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How to Use This Addenda

Make sure you're ready to teach by noting the **Necessary Materials and Pre-Lesson Prep** you will need to gather or complete prior to the lesson

Find high-leverage instructional moves in the **Lesson Look Fors**. This is what leaders should see when observing your instruction

Note how your lesson objective ties to your state **Standards**

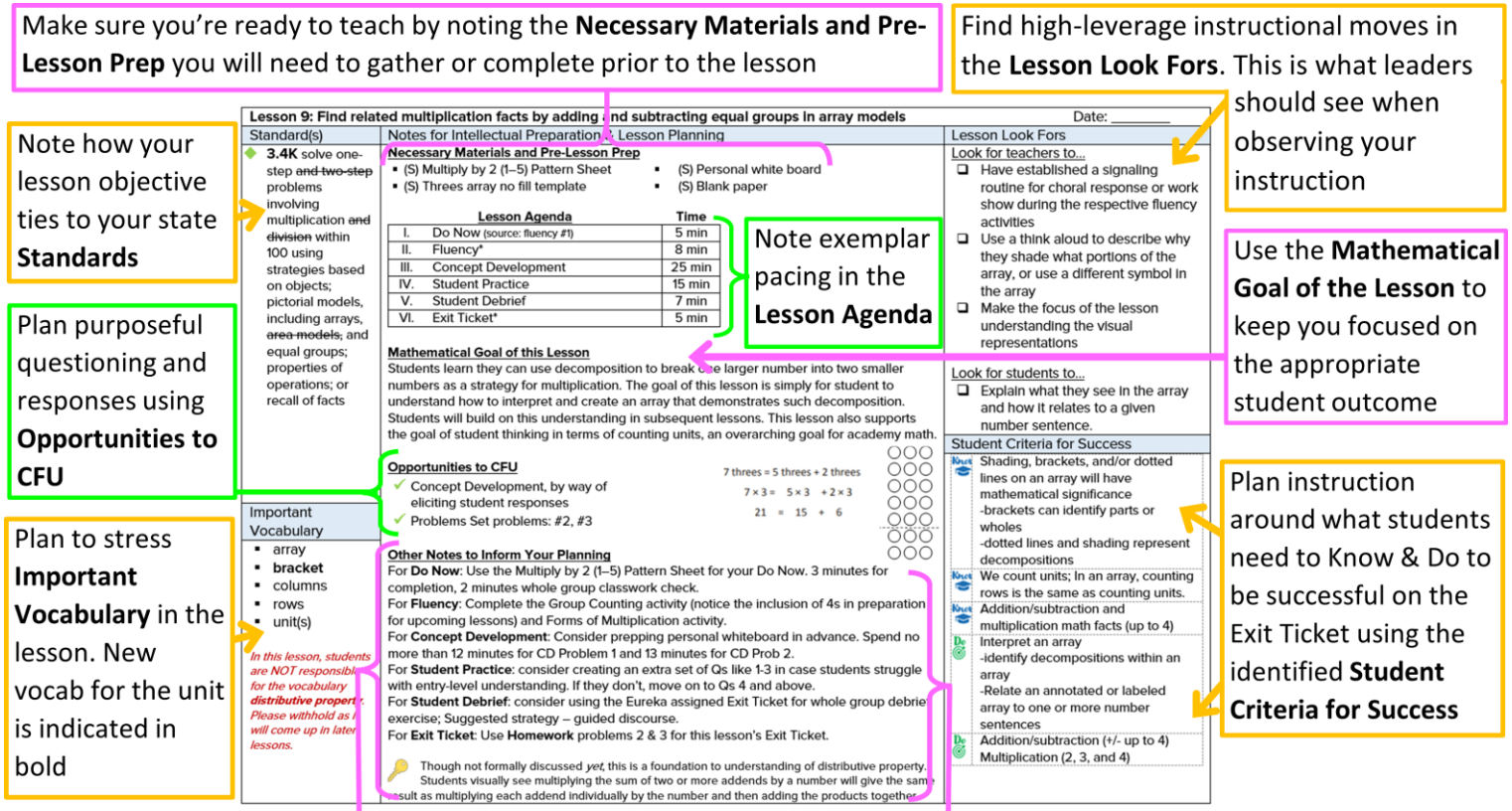
Note exemplar pacing in the **Lesson Agenda**

Use the **Mathematical Goal of the Lesson** to keep you focused on the appropriate student outcome

Plan purposeful questioning and responses using **Opportunities to CFU**

Plan to stress **Important Vocabulary** in the lesson. New vocab for the unit is indicated in bold

Plan instruction around what students need to Know & Do to be successful on the Exit Ticket using the identified **Student Criteria for Success**



Lesson 9: Find related multiplication facts by adding and subtracting equal groups in array models Date: _____

Standard(s)

3.4K solve one-step ~~and two-step~~ problems involving multiplication ~~and division~~ within 100 using strategies based on objects; pictorial models, including arrays, ~~area models~~, and equal groups; properties of operations; or recall of facts

Important Vocabulary

- array
- **bracket**
- columns
- rows
- unit(s)

*In this lesson, students are NOT responsible for the vocabulary **distributive property**. Please withhold as it will come up in later lessons.*

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- (S) Multiply by 2 (1–5) Pattern Sheet
- (S) Threes array no fill template
- (S) Personal white board
- (S) Blank paper

Lesson Agenda		Time
I.	Do Now (source: fluency #1)	5 min
II.	Fluency*	8 min
III.	Concept Development	25 min
IV.	Student Practice	15 min
V.	Student Debrief	7 min
VI.	Exit Ticket*	5 min

Mathematical Goal of this Lesson

Students learn they can use decomposition to break one larger number into two smaller numbers as a strategy for multiplication. The goal of this lesson is simply for student to understand how to interpret and create an array that demonstrates such decomposition. Students will build on this understanding in subsequent lessons. This lesson also supports the goal of student thinking in terms of counting units, an overarching goal for academy math.

Opportunities to CFU

- ✓ Concept Development, by way of eliciting student responses
- ✓ Problems Set problems: #2, #3

7 threes = 5 threes + 2 threes
7 × 3 = 5 × 3 + 2 × 3
21 = 15 + 6

Other Notes to Inform Your Planning

For **Do Now**: Use the Multiply by 2 (1–5) Pattern Sheet for your Do Now. 3 minutes for completion, 2 minutes whole group classwork check.
For **Fluency**: Complete the Group Counting activity (notice the inclusion of 4s in preparation for upcoming lessons) and Forms of Multiplication activity.
For **Concept Development**: Consider prepping personal whiteboard in advance. Spend no more than 12 minutes for CD Problem 1 and 13 minutes for CD Prob 2.
For **Student Practice**: consider creating an extra set of Qs like 1-3 in case students struggle with entry-level understanding. If they don't, move on to Qs 4 and above.
For **Student Debrief**: consider using the Eureka assigned Exit Ticket for whole group debrief exercise; Suggested strategy – guided discourse.
For **Exit Ticket**: Use **Homework** problems 2 & 3 for this lesson's Exit Ticket.

Though not formally discussed *yet*, this is a foundation to understanding of distributive property. Students visually see multiplying the sum of two or more addends by a number will give the same result as multiplying each addend individually by the number and then adding the products together.

Lesson Look Fors

Look for teachers to...

- ❑ Have established a signaling routine for choral response or work show during the respective fluency activities
- ❑ Use a think aloud to describe why they shade what portions of the array, or use a different symbol in the array
- ❑ Make the focus of the lesson understanding the visual representations

Look for students to...

- ❑ Explain what they see in the array and how it relates to a given number sentence.

