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-4 to teach students how to classify triangles into categories based on minimal defining attributes, and understand the categories and subcategories using a hierarchy.

Another way to do this is to use the Activity-Based Exploration for 13-4 to provide students with hands-on experience to explore the properties of triangles and classify triangles based on their properties.

Suggestions: *Keep in mind that according to DESE item specs: two-dimensional attributes being identified and described include side lengths, number of sides, number of angles, and angle measurement.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 13-5 Properties of Quadrilaterals

Teaching Point: *Today I am going to teach you how to name quadrilaterals based on their properties.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.A.2 Classify figures in a hierarchy based on properties.

Supporting: 5.GM.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-5 to teach students to classify quadrilaterals into categories based on minimal defining attributes.

Another way to do this is to use the Activity-Based Exploration for 13-5 to provide students with hands-on experience to explore classifying quadrilaterals into categories based on minimal defining attributes.

Suggestions: 1. Keep in mind that according to DESE item specs: two-dimensional attributes being identified and described include side lengths, number of sides, number of angles, and angle measurement. 2. Using data from exit tickets, determine whether to assess with the Math Probe for this unit.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 6: 13-6 Classify Quadrilaterals by Properties

Teaching Point: *Today I am going to teach you how to classify quadrilaterals based on their properties into categories and subcategories.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.A.2 Classify figures in a hierarchy based on properties.

Supporting: 5.GM.A.1

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 13-6 to teach students to explore the categories and subcategories of quadrilaterals using a hierarchy.

Another way to do this is to use the Activity-Based Exploration for 13-6 to provide students with an exploration of categories and subcategories of quadrilaterals to develop a hierarchy.

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review The Coordinate Plane and Classifying Triangle and Quadrilaterals

Teaching Point: *Today we are going to review the coordinate plane and how to classify triangles and quadrilaterals based on properties.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.A.2 Classify figures based on properties.

5.GM.C.6.a-d Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin; Identify any point on the Cartesian coordinate plane by its ordered pair coordinates; Define the first number in an ordered pair as the horizontal distance from the origin; Define the second number in an ordered pair as the vertical distance from the origin.

Supporting: 5.GM.A.1, 5.GM.C.7

Detailed Description/Instructions:

One way to do this is to differentiate based on data from formative assessments throughout the unit.

Another way to do this is to use the student workbook Unit Review pages 223-226.

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about the coordinate plane and classifying triangles and quadrilaterals based on properties.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.GM.A.2 Classify figures based on properties.

5.GM.C.6.a-d Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin; Identify any point on the Cartesian coordinate plane by its ordered pair coordinates; Define the first number in an ordered pair as the horizontal distance from the origin; Define the second number in an ordered pair as the vertical distance from the origin.

Supporting: 5.GM.A.1, 5.GM.C.7

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 13 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is print the Unit 13 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Bloom's Levels: Analyze

DOK: 3

Engaging Scenario - Unit 13

Performance Task: Shapes and the Coordinate Plane
Teacher's Edition page 228A

In this 5-part task, students draw on their understanding of the coordinate plane, classifying triangles, and classifying quadrilaterals.

Unit 14: Algebraic Thinking

Subject: Math

Grade: 5th

Name of Unit: Algebraic Thinking

Length of Unit: 6 lessons, 11 days

Overview of Unit: When evaluating expressions, the order of operations is needed so that everyone gets the same result. It is important for students to understand that we use grouping symbols when we want to do operations in an order that is different from what is required by the Order of Operations. Grouping symbols are also used to help clarify the order of operations when an expression contains many numbers and operations.

In this unit, students generate and extend numerical patterns and identify relationships between each set of corresponding terms.

A *numerical pattern* is an arrangement of numbers where the next number in the arrangement can be predicted based on a rule. A rule for a numerical pattern is a statement that describes how the numbers are related. A *sequence* is a list of numbers that follow a rule. A *term* is a number in a sequence. *Corresponding terms* are *terms* that appear in the same position in their respective patterns.