Student Criteria for Success

- Know: Shading, brackets, and/or dotted lines on an array will have mathematical significance -brackets can identify parts or wholes -dotted lines and shading represent decompositions
- Know: We count units; In an array, counting rows is the same as counting units.
- Know: Addition/subtraction and multiplication math facts (up to 4)
- Do: Interpret an array -identify decompositions within an array -Relate an annotated or labeled array to one or more number sentences
- Do: Addition/subtraction (+/- up to 4) Multiplication (2, 3, and 4)

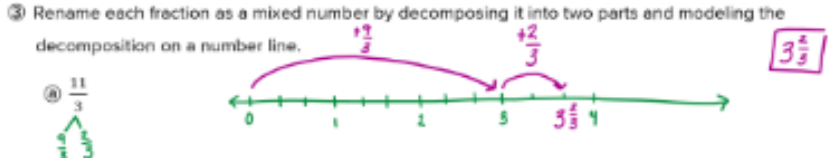
Find recommended lesson modifications, content knowledge boosters, and/or high-leverage instructional moves that may not be in your Teacher Edition located in **Other Notes to Inform Your Planning**

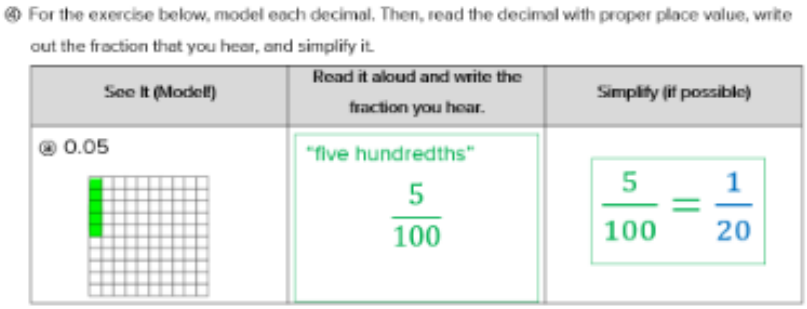
UNIT SYNOPSIS

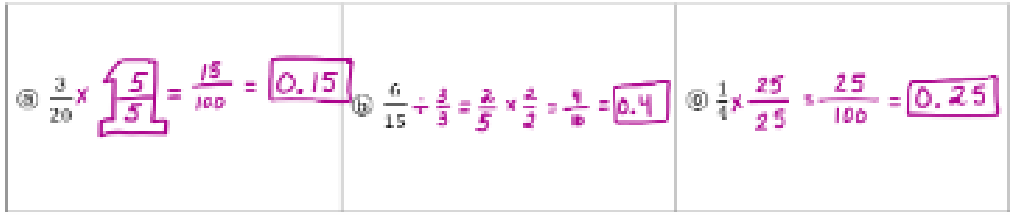
In elementary students began learning how to simplify fractions and how to convert between mixed numbers and fractions greater than one whole. They also learned how to represent decimals to the thousandth place using expanded notation. In this unit, we begin by reviewing how to simplify fractions and convert between mixed numbers and fractions greater than one whole. Students learn that fractions are a way to represent division and use this understanding to convert between fractions and decimals. As students build fluency in converting between fractions and decimals, they use this understanding to be able to represent rational numbers on the number line, graph rational numbers on the coordinate plane, and compare inequalities with rational numbers. During the second half of the unit, they learn how to operate with fractions and decimals. This unit lays the foundation for students to be successful with the following units, as they must be able to operate with rational numbers to be able to do anything else in 6th grade and beyond.

Topic A Overview – Converting between Fraction and Decimals

In Topic A students begin in Lesson 1 by reviewing simplifying fractions. Then in Lesson 2 they move to utilizing fluency in decomposing mixed numbers and fractions from 4th grade to rename fractions 'greater than one.' Use of the number line in this lesson helps to deepen their understanding. In Lesson 3 students use concrete models such as the hundreds grid to assist them in connecting the idea that fractions represent part of a whole and the whole depends on the place value shown in the number or on the decimal grid. They then use what they learned in Lesson 1 to take it to the next level by simplifying. In Lesson 4 students generate equivalent forms of fractions and decimals by converting fractions into equivalent fractions that have denominators of 10 or 100 so that they can use the denominator to easily move from fraction to decimal. Next, they extend their understanding of division to include b)a.

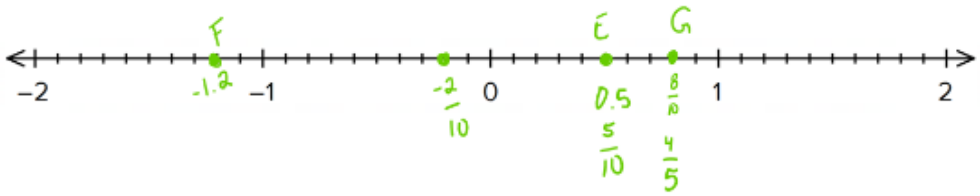






Topic B Overview – Representing Rational Numbers

In Topic B students begin Lesson 5 using what they learned in Lessons 1-4 to represent rational numbers on a number line. In Lesson 6 student graph pairs made of rational number in all four quadrants of the coordinate plane. Students work with positive and negative fractions greater than one, or decimals using prior knowledge of graphing integers from Lesson 1.5. Next, in Lesson 7, students begin to compare and order rational numbers using inequality symbols. They will use knowledge of ordering integers, converting between fractions and decimals to engage in error analysis where they will identify and correct common misconceptions.



The student had the right idea in wanting a common denominator or unit, but they didn't change the numerators accordingly. The correct work is below:

Step 1:

$\frac{14}{16}, \frac{8}{16}, \frac{9}{16}, \frac{10}{16}, \frac{11}{16}, \frac{12}{16}$

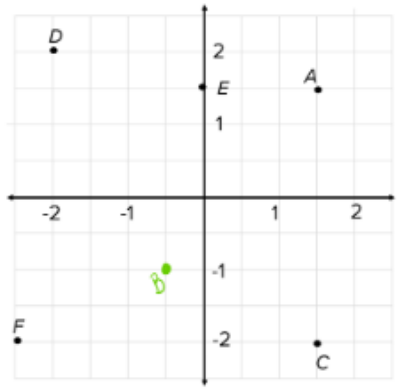
Step 2:

$\frac{8}{16} < \frac{9}{16} < \frac{10}{16} < \frac{11}{16} < \frac{12}{16} < \frac{14}{16}$

Step 3:

$\frac{1}{2} < \frac{9}{16} < \frac{5}{8} < \frac{11}{16} < \frac{3}{4} < \frac{7}{8}$

Directions: Use the coordinate plane below to answer the questions that follow.



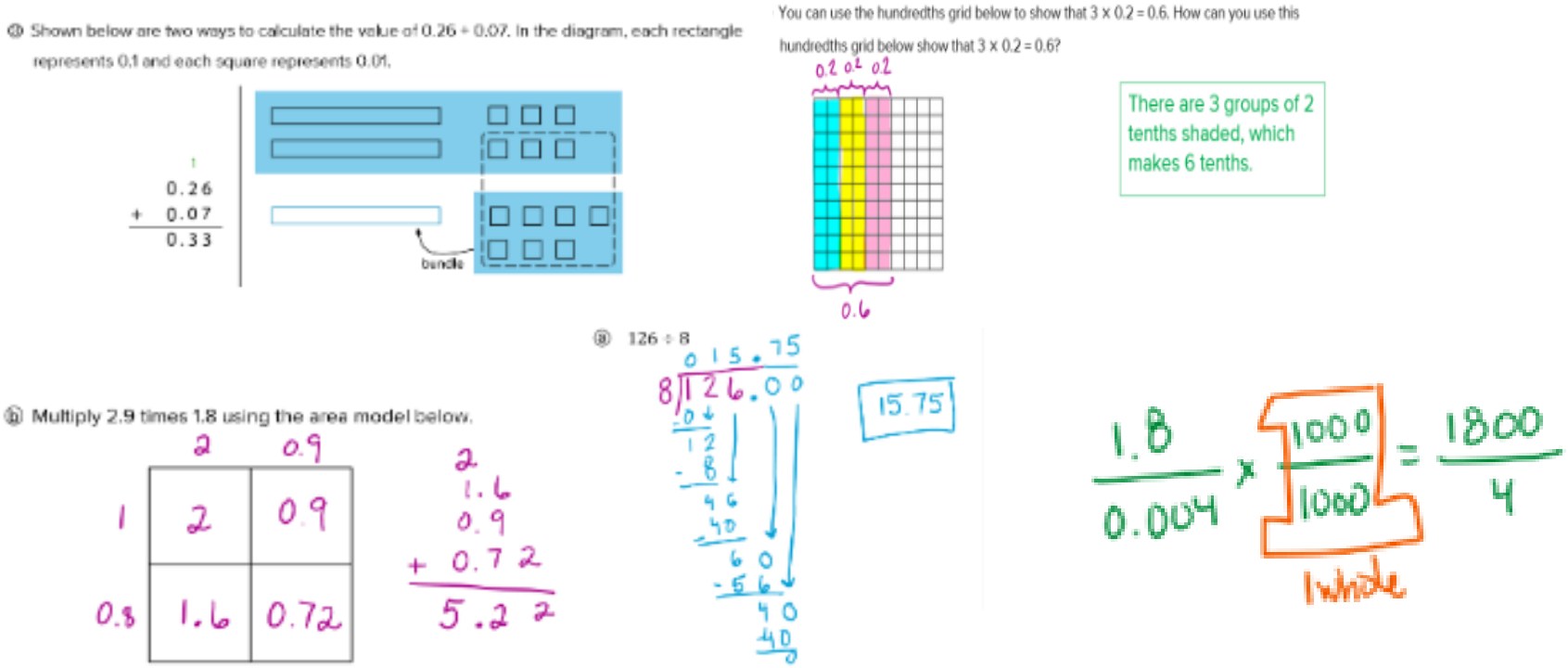
① What ordered pair represents Point *A*? How do you know?

$(1\frac{1}{2}, 1\frac{1}{2})$. I know because along both the x- and y-axis, A is halfway between 1 and 2.

② Plot Point *B* at (-0.5, -1).

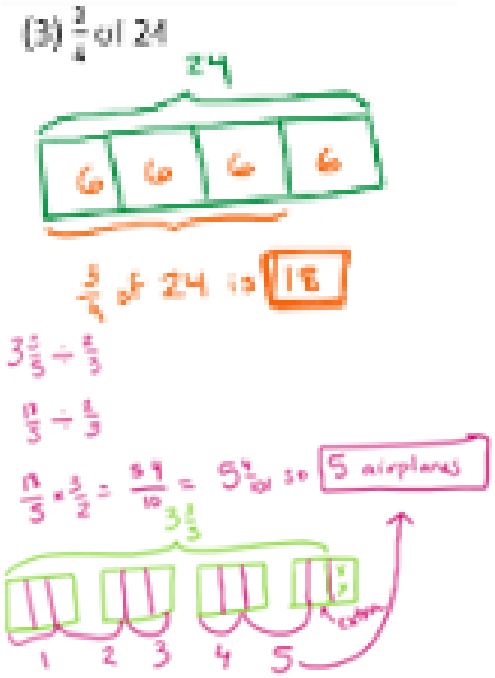
Topic C Overview – Operations with Decimals

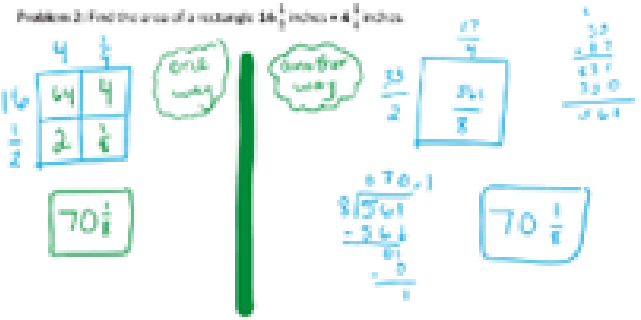
In Topic C students begin Lesson 8 by modeling and solving sums and differences of decimals using base-10 blocks to strengthen their understanding of the algorithm. In Lesson 9 students use the hundreds grid or area model to solve and estimation to help with placing the decimal in the product. In Lesson 10 students divide whole numbers or decimals **by** decimals using a base-10 diagram to model long division and connect that understanding to the standard algorithm. In Lesson 11 students use what they learned in Lesson 10 to determine what makes an equivalent expression that is easier to divide with the standard algorithm using a version of one 10/10, 100/1000, or 1000/1000.

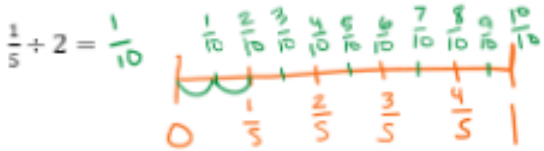


Topic D Overview – Operations with Fractions

In Topic D student begin Lesson 12 by using a tape diagram or fraction model to multiply fractions by fractions and fractions by whole numbers. They will also gain an understanding of why when multiplying a whole number by a fraction or a fraction by a fraction it yields a smaller product than the original factor. In Lesson 13 students move to using area models to multiply fractions and mixed numbers. By the end of this lesson, students should have developed an understanding that when multiplying **two numbers greater than one whole**, the product is greater than both the original factors. In Lesson 14, students learn how to divide fractions by modeling using a fraction model and/or number line. In Lesson 15, student model dividing fractions and mixed numbers by fractions and mixed numbers. The model will assist students in discovering that dividing fractions is the same as multiplying by its reciprocal.







CONTENT STANDARDS

Below are the standards addressed in this unit.

Readiness Standards	Supporting Standards
6.2(D) order a set of rational numbers arising from mathematical and real-world contexts **6.3(D)** add, subtract, multiply, and divide integers fluently **6.3(E)** multiply and divide positive rational numbers fluently **6.4(G)** generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money **6.11(A)** graph points in all four quadrants using ordered pairs of rational numbers	**6.2(C)** locate, compare, and order integers and rational numbers using a number line **6.3(A)** recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values **6.3(B)** determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one **6.5(C)** use equivalent fractions, decimals, and percents to show equal parts of the same whole *The following are standards from 4th grade that act as supporting standards in this unit:* **4.2(E)** represent decimals, including tenths and hundredths, using concrete and visual models and money **4.3(B)** decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations **4.4(A)** add and subtract whole numbers and decimals to the hundredth place using the standard algorithm

Focus on Disciplinary Literacy	
	Mathematical Process Standard (F) – analyze mathematical relationships to connect and communicate mathematical ideas
	Mathematical Process Standard (G) – display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

ROADMAP

AT A GLANCE: Unit 3 – Rational Number Operations				
Topic	Day	Date	Lesson	Lesson Title
Topic A Converting between Fractions and Decimals	1		1	Simplify Fractions
	2		2	Mixed Numbers and Fractions Greater than One Whole
	3		3	Decimals to Fractions
	4		4	Fractions to Decimals and Fractions as Division
	5		5	Representing Rational Numbers on a Number Line
	6		6	Graphing Rational Numbers on the Coordinate Plane
	7		7	Inequalities to Compare Rational Numbers
	8			Topic Quiz 3| Review and/or Flex Day
Topic C Operations with Decimals	9		8	Sums and Differences to Decimals
	10		9	Products of Decimals
	11		10	Quotients of Decimals (Day 1)
	12		11	Quotients of Decimals (Day 2)
	13		12	Products of Fractions
Topic D Operations with Fractions	14		13	Products of Mixed Numbers
	15		14	Quotients of Fractions
	16		15	Quotients of Mixed Numbers
	17			Review
	18			Unit Exam 3

Lesson 1: Simplify Fractions | Date: _____

Standard(s)

- **6.5(C)** use equivalent fractions, ~~decimals, and precents~~ to show equal parts of the same whole.

Important Vocabulary

- Fraction
- Numerator
- Denominator
- Equivalent Fractions
- Common Factor
- Simplify
- Simplest Terms

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Matching Game Cards *(It will be necessary to prepare by printing/cutting cards.)*
- Debrief Question

Lesson Agenda		Time
I.	Do Now	5 min
II.	INM/Concept Development	20 min
III.	Student Practice	20 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to review and utilize prior knowledge of understanding and identifying equivalent fractions such as half; pictorially and on a number line to assist with identifying them concretely. This prior knowledge will support students in the lesson as they begin to **simplify fractions**; understanding that simplifying a fraction means to divide the numerator and denominator by a common factor. Also noting that a fraction is in its **simplest form** when the only **factor** that the numerator and denominator have in common is 1.

Opportunities to CFU

- ✓ INM Part I: #2,3
- ✓ INM Part II: #4,5
- ✓ Student Practice: #1,2(f,h)

Other Notes to Inform Your Planning

For INM Part 2: ***Q4***; After reviewing A and B, stamp for students that Cara wrote out all her factors for 20 but only wrote 10 and 3 for 30. Bring student voices into the space by asking, 'Why do you think Cara didn't write out all the factors for 30? Is it okay, is it not and why? Is there another way Cara could have simplified this fraction?'

Focus on Disciplinary Literacy

INM: First Table
Student Practice: #2a-c

Lesson Look Fors

Look for teachers to…

- ❑ Allow students to do the heavy lifting on INM Part 1 (C, D).
- ❑ Circulate and monitor during discussions; listening for discussion points to highlight and **providing feedback.**

Look for students to…

- ❑ Easily identify fractions that are equivalent to ½ pictorially, on a number line => concretely.
- ❑ Identify equivalent fractions other than halves.
- ❑ Be able to determine the most efficient process for simplifying and explain what it means to simplify.

Student Know/Do Chart

- Know: Dividing numerator and denominator by a common factor makes a simplified, yet still equivalent, fraction.
- Know: A fraction is in its simplest form when the only factor that the numerator and denominator have in common is 1.
- Do: Find common factors; choosing the most efficient process to simplify a fraction to its simplest term.
- Do: Identify fractions that are equivalent.

Lesson 2: Mixed Numbers and Fractions Greater than One Whole

Standard(s)

- **6.5(C)** use equivalent fractions, ~~decimals, and precents~~ to show equal parts of the same whole.
- **4.3(B)** decompose fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording result with symbolic representations; *this is a 4th grade standard and acts as a supporting standard for this lesson.*

Important Vocabulary

- **Fraction greater than 1**
- Mixed Number

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Matching Game Cards *(It will be necessary to prepare by printing/cutting cards.)*
- Debrief Question

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	20 min
III.	Student Practice	20 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to utilize fluency in decomposing mixed numbers and fractions from 4th grade to rename fractions 'greater than one.' Students will also use decomposing to rename mixed numbers as fraction. Use of the number line helps to deepen their understanding of the material and justify their reasoning.