Consider the pattern shown below:

<u>Term</u>	<u>Pattern A</u>	<u>Pattern B</u>
1	3	9
2	6	18
3	9	27
4	12	36
5	?	?

In the pattern, 9 and 27 are corresponding terms because each is the third term in their pattern. The terms in Pattern B are 3 times as great as the corresponding terms in Pattern A. The rule for Pattern A is “Add 3” (Term 5 is 15); the rule for Pattern B is “Add 9” (Term 5 is 45). Using rules and tables to compare and extend two patterns sets the stage for graphing two patterns on a coordinate plane.

Getting Ready for the Unit:

- Before each unit, 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.
- Number cubes
- Index cards
- Cardstock
- Two-color counters
- Blank cubes
- [*Coordinate Plane*](#) Teaching Resource

Essential Question:

- How can I begin to think about algebra?

Enduring Understandings:

- Grouping symbols in an equation shows what order to do operations in when they differ from the Order of Operations.
- Numerical patterns are arrangements of numbers based on a rule.
- Terms are numbers in a pattern.
- Corresponding terms prepare students to graph two patterns on a coordinate plane.

Priority Standards:

- 5.RA.A Represent and analyze patterns and relationships.
 - 5.RA.A.1 Investigate the relationship between two numeric patterns.
 - 5.RA.A.1.a Generate two numeric patterns given two rules.
 - 5.RA.A.1.b Translate two numeric patterns into two sets of ordered pairs.
 - 5.RA.A.1.c Graph numeric patterns on the Cartesian coordinate plane.
 - 5.RA.A.1.d Identify the relationship between two numeric patterns.
 - 5.RA.A.2 Write a rule to describe or explain a given numeric pattern.
- 5.RA.C Use the four operations to represent and solve problems.
 - 5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting Standards:

- 5.RA.B Write and interpret numerical expressions.
 - 5.RA.B.3 Write, evaluate and interpret numeric expressions using the order of operations.
 - 5.RA.B.4 Translate written expressions into algebraic expressions.

Standard	Unwrapped Concepts (Students need to know)	Unwrapped Skills (Students need to be able to do)	Bloom's Taxonomy Levels	Webb's DOK
5.RA.A.1.a	How to represent and analyze patterns and relationships.	Investigate the relationship between two numeric patterns. Generate two numeric patterns given two rules and starting numbers. Extend two numeric patterns given two rules and/or fill in missing terms given two incomplete patterns and their rules.	Apply	2
5.RA.A.1.b	How to represent and analyze patterns and relationships.	Translate two numeric patterns into two sets of ordered pairs.	Apply	2
5.RA.A.1.c	How to represent and analyze patterns and relationships.	Graph numeric patterns on the Cartesian coordinate plane.	Apply	2
5.RA.A.1.d	How to represent and analyze patterns and relationships.	Identify the relationship between two numeric patterns.	Apply	2
5.RA.A.2	How to represent and analyze patterns and relationships.	Write a rule to describe or explain a given numeric pattern.	Apply	2
5.RA.C.5	How to use the four operations to represent and solve problems.	Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals. Use and explain multiple strategies. Solve problems with or without context.	Apply	3

Information above is taken from DESE's Assessment Item Specifications

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 • Digital or Print Assessment Form A • Exit Tickets for all lessons • Math Probe • Fluency Check	• Digital or Print Assessment Form B • Performance Task

Unit Vocabulary:

Academic Cross-Curricular Words	Content/Domain Specific
reflect suggest complex valid accurate contradiction emphasize transition inference analyze speculate	expression grouping symbol numerical expression parentheses evaluate order of operations corresponding term numerical pattern rule (of a pattern) corresponding term

Math Language Routines:

- MLR 1: Stronger and Clearer Each Time
- MLR 2: Collect and Display
- MLR 4: Information Gap
- MLR 5: Co-Craft Questions and Problems
- MLR 6: Three Reads
- MLR 7: Compare and Connect

Number Routines:

- Can You Make the Number?
- What's Another Way to Write It?
- Would You Rather?