Opportunities to CFU

- ✓ INM Part I: #1-3a
- ✓ INM Part II #2,3b-d
- ✓ Student Practice #1a,1c

Other Notes to Inform Your Planning

Do Now: Use the Do Now to activate prior knowledge such as when a fraction has the same numerator and denominator it represents one whole. It is also important to assess whether students can visualize that a mixed number is greater than 1 whole. **Q5** on the Do Now asks students to use a fraction circle to model this understanding.

INM: Stamp for students that a mixed number should be referred to as a fraction but as a 'fraction greater than one,' and not an improper fraction. This will deepen their understanding of the material. The number line should be used throughout the lesson so that students get the opportunity to understand why (i.e., 3 ¼ = 13/4).

Focus on Disciplinary Literacy

INM: First Table
Student Practice: #2a-c

For Struggling Students: Scaffold by making smaller 'hop marks' for students who struggle.

Lesson Look Fors

Look for teachers to…

- ❑ Stamp for students that 'improper fractions' should be referred to as 'fractions greater than one.'
- ❑ Use a number line to model what it means to 'decompose' a fraction greater than one whole.

Look for students to…

- ❑ Decompose fractions greater than one whole to generate a mixed number and vice versa.
- ❑ Use a number line to accurately model renaming mixed numbers to fractions greater than one and vice versa.

Student Know/Do Chart

Know: To represent a whole, the numerator and denominator must be the same (i.e., $\frac{5}{5}$ is 5 parts out of 5).
A fraction is greater than one if…

Know: The denominator in a **mixed number** and **fraction** is used to partition the number line into the appropriate amount of fractional parts.

Do: Decompose a fraction greater than one into two parts and rename it as a mixed number.

Do: Decompose a mixed number into two parts and rename it as a fraction greater than one

Do: Represent mixed numbers and fractions greater than one on the number line.

Lesson 3: Decimals to Fractions

Standard(s)

- **6.4(G)** generate equivalent forms of fractions, decimals, ~~and percents~~ using real-world problems, including problems that involve money.

Important Vocabulary

- Decimal
- Tenths
- Hundredths
- Thousandths
- Simplify

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Showdown Powerpoint
- Debrief Question

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	20 min
III.	Student Practice	10 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to use concrete models such as the hundreds grid to assist them in connecting the idea that fractions represent a part of a whole and the whole depends on the place value shown either in the number or on the decimal grid. Students must first master modeling of decimals by reading them aloud with the proper place value. Then students should be able to read a decimal number or grid, determine the place value and write it out in words and in fraction form based on its place value. Last students take it to the next level by simplifying it into its simplest form if possible. It is important to highlight that the decimal and its fraction form are equivalent values.

Opportunities to CFU

- ✓ INM Part I: #2, 3b-e
- ✓ INM Part II: #4b-e
- ✓ Student Practice #2, 3, 5, 6, 8

Other Notes to Inform Your Planning

INM: A place value chart would be a useful tool to assist students with their understanding of the material. Also, if you notice that a few students seem to be struggling with Part I, you should pull them in small group before proceeding with the rest of the material.

Exit Ticket: #1 on the exit ticket is a must do because it is a multiple response question which exposes students to questions that will appear on STAAR 2.0.

Focus on Disciplinary Literacy

INM: Part III
SP: #4,5

Lesson Look Fors

Look for teachers to…

- ❑ Use think-a-loud to model turning a decimal into a fraction; read the decimal and place value then write out what is heard (ex. 0.02 => 2 hundredths $\frac{2}{100}$)
- ❑ Encourage students to simplify whenever necessary.
- ❑ Identify who struggles and make a plan to close the gap.

Look for students to…

- ❑ Correctly identify a decimal's place value and read it aloud. (*Ask*: How would you read this decimal aloud?
- ❑ Choose the correct denominator based on how the decimal is read.
- ❑ Simplify correctly.

Student Know/Do Chart

Know — A decimal digit's place value up to the thousandths place.

Know — Identify what decimal is modeled on a hundredths grid.

Do — Model a decimal on a hundredths grid.

Do — Generate a fraction from a decimal and write it in simplest form.

Lesson 4: Fractions to Decimals and Fractions as Division

Standard(s)

- **6.4(G)** generate equivalent forms of fractions, decimals, ~~and percents~~ using real-world problems, including problems that involve money.
- **6.2(E)** Extend representations for division to include fraction notation such as $\frac{a}{b}$ represents the same number as a a÷ b where b ≠ 0

Important Vocabulary

- Fraction
- Numerator
- Denominator
- Decimal
- Simplify

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

Document Camera
Projector
Unit 3 Student Workbook
Fraction to Decimal Task Cards *(It will be necessary to prepare by printing/cutting cards.)*
Debrief Question

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	30 min
III.	Student Practice	10 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to generate equivalent forms of fractions and decimals by **converting** fractions into equivalent fractions that have denominators of 10 or 100 so that they can move from a fraction to a decimal **without** having to apply the long division algorithm. Students then extend their understanding of division from elementary (namely, that a ÷ b = $b\overline{)a}$.) to include ($\frac{a}{b}$ = a÷ b = $b\overline{)a}$.). They will apply this understanding to use the long division algorithm to convert fractions to decimals.

Opportunities to CFU

INM Part I: #2, 3a-c
INM Part II: #4, 5a-c, 6b, c, e, f
Student Practice #1, 3b

Other Notes to Inform Your Planning

For INM Part II: In **Q4,** make sure to activate prior knowledge by connecting how fractions were represented in elementary (a ÷ b) to how it is represented currently which is ($\frac{a}{b}$ = a÷ b = $b\overline{)a}$.).

Student Practice: Note that **Q3b** asks students 'which part of the **people DO NOT** enjoy coffee.' Students may have a misunderstanding about which fractional part should be represented. Make sure to monitor student understanding on this question and be prepared to scaffold for students who have a misunderstanding. You can help students to avoid this mistake by having students highlight 'DO NOT' so that stands out to them.

Focus on Disciplinary Literacy

INM: Part I; #2, Part II; #4, #6
Student Practice: #2

Lesson Look Fors

Look for teachers to…

- ❑ Stamp/model when finding equivalent fractions students should multiply/divide the numerator and denominator by the appropriate version of one.
- ❑ Model dividing the numerator by the denominator. PUNCH that the numerator is what is used to divide a fraction into equal parts.

Look for students to…

- ❑ Determine whether to multiply/simplify by the appropriate version of one to get a denominator of 10 or 100.
- ❑ Generate the decimal equivalent of a fraction by using long division or multiplying/simplifying by the appropriate version of one.

Student Know/Do Chart

Know: To turn a fraction into a decimal, divide the numerator by the denominator or find an equivalent fraction with a denominator of 10, 100, or 1000 and use that to find the decimal equivalent.

Know: Determine the fractional representation of a given word problem. (ex. Jim ate 3 out of 8 slices of pizza => $\frac{3}{8}$)

Do: Generate the decimal equivalent given a fraction in a real-world application problem.

Lesson 5: Representing Rational Numbers on the Number Line

Standard(s)

◆ **6.2(C)** Locate, ~~compare and order integers and~~ rational numbers using a number line.

Important Vocabulary

- Rational Number

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Quiz Quiz Trade Cards *(It will be necessary to prepare by printing/cutting cards.)*
- Debrief Question

Lesson Agenda		Time
I.	Do Now	5 min
II.	INM/Concept Development	15 min
III.	Student Practice	25 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to represent rational numbers on the number line. Students should conclude this lesson with a strong understanding of how to create and interpret number lines with rational numbers. Beyond this, the lesson continues to build conceptual understanding of the relationship between mixed numbers, fractions greater than one, and their decimal equivalents. The use of number lines helps students visualize how they are divided into segments resulting in a visual representation of fractions.

Opportunities to CFU

- ✓ INM: #1c, d, e
- ✓ INM: #2, 3
- ✓ Student Practice: #1,2

Other Notes to Inform Your Planning

Do Now: ***Q2;*** Push student understanding with decimals such as 1.5, 1.50, 1.500. This can be done by asking if these numbers are equivalent and why. Address misconceptions such as a student thinking that 1.5< 1.50, 1.50 > 1.500 by modeling on a place value chart.

INM: Model Example A for students using a Think Aloud so that students **clearly** understand the expectation. As a scaffold for students that may struggle, consider using a reference with benchmark fractions and their decimal equivalent to help with remembering benchmarks such as halves, fourths, fifths, eighths, and tenths. This will also help with filling in the number line.

Focus on Disciplinary Literacy

INM: #2, 3
Student Practice: #1

e.

Lesson Look Fors

Look for teachers to…

- ❑ Use a think-a-loud to model Example 1A on the INM; allow students to do the heavy lifting on B-E.
- ❑ **INM B-E**: Facilitate and use scaffolding questions to support students that may struggle.
- ❑ **INM B-E**: Use show call to highlight two responses that look different but are really the same.

Look for students to…

- ❑ Correctly count from 'notch to notch' to determine where to place rational numbers.
- ❑ Generate equivalent values for decimals, fractions, and mixed numbers.

Student Know/Do Chart

Know — All mixed numbers have a fraction equivalent, and all fractions have a decimal equivalent.

Know — All number lines can be cut into any amount of equal-sized segments and the amount of segments is used to determine the value of any number plotted on the number line.

Do — Identify the location of a value on a number line.

Do — Generate equivalent fractions, mixed numbers, and decimals.

Lesson 6: Graphing Rational Numbers on the Coordinate Plane

Standard(s)

- **6.11(A)** graph points in all four quadrants using ordered pairs of rational numbers.

Important Vocabulary

- Coordinate plane
- Origin
- Y-axis
- X-axis
- Ordered pair
- X-coordinate
- Y-coordinate
- Quadrant I
- Quadrant II
- Quadrant III
- Quadrant IV

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Debrief and Graphing Battleship Direction Slides

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	15 min
III.	Student Practice	25 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to graph pairs made of rational numbers in all four quadrants of the coordinate plane. Students work with positive and negative fractions greater than one, or decimals using prior knowledge of graphing integers from Lesson 1.5.

Opportunities to CFU

✓ INM: #1,2

✓ Student Practice #1(A-D, M, N)

Other Notes to Inform Your Planning

For INM Part 1: ***Q1***; In the case that students offer one way to write out ordered pairs such as (1.5, 1.5), push their thinking by asking; 'That is definitely correct, but what OTHER ways could we write this ordered pair.' The rationale behind this push is so that students will think flexibly and be able to work with different representations of the same value.

Focus on Disciplinary Literacy

INM: #4-6
SP: #1,2

Student Practice: Since the exit ticket has a question that asks the quadrant that a specific point is located; it may be a good idea to ask students to also name the quadrant where the point plotted is located (i.e., *Whole Group:* 'Jennifer do you mind sharing the quadrant where Point A is located? Manuel, do you mind sharing the quadrant that Point C is located?) You may suggest that students label the quadrants prior to starting the student practice. There may be misconceptions around the coordinates (i.e., (-1,2), students may start by locating the first coordinate on the 'y' axis, instead of the 'x' axis. For students who make this mistake, consider having them annotate the ordered pair, labeling the 'x' and 'y' coordinates prior to graphing it.

Debrief: Consider including in the debrief discussion a question asking which quadrant each point is located.

Lesson Look Fors

Look for teachers to…

- ❑ Stamp that a coordinate plane is made from two perpendicular number lines.
- ❑ Connect students' prior learning about the existence of negative numbers to the reason we can "unlock" the other three quadrants of the coordinate plane.

Look for students to…

- ❑ Correctly plot ordered pairs in all four quadrants.
- ❑ Identify ordered pairs and the appropriate quadrant based on plotted points.

Student Know/Do Chart

Know: The coordinate plane is made of a vertical and horizontal number line.

Know: Determine the x and y coordinate in an ordered pair.

Do: Identify and plot ordered pairs made of rational numbers on the coordinate plane in all four quadrants.

Lesson 7: Inequalities to Compare Rational Numbers

Standard(s)

- **6.2(D)** order a set of rational numbers arising from mathematical and real-world context

Important Vocabulary

- Positive Numbers
- Negative Numbers
- <: Less than
- >: Greater/more than

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Compare and Order Station Cards

(It will be necessary to prepare by printing/cutting cards.)

- Debrief Slide

Lesson Agenda

		Time
I.	Do Now	3 min
II.	INM/Concept Development	32 min
III.	Student Practice	8 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to compare and order rational numbers using inequality symbols. Students are offered the opportunity to utilize prior knowledge of ordering integers, converting between fractions and decimals to engage in error analysis. Students will identify and correct common misconceptions and at the end of the lesson summarize their learning by noting the corrected misconceptions and then engaging in additional practice.

Opportunities to CFU

- ✓ INM Part I: #1-5
- ✓ INM Part II: #6a-e
- ✓ Student Practice: #3

Other Notes to Inform Your Planning

For INM Part 1: ***Q1***; Allow students to do the heavy lifting as they are working in partners. You may include scaffolding questions based on your students, but it is important to allow students an opportunity to grapple with the material. Consider adding in an anchor chart with an integer number line so that it is available to all students especially those that may struggle.

Student Practice: You may consider allowing students to use a teacher-created or student-created benchmark fractions and decimals reference. This would be especially helpful for students that have a difficult time with long division or you may decide to provide some students with graph paper to assist them in organizing numbers in long division.

Focus on Disciplinary Literacy

Do Now: #1
INM: Part I and Part II

Lesson Look Fors

Look for teachers to…

- ❑ In the **INM**, facilitate partner work for each example.
- ❑ Allow students to discover errors without sharing where there may be an error.
- ❑ Guide students to develop the BIG TAKEAWAY section on their own rather than having them copy the TE.

Look for students to…

- ❑ Carefully read the original question and the student's response to it to find the error.
- ❑ Correct the error.

Student Know/Do Chart

Know — When comparing fractions and decimals, it's easier to convert the numbers so they are all decimals or all fractions with the same denominator.

Know — Negative numbers are ALWAYS less than positive numbers and the order of negative numbers is ALWAYS opposite the order of positive numbers.

Do — Compare and order a set of rational numbers.

Lesson 8: Sums and Differences of Decimals

Standard(s)

- **6.3(D)** add, subtract, ~~multiply, and divide~~ integers fluently
- **4.2(E)** represent decimals, including tenths and hundredths, using concrete and visual models and money
- **4.4(A)** Add and subtract whole numbers and decimals to the hundredths place using the standard algorithm

Note: *The standards from G4 are support students understanding from G4 and are acting as supporting standards for this lesson.*

Important Vocabulary

- Sum
- Difference
- Bundling

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Debrief Question

Lesson Agenda		Time
I.	Do Now	5 min
II.	INM/Concept Development	24 min
III.	Student Practice	10 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to add and subtract decimals. Although this lesson summarizes many fourth-grade concepts involving addition and subtraction of decimals, some students may still struggle. This lesson makes heavy use of modeling in the base ten system so that students will better understand addition and subtraction algorithms.

Opportunities to CFU

- ✓ INM Part I #1,3
- ✓ INM Part II #1a-c, 2b, c
- ✓ Student Practice #1, 2, 4, 8, 9

Other Notes to Inform Your Planning

Do Now: This is a great time to assess prior knowledge of base ten blocks. This offers a great opportunity to address any misunderstanding/misconceptions about the meaning of base ten blocks. It also affords the opportunity to see which students are able to successfully apply the standard algorithm.

For INM Part 1-2: Consider using physical base ten blocks or snap cubes to support student understanding.

For INM Part 2: ***Q1c***; Students that may struggle with this problem could benefit from base then blocks or breaking the tenths bar into hundredths then counting the total amount of hundredths and subtracting the four hundredths.

Student Practice: The student practice is word problem heavy. Some students may struggle with interpreting what operation a word problem represents. To help with this encourage students to make sense of the problems using Read Draw Write (RDW). This will need to be modeled for students.

Focus on Disciplinary Literacy

INM: #2a-b
SP: #4-7

Lesson Look Fors

Look for teachers to…

- ❑ Review the meaning of bundling, use this term throughout the lesson, and expect students to use the term as well.
- ❑ Stamp the connection between the model and lining up decimals.

Look for students to…

- ❑ Use the model and explain how it relates to the standard algorithm.
- ❑ Determine how to appropriately stack numbers in the standard algorithm.
- ❑ Add and subtract using the model and/or the standard algorithm.

Student Know/Do Chart

Know: Identify a decimal digit's place value up to the thousandths place.

Do: Model decimal addition and subtraction using place value columns or base 10 blocks.

Do: Add or subtract decimals using the standard algorithm.