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 do you see?
- Notice & Wonder: What questions can you ask?
- Numberless Graph: What math do you see?
- Numberless Word Problem: What math do you see in this problem?

Workstations

Teachers can use these activities to differentiate and enrich students' instructional experiences with the unit content. The table presents an overview of the resources available for the unit with recommendations for when to use.

	Activity	Description	Use After Lesson
Game Station		Game Station	Students build understanding of numerical expressions and patterns.
		• Numerical Expressions Concentration	14-1
		• Numerical Expressions Task Cards	14-2
		• Order of Operations Showdown	14-3
		• Numerical Patterns Task Cards	14-4
		• Patterns on the Coordinate Plane Concentration	14-5
		• Patterns on the Coordinate Plane Concentration	14-6
Digital Station	Digital Game	Operation Station Students practice applying the order of operations.	14-1
Have students complete at least one of the Use It! activities for this unit.			
Application Station	STEM Project Card	A Rule Created That? Students use coordinate planes and coordinate pairs to create 3-D art.	14-6
	Connection Card	Color by Number Students use grid paper to create designs and numerical expressions.	14-3
	Real World Card	Earning an Income Students research 5 jobs and incomes, create a table, and plot the results on a coordinate plane.	14-6

Differentiated Practice and Application Suggestions:

<i>Reinforce Understanding</i>	<i>Build Proficiency</i>	<i>Extend Thinking</i>
• Small Group suggestion • Take Another Look Lesson • Differentiation Resource Book • ALEKS	• Practice It! Digital Games • Own It! Digital Games for fluency • Interactive Additional Practice • Spiral Review • Student Practice Book • ALEKS	• Use It! • Websketch Exploration • Extend Thinking Page from Differentiation Resource Book • ALEKS

Diagnostic Assessment

Teaching Point: *Today you will be taking the Unit 14 Pretest or Readiness Diagnostic.*

Suggested Length of Time: 1 day

Detailed Description/Instructions:

One way to do this is to assign the digital Unit 14 Assessment Form A for a preassessment and/or the Unit 14 Readiness Diagnostic. Students can show their work on paper and turn it in, so that teachers can analyze their work/thinking.

Another way to do this is to print the Unit 14 Assessment Form A.

Suggestions: *Choose which test is best for your class. The Readiness Diagnostic will test 4th grade standards to show you which students are ready for the new learning. The Pre-Assessment Form A assesses the same standards as the Post-Assessment. You could also give the Readiness Diagnostic to some students and the Pre-Assessment Form A to others, depending on what makes most sense for that student.*

Bloom's Levels: 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 begin to think about algebra? Play the STEM career video and then have students complete the Ignite! activity on page 230 of their volume 2 workbook.

Another way to do this is to introduce the Focus Question: How can I begin to think about algebra? 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 could be done during independent work on this Ignite! Day. There are targeted intervention teacher directed lessons and worksheets in ConnectEd>Browse This Course>Unit 14>Targeted Intervention.*

Bloom's Levels: Apply

DOK: 2

Engaging Experience 1: 14-1 Write Numerical Expressions

Teaching Point: *Today I'm going to teach you how to write numerical expressions to represent calculations that are described using written statements.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3, 5.RA.B.4

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-1 to teach students how to write a numerical expression to represent a given word problem.

Another way to do this is to use the Activity-Based Exploration for 14-1 to provide students with an opportunity to explore interpreting numerical expressions as verbal descriptions.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 2: 14-2 Interpret Numerical Expressions

Teaching Point: *Today I am going to teach you how to interpret numerical expressions without evaluating them.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-2 to teach students how expressions are different by interpreting them.

Another way to do this is to use the Activity-Based Exploration for 14-2 to provide students with an opportunity to explore how two numerical expressions are similar and different.