Lesson 9: Products of Decimal

Standard(s)

- **6.3(E)** multiply ~~and divide~~ positive rational numbers fluently

Important Vocabulary

- Product
- Factor
- Area Model
- Standard multiplication algorithm

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Task Cards (may require cutting
- Debrief Question

Lesson Agenda	Time
I. Do Now	5 min
II. INM/Concept Development	25 min
III. Student Practice	15 min
IV. Student Debrief	5 min
V. Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to multiply decimals. It starts by taking students through modeling integer multiplication so that they can use it to make sense of multiplying with decimals. By the end of the unit students see that they can use the area model and estimation to help them with placing the decimal in the product. The standard algorithm can still be used as long as students use estimation to support them in understanding where to place the decimal.

Opportunities to CFU

- ✓ INM: #1,2,3,5,6
- ✓ Student Practice #1c-d, 2, 3

Other Notes to Inform Your Planning

For INM: Allow students who struggle with multiplication to use a calculator or the 12 x12 chart they created. The hundredths grid is also a great tool to assist students in making sense of multiplying decimals. Some students may need to see you model. #2 provides a great opportunity to model under the document camera.

Focus on Disciplinary Literacy

INM: #1, 2b
SP: #2,3

Lesson Look Fors

Look for teachers to…

- ❑ Start the INM by using whole numbers first and then moving to decimals.
- ❑ Allow students who struggle to use a multiplication chart. ***Not all students.***
- ❑ Stamp that students should estimate so they know where to put the decimal.

Look for students to…

- ❑ Correctly break down factors by place value using the area/array method.
- ❑ Estimate to determine where to place the decimal.
- ❑ Check their answer for reasonableness.

Student Know/Do Chart

Know — When multiplying with decimals using the standard algorithm, it is not necessary to line decimals up by place value.

Know — When multiplying decimals, the product will have the same number of digits to the right of the decimal as the sum of the digits to the right of the decimal in the factors.

Do — Multiply decimal factors using the array model OR the standard algorithm.

Do — Place the decimal in the appropriate place in the product.

Lesson 10: Quotients of Decimals (Day 1)

Standard(s)

- **6.3(E)** multiply and divide positive rational numbers fluently.

Important Vocabulary

- Divide
- Quotient
- Divisor
- Dividend

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Debrief Slide

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	25 min
III.	Student Practice	15 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of the lesson is for students to divide whole numbers or decimals **by** decimals. They start this lesson by using a base-ten diagram to model long division, specifically the unbundling that happens when you move left to right during the long division process. Then they move to using the long division process. The goal is for students to connect what is happening in the model to the standard algorithm and not need the model. However, students that still struggle with the standard algorithm can use the model if they need to; eventually connecting it to the standard algorithm.

Opportunities to CFU

- ✓ INM: #2, 3a-c, 4b, 5a-b
- ✓ Student Practice #2,3,4

Other Notes to Inform Your Planning

For Do Now: Use the Do Now to determine that could use the support of a multiplication chart.

For INM: Consider providing students that struggle with long division a sheet of graph paper. This supports them in organizing their numbers.

Focus on Disciplinary Literacy

INM: Part One and Two
SP: #2, 3

Students that struggle with understanding the unbundling may benefit from the use of base snap cubes if they are available. Before moving on to the standard algorithm make sure that students thoroughly understood #2. It will be worth it to model under a document camera and color-code each place value representation. Students may have misconceptions when unbundling the 2 in 271; be prepared to address this misconception.

Lesson Look Fors

Look for teachers to…

- ❑ Model dividing by bundling and unbundling with whole numbers **INM #1**.
- ❑ Connect bundling and unbundling to the standard algorithm.
- ❑ Provide students that struggle with multiplication facts with a 12x12 multiplication chart.

Look for students to…

- ❑ Model and solve using base 10 visual representations and connect it to the standard algorithm.
- ❑ Use estimation to justify that the decimal is in the correct place in the quotient.

Student Know/Do Chart

Know — Division is when you split a total into equal groups.

Know — Understand base-10 blocks and what it means to **unbundle.**

Do — Use a problem-solving model to make sense of and identify which value is the divisor and which is the dividend in a given word problem.

Do — Solve using the standard algorithm.

Lesson 11: Quotients of Decimals (Day 2)

Standard(s)

- **6.3(E)** multiply and divide positive rational numbers fluently.

Important Vocabulary

- Divide
- Quotient
- Divisor
- Dividend

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Debrief Slide

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	28 min
III.	Student Practice	12 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to divide whole numbers or decimals by whole numbers. Students should be able to identify equivalent division expressions, realizing that if the decimal is moved the same number of times in the dividend and divisor – this makes an equivalent expression that is easier to divide using the standard algorithm. This understanding should be connected to multiplying by a version of 1 such as 10/10, 100/100, 1000/1000.

Opportunities to CFU

- ✓ INM Part I: #1,2
- ✓ INM Part II: #1-3
- ✓ Student Practice #1, 2, 3c, 4, 5a-b

Other Notes to Inform Your Planning

Do Now: This problem has more than one correct answer. This may be a good time to do a show call using students that only chose B and students that only chose D. Consider discussing similarities/differences in these two expressions and why they are equivalent to the one in the original problem. Also share with students that it is possible that more than one answer choice may be correct. This prepares them for the exit ticket and ultimately STAAR 2.0

For INM Part 1: It is important to stamp for students that moving the decimal in the dividend and divisor is the same as multiplying both by 10, 100, or 1000. Graph paper may be useful to help students organize their numbers in the standard algorithm.

Focus on Disciplinary Literacy

INM: #1,2
SP: #3

Lesson Look Fors

Look for teachers to…

- ❑ Allow students to work in partners on **INM I #1,2**; monitor for discussion to highlight in whole group.
- ❑ Use show call to validate/celebrate other student's approach to the same division problem.
- ❑ Use graph paper to support students that may struggle with the long division.

Look for students to…

- ❑ Multiply both the divisor and dividend by the same power of 10.
- ❑ Accurately use the standard division algorithm.
- ❑ Accurately identify which is the total (dividend) and which is the part (divisor) in a word problem.

Student Know/Do Chart

Know — Determine when it is necessary to 'move' decimals in a division problem and why.

Know — Explain the rationale for moving a decimal when the decimal is in the dividend/divisor or both.

Do — Identify which value is the divisor and which is the dividend in a given word problem.

Do — Solve using the standard algorithm.

Lesson 12: Products of Fractions

Standard(s)

- **6.3(E)** multiply and divide positive rational numbers fluently
- **6.3(B)** determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one

Important Vocabulary

- Product
- Factor
- Fraction
- Numerator
- Denominator

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Debrief Slides

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	20 min
III.	Student Practice	20 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to multiply **fractions by fractions** and **by whole numbers**. Students will visualize the algorithm using a tape diagram and fraction model. They will also gain an understanding of **WHY** when multiplying a **whole number** by a **fraction** or **fraction by a fraction** it yields a smaller product than the original factor. They will then use tape diagrams to find missing information such as **fractional parts**, **the total,** or **the whole**.

Opportunities to CFU

- ✓ INM Part I: #1-5,7,9,11
- ✓ Student Practice: #1-4, 9-10

Other Notes to Inform Your Planning

For INM: **Q3**; The of this example is to give students a chance to divide when the quotient is NOT a whole number. This is a review of turning mixed numbers into fractions and back. Allow students time to use RDW strategies to make sense of this problem.

If available, colored pencils may be helpful to support student understanding with modeling on the tape diagram and grid. Color coding may help to support their understanding.

Focus on Disciplinary Literacy

Do Now: #1
INM: #1-13; Rally Coach #11, 12
Student Practice: 10

Lesson Look Fors

Look for teachers to…

- ❑ Deliver a clear Think-Aloud for example 1 in the **INM**.
- ❑ For each INM problem, PUNCH the comparison between the product and the original factor.

Look for students to…

- ❑ Create tape diagrams with accurate values based on the given situation.
- ❑ Compare the value of their product to the original factor and explain why the product is larger or smaller.

Student Know/Do Chart

Know: Able to determine when a problem situation requires multiplication.

Do: Model and solve fraction multiplication using a tape diagram and/or fraction model.

Do: Explain why it makes sense for a product to be greater or less than the factors that yielded it.

Lesson 13: Products of Mixed Numbers

Standard(s)

- **6.3(E)** multiply and divide positive rational numbers fluently
- **6.3(B)** determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one

Important Vocabulary

- Product
- Factor
- Fraction
- Numerator
- Denominator
- Mixed Number
- Fraction greater than one whole

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Debrief Slide

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	12 min
III.	Student Practice	28 min
IV	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to use area models to multiply fractions and mixed numbers. By the end of the lesson students should have developed an understanding that when multiplying two numbers greater than one whole, the product is greater than both the original factors.

Opportunities to CFU

✓ INM: #1-3

✓ Student Practice: #3,4

Other Notes to Inform Your Planning

Do Now: Share with students that the area model will be used for the day's lesson. Students should use area models so that they are prepared for the lesson. Some may want to use the standard algorithm.

INM: Q1: In this example, make sure to show students that they can break a mixed number down to into its whole number and fraction to multiply it more easily using the area model, a strategy that they already know. But they can also convert mixed numbers to fractions greater than one whole and multiply those two factors instead and skip the adding process. They will need to be reminded that when multiplying 'proper fractions'; the standard algorithm is numerator times numerator and denominator times denominator. When using the area model; be prepared to address misconceptions when adding fractions with different denominators although this isn't a new concept.

Focus on Disciplinary Literacy

INM: #3, Rally Coach: #3,4,7,8
Student Practice: 1-4

Lesson Look Fors

Look for teachers to…

- ❑ Deliver a clear Think-Aloud for example 1 in the **INM**.
- ❑ For each INM problem, PUNCH the comparison between the product and the original factor.

Look for students to…

- ❑ Set up the correct model for fraction multiplication.
- ❑ Convert mixed numbers into fractions greater than one whole.
- ❑ Multiply fractions correctly.

Student Know/Do Chart

Know: Understand how to generate a fraction greater than one given a mixed number.

Know: Understand that it is necessary to generate an equivalent fraction with the same denominator and add the numerators when adding fractions.

Do: Use the area model to multiply mixed numbers.

Do: Convert between mixed numbers and fractions greater than one whole.

Lesson 14: Quotients of Fractions

Standard(s)

- **6.3(E)** multiply and divide positive rational numbers fluently
- **6.3(B)** determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one

Important Vocabulary

- Quotient
- Divisor
- Dividend
- Reciprocal

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Task Cards *(It will be necessary to prepare by printing/cutting cards.)*
- Debrief Slide

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	27 min
III.	Student Practice	13 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to learn how to divide fractions by modeling with the use of a fraction model and/or a number line so that they can use what they have learned to divide fractions without modeling. Students should also understand that dividing a fraction is the same as multiplying by its reciprocal.

Opportunities to CFU

- ✓ INM: #1 f-g, 2-4
- ✓ Student Practice: #1, 2, 5, 6

Other Notes to Inform Your Planning

Do Now: The Do Now is a spiraled review of multiplication and division from previous lessons. It is important to assess student knowledge during this time. This is a great time to quickly address any misconceptions.

Student Practice: Modeling should be encouraged but not forced. If students can compute accurately without the models allow them to solve in this way. Struggling students should find that modeling makes things easier. Consider giving half credit for those that refuse to model for questions that say, 'Draw a picture to support your response.' In the Problem Set, set the timer for 9.5 minutes and make expectations clear. Make sure to use the last 3.5 to have students check their work.

Focus on Disciplinary Literacy

Do Now: #1, 2
INM: #1-6
Student Practice: #1-6

Lesson Look Fors

Look for teachers to…

- ❑ Model each part of **INM Problem 1.**
- ❑ Provide opportunities for students to participate in turn-and-talk or think/pair/share for **parts a-g**.
- ❑ Use the tape diagram and number line to model **INM Problem 2.**
- ❑ Punch that dividing a fraction is the same as multiplying by its reciprocal.

Look for students to…

- ❑ Model fraction division accurately on a number line or tape diagram.
- ❑ Explain why dividing a fraction is the same as multiplying by its reciprocal.

Student Know/Do Chart

Understand which value in a division situation is the divisor and which is the dividend.

Able to determine when a problem situation requires division.

Model and solve division by a fraction and whole number on a number line, fraction model or solve by using the standard algorithm

Lesson 15: Quotients of Mixed Numbers

Standard(s)

- **6.3(E)** multiply and divide positive rational numbers fluently
- **6.3(A)** recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values

Important Vocabulary

- Quotient
- Divisor
- Dividend
- Reciprocal
- Multiplicative Inverse

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 3 Student Workbook
- Task Cards
  (It will be necessary to prepare by printing/cutting cards.)
- Debrief Slide

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	21 min
III.	Student Practice	19 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The goal of this lesson is for students to divide fractions and mixed numbers by fractions and mixed numbers. Through modeling, students should make the connection that dividing by a fraction is the same as multiplying by its reciprocal. They should also realize that to divide mixed numbers, it's best to convert them to fractions greater than one whole; **additionally**, in order to model using a fraction model, the denominators need to be like. The other goal is for students to recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values.

Opportunities to CFU

- ✓ INM: #1, 2
- ✓ Student Practice: #1, 3, 4

Other Notes to Inform Your Planning

For INM Part 1: When modeling stamp for students it is necessary to generate an equivalent fraction with the same denominator. Students may have misconceptions or become confused when modeling with different denominators.

Student Practice: While modeling should be encouraged, it should not be forced. If students can compute accurately without the models, they may get frustrated if they are forced to model. Struggling students should find that modeling makes things easier.

Focus on Disciplinary Literacy

Do Now: #1, 2
INM: #1-5
Student Practice: #1-4

Lesson Look Fors

Look for teachers to…

- ❑ Focus on stamping the conceptual understanding and avoid using keep/change/flip.
- ❑ Use a tape diagram to model.
- ❑ Punch that dividing a fraction is the same as multiplying by its reciprocal.

Look for students to…

- ❑ Understand that a mixed number must be turned into a fraction greater than one prior to multiplying.
- ❑ Use modeling or the standard algorithm to multiply mixed numbers
- ❑ Explain and apply multiplying by the reciprocal.

Student Know/Do Chart

Know — Understand which value in a division situation is the divisor and which is the dividend.

Know — Able to determine when a problem situation requires division.

Do — Model and solve division of a fraction and mixed number on a number line, fraction model or solve by using the standard algorithm.

Recommended Success Day Materials and Resources

6.3A, 6.3E, 6.3B , and 6.4G
Constant Rate of Change, Linear Relationships, and Constant of Proportionality

- Quotients and Products of Mixed Numbers
  Equivalent Fractions and Decimals Part I
  Equivalent Fractions and Decimals Part II
  Extra Practice SE
  Extra Practice TE

Notes to Inform Your Planning
These resources can be used for either small-group or whole-group reteach.

If student data indicates a pause point is not necessary, you can opt to move forward and reserve a Success Day to use at a later date.

Using exit ticket data can help you prioritize what to review. For example, if you remember that students did poorly on Lesson 5, pull problems from lesson 5, especially if they are problems students did not do before (for example, SP or INM problems you skipped during class). You can also take questions from the resources linked above.

All unit exams should be given online to prepare students for STAAR online.

UNPACKED STANDARDS

Focus standards for this unit.

<table>
<tr><th colspan="3">Standards Clarification</th></tr>
<tr><th>Standards</th><th>Specificity</th><th>Notes/Explanations/Examples</th></tr>
<tr><td>6.2(D) order a set of rational numbers arising from mathematical and real world contexts</td><td>
Concepts:

Comparing numbers using inequality symbols
Ordering rational numbers
Justifying comparisons of rational numbers with a number line

Skill:

Order

Including but not limited to:

Using the number line to order integers.
Using place value to order decimals.
Ordering fractions with different denominators.
Finding a set of equivalent fractions with the same denominator when given a set of fractions with different denominators so they can be compared
Interpreting word problems to determine if numbers need to be listed in order from least to greatest or greatest to least.

Limitations:

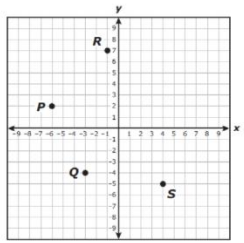
This unit includes ONLY rational numbers.