Bloom's Levels: Understand

DOK: 1

Engaging Experience 3: 14-3 Evaluate Numerical Expressions

Teaching Point: *Today I am going to teach you how to use the order of operations to evaluate numerical expressions.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-3 to teach students how to evaluate numerical expressions using the order of operations.

Another way to do this is to use the Activity-Based Exploration for 14-3 to provide students with an opportunity to explore the importance of the order of operations when evaluating numerical expressions.

Suggestions: *Using data from exit tickets, determine whether to assess with the Math Probe for this unit.*

Bloom's Levels: Understand

DOK: 1

Engaging Experience 4: 14-4 Numerical Patterns

Teaching Point: *Today I am going to teach you how to generate two numerical patterns using two given rules and to identify relationships between corresponding terms.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-4 to teach students how to generate two numerical patterns using their rules and identify an apparent relationship between corresponding terms in the patterns in order to solve a problem.

Another way to do this is to use the Activity-Based Exploration for 14-4 to provide students with experience exploring numerical patterns to solve a problem.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 5: 14-5 Relate Numerical Patterns

Teaching Point: *Today I am going to teach you how to arrange corresponding terms in two numerical patterns in a table.*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-5 to teach students how to generate numerical patterns when given rules, and use a table to assist them in describing the relationship between corresponding terms in the patterns.

Another way to do this is to use the Activity-Based Exploration for 14-5 to provide students with experience exploring generating numerical patterns when given rules and explore how they can describe a relationship between the patterns.

Bloom's Levels: Apply

DOK: 2

Engaging Experience 6: 14-6 Graphs of Numerical Patterns

Teaching Point: *Today I am going to teach you how to form ordered pairs consisting of corresponding terms from two numerical patterns and to plot those ordered pairs on the coordinate plane*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,c,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Graph numeric patterns on the Cartesian coordinate plane; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to use the Guided Exploration for 14-6 to teach students how to form ordered pairs using corresponding terms from two numerical patterns, plot them on the coordinate plane, and analyze the graph to draw conclusions.

Another way to do this is to use the Activity-Based Exploration for 14-6 to provide students with an opportunity to explore how they can represent numerical patterns on the coordinate plane.

Bloom's Levels: Apply

DOK: 2

A Day for Review: Review Order of Operations and Numerical Patterns

Teaching Point: *Today we are going to review how to use the order of operations to solve problems and numerical patterns*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,c,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Graph numeric patterns on the Cartesian coordinate plane; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to differentiate based on data from formative assessments throughout the unit.

Another way to do this is to use the student workbook Unit Review pages 257-260.

Bloom's Levels: Apply

DOK: 2

A Day for Post-Assessment

Teaching Point: *Today you are going to show what you know about order of operations and numerical patterns*

Suggested Length of Time: 1 day

Standards Addressed

Priority: 5.RA.A.1.a,b,c,d. Generate two numeric patterns given two rules; Translate two numeric patterns into two sets of ordered pairs; Graph numeric patterns on the Cartesian coordinate plane; Identify the relationship between two numeric patterns

5.RA.A.2. Write a rule to describe or explain a given numeric pattern.

5.RA.C.5 Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.

Supporting: 5.RA.B.3

Detailed Description/Instructions:

One way to do this is to digitally assign the Unit 14 Assessment Form B. In addition to the assessment, you could digitally assign the Performance Task.

Another way to do this is print the Unit 14 Assessment Form B. In addition to the assessment, you could print the Performance Task.

Another way to do this is to assign Benchmark Summative Assessment either digitally or in print form. This assessment will assess the priority standards for this unit in addition to standards from the previous units.

Bloom's Levels: Analyze

DOK: 3

Engaging Scenario - Unit 14

Performance Task: Invoicing
Teacher's Edition page 262A

In this 4-part task, students draw on their understanding of numerical expressions and patterns working at a fishing supply store.