Vertical Alignment:
In 5th grade students learned how to compare and order two decimals up to the thousandths place using <, >, and = symbols.
In 7th and 8th grade students continue to compare and order rational numbers.
</td><td>
2019 6G STAAR Q12
The weights of four puppies are shown in pounds.
$9.5 \quad 9\frac{3}{8} \quad 9.125 \quad 9\frac{3}{4}$
Which list shows these weights in order from greatest to least?
F $9\frac{3}{4} \quad 9.5 \quad 9\frac{3}{8} \quad 9.125$
G $9.5 \quad 9\frac{3}{8} \quad 9\frac{3}{4} \quad 9.125$
H $9.125 \quad 9\frac{3}{8} \quad 9.5 \quad 9\frac{3}{4}$
J $9\frac{3}{4} \quad 9\frac{3}{8} \quad 9.5 \quad 9.125$
2019 6G STAAR Q30
Mari used a thermometer to record temperatures of −3.4° Celsius and 1.6° Celsius. Which temperature in degrees Celsius is less than both of the temperatures Mari recorded?
F −2.6 °C
G 3.9 °C
H −5.4 °C
J 0 °C
2018 6G STAAR Q40
14 The table shows the portion of a day four students used to build a website.
Time Used
<table>
<tr><th>Student</th><th>Portion of Day</th></tr>
<tr><td>Jamail</td><td>29.4%</td></tr>
<tr><td>Andrew</td><td>37.6%</td></tr>
<tr><td>Ernesto</td><td>$\frac{7}{25}$</td></tr>
<tr><td>Blake</td><td>$\frac{3}{10}$</td></tr>
</table>
Which list shows the students in order from the greatest amount of time used to the least amount of time used?
F Andrew, Blake, Jamail, Ernesto
G Blake, Andrew, Jamail, Ernesto
H Ernesto, Blake, Andrew, Jamail
J Andrew, Jamail, Ernesto, Blake
</td></tr>
<tr><td>6.3(E) multiply and divide</td><td>
Concepts:

Rational Numbers

</td><td>
2019 6G STAAR Q22
The weight of one serving of trail mix is 2.5 ounces. How many servings are there in 22.5 ounces of trail mix?
F 11.5
G 25.0
H 56.25
</td></tr>
</table>

Standards Clarification		
Standards	**Specificity**	**Notes/Explanations/Examples**
positive rational numbers fluently	• Multiplication • Division **Skill:** • Multiply • Divide **Including but not limited to:** • Determining whether a word problem is requiring multiplication, division, or both, and in what order. • Multiplying and dividing fractions and mixed numbers. • Multiplying and dividing decimals up to the thousandths place value. • Using the array method or the standard algorithm to multiply fractions and decimals • Modeling fraction division and multiplication using a number line or tape diagram **Limitations:** • Students do not encounter negative rational numbers. **Vertical Alignment:** In 5th grade students learned how to use the standard algorithm to multiply three-digit by two-digit numbers. They also learned how to solve for products of decimals up to the hundredths place and how to divide whole numbers by unit fractions and vice versa. In 7th grade students continue to multiply and divide rational numbers, but they also work with negative rational numbers.	**2019 6G STAAR Q36** What is the value of $\frac{4}{15} \div \frac{2}{3}$? **F** $\frac{8}{45}$ **G** $\frac{14}{15}$ **H** $\frac{5}{2}$ **J** $\frac{2}{5}$ **2016 6G STAAR Q2** 2 A baby weighed 7.25 lb at birth. At the end of 8 months, the baby weighed $2\frac{1}{2}$ times its birth weight. How many pounds did the baby weigh at the end of 8 months? F 14.5 lb G 9.75 lb H 18.125 lb J 14.125 lb
6.4(G) generate equivalent forms of fractions,	**Concepts:** • Fractions as division • Place value **Skill:**	**2019 6G STAAR Q7** Carlos walked to school on 14 of the 20 school days in February. Which value is equivalent to the fraction of the school days in February that Carlos walked to school? A 70% B 0.07 C 0.142 D 56%

Standards Clarification		
Standards	**Specificity**	**Notes/Explanations/Examples**
decimals, ~~and percents~~ using real-world problems, including problems that involve money	• Generate **Including but not limited to:** • Dividing numerators by denominators to get decimals. • Using place value to determine a decimal's equivalent fraction. • Finding a common factor by which to divide a fraction's numerator and denominator in order to find its simplest form • Finding a fraction's equivalent decimal and percent. • Finding a decimal's equivalent fraction and percent. • Finding a percent's equivalent fraction and decimal. • Determine what, if any, fraction is expressed in a word problem (for example, "Lisa spent $18 of the $20 she had. What fraction represents the amount of money she has left?") **Limitations:** • Students do not work with percents until Unit 5. **Vertical Alignment:** In 5th grade students learn how to divide using the standard algorithm, which they need to be able to turn fractions into decimals. They also use a variety of methods to determine if two given fractions are equivalent. In 7th grade students work on multi-step problems involving percent increase and percent decrease; these problems require the fluency in generating equivalent forms of fractions, decimals, and percents developed in 6th grade.	**2018 6G STAAR Q10** 10 A waiter earned a 17% tip. What decimal is equivalent to 17%? Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value. **2017 6G STAAR Q36** 36 A company spent 32% of its annual budget developing a new machine. What fraction of the company's budget was spent developing the new machine? F $\frac{1}{32}$ G $\frac{5}{16}$ H $\frac{8}{25}$ J $\frac{4}{125}$
6.11(A) graph points in all four quadrants using ordered pairs of rational numbers	**Concepts:** • Coordinate plane • Ordered pair • Rational numbers **Skill:** • Graph **Including but not limited to:**	**2018 6G STAAR Q21** 21 The coordinate grid shows points *P*, *Q*, *R*, and *S*. All the coordinates for these points are integers.  What is the value of the *x*-coordinate of point *P*? Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

Standards Clarification		
Standards	**Specificity**	**Notes/Explanations/Examples**
	• Graphing an ordered pair made of rational numbers on the coordinate plane. • Writing an ordered pair based on a given point. • Identifying the x- or y-coordinate of a given point. **Limitations:** • Students work only with the two-dimensional Cartesian plane. **Vertical Alignment:** In 5th grade students learn how to graph in quadrant I of the coordinate plane using positive rational ordered pairs. In 7th grade students use their knowledge of all four quadrants to graph $y=mx+b$.	
6.2(C) locate, compare, and order integers and rational numbers using a number line	**Concepts:** • Number line • Integers • Rational numbers **Skills:** • Locate • Compare • Order **Including but not limited to:** • Plotting points on the number line	**2019 6G STAAR Q16** Four points are labeled on the number line.  Which point best represents $\frac{1}{3}$? **F** Point *K* **G** Point *L* **H** Point *M* **J** Point *N* **2016 6G STAAR Q19** **19** Alyssa will correctly label the numbers 48.4, $48\frac{1}{2}$, 48.09, and $48\frac{3}{5}$ on the number line below.  Which number will be located closest to 49? **A** 48.4

Standards Clarification		
Standards	**Specificity**	**Notes/Explanations/Examples**
	• Identifying which number, in a set of numbers, is least or greatest. • Comparing two or more rational numbers • Identifying whether points are plotted incorrectly on a number line **Limitations:** • None **Vertical Alignment:** In 5th grade students learn how to compare and order decimals up to the thousandths place. In 8th grade students approximate the value of irrational numbers.	

VERTICAL STANDARDS

This section details the **progression** of key student expectations/standards** in the courses **before** and **after** this course. This will help you understand what **prior knowledge skills to build upon** and guide you in knowing what **skills you are preparing your students** for in the subsequent course.

5th grade	6th grade Mathematics	7th grade Pre-Algebra / 8th grade Algebra I
5.2(B) compare and order two decimals to thousandths and represent comparisons using the symbols >, <, or =.	**6.2(D)** order a set of rational numbers arising from mathematical and real world contexts	**8.2(D)** order a set of rational numbers arising from mathematical and real world contexts
5.3(K) add and subtract positive rational numbers fluently **5.3(B)** multiply with fluency a three-digit number by a two-digit number using the standard algorithm **5.3(D)**represent multiplication of decimal with products to the hundredths using objects and pictorial models, including area models. **5.3(E)** solve for the products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers	**6.3(E)** multiply and divide positive rational numbers fluently	**7.3(A)** add, subtract, multiply, and divide rational numbers fluently **A.10(B)** multiply polynomials of degree one and degree two. **A.10(C)** determine the quotient of a polynomial of degree one and polynomial of degree two when divided by a polynomial of degree one and a polynomial of degree two when the degree of the divisor does not exceed the degree of the dividend
	6.4(G) generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money	**7.4(D)** solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
5.8(A) describe the key attributes of the coordinate plane, including perpendicular number lines (axes)	**6.11(A)** graph points in all four quadrants using ordered pairs of rational numbers	**8.3(C)** use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures

where the intersection (origin) of the two lines coincides with zero on each number line and the given point (0, 0). The x-coordinate, the first number in an ordered pair, indicates movement parallel to the x-axis starting at the origin. The y-coordinate, the second number, indicates movement parallel to the y-axis starting at the origin. **5.8(B)** describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane **5.8(C)** graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from mathematical and real-world problems, including those generated by number patterns or found in an input-output table.		on a coordinate plane with the origin as the center of dilation
	6.2(A) classify whole numbers, integers, and rational numbers using a visual representation such as a Venn Diagram to describe relationships between sets of numbers	**7.2(A)** extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers. **8.2(A)** extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers.
	6.2(B) identify a number, its opposite, and its absolute value.	**8.2(B)** approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line.

	6.2(C) locate, compare, and order integers and rational numbers using a number line	**8.2(B)** approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line.
	6.2(E) extend representations for division to include fraction notation such as $\frac{a}{b}$ represents the same number as $a \div b$ where $b \neq 0$	
5.3(I) represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models.	**6.3(B)** determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one	**7.3(B)** apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers.