Big Ideas
Fractions can be written and compared in the form of decimal fractions. Students can solve mathematical and real-world problems involving measurement and conversion of measurements.
Vocabulary
fraction, numerator, denominator, groups, items, product, equivalent fractions, decimal, tenths, hundredths, place value chart, less than, greater than, comparisons/compare, kilometer, meter, centimeter, kilogram, gram, liter, milliliter, equivalence, remainder, reasonableness, mental computation, estimation, rounding, measure, convert/conversion, time, hour, minute, seconds, arithmetic patterns.
Prior Learning
In Grade 3 students developed the idea of fractions as numbers and used visual models to compare fractions. In Grades 2 and 3, students worked with lengths and measures in the same unit and solved problems involving addition and subtraction of measures.
Essential Questions
• How can decimal fractions be represented visually and symbolically? • How might decimal fractions and place value help us make sense of fractions in decimal notation? • What strategies assist in comparing fractions in decimal notation? • How can we generate equivalent decimal fractions? • How can we visually represent and verify fractional computation? • How can we compare decimal fractions? • What is a decimal? • How do fractions help us to understand decimals? • How can we tell if one decimal is greater than or less than another? • How do you change a fraction to a decimal when the denominator is 10 or 100? • How do you change a decimal in the tenths or hundredths place to a fraction? • When comparing decimals, at what place value should you start comparing? • What are the different ways to interpret the fraction $\frac{a}{b}$? • How do different measurements of length compare to one another? • How do we change one unit of measure into another unit? • What is the relationship between hours and minutes? minutes and seconds? • What can be measured in hours? minutes? seconds? • How can a number line, T-chart, or scaled diagram help you solve problems involving time? • What can you learn by creating and analyzing conversion tables? • How is developing models for representing and solving measurement problems helpful? • Students will convert measurements within a system in mathematical and real-world situations. • Students will solve problems involving various measurement situations. • Students will write a multiplication equation for a multiplicative situation or problem. • Students will identify and use appropriate customary and metric units to measure length • Students will carry out simple conversions within the customary and metric systems of measurement (12 inches per foot; 36 inches per yard; 3 feet per yard; 100 cm. per meter) • Students will solve problems that involve units of length • Students will solve real-world problems involving liquid volumes and masses of objects. • Students will solve real-world problems involving money. • Students will solve real-world problems involving measurement situations (distance, time intervals, liquid volumes, mass and money) including problems with simple fractions or decimals. • Students will determine elapsed time for a variety of situations. • Students will solve one- and two-step word problem involving the addition and subtraction of time. Students will describe a strategy for converting time measurements.
Competencies
• Students will compare and order fractions and decimals.

- Students will identify the direct relationship between fractions and decimals.
- Students will express a fraction with a denominator of 10 as an equivalent fraction with denominator 100.
- Students will add two fractions with respective denominators of 10 and 100
- Students will express fractions with denominators of 10 or 100 using decimal notation
- Students will compare and order decimals to the hundredths place by reasoning about the relative sizes of the decimals.
- Students will model decimals and fractions of denominators 10 or 100 using 10-by-10 grids and base ten blocks.
- Students will place decimals to the hundredth on an appropriately scaled number line and use the number line to order decimals.

Misconceptions

- Students may treat decimals as whole numbers when making comparison of two decimals. They think the longer the number, the greater the value. For example, they think that 0.03 is greater than 0.3.
- Students may add the denominators of 10 and 100 before finding the equivalent fraction.
- Students may have difficulty justifying their conclusions about ordering and comparing decimals.
- Some students may believe that larger units will give the larger measure.
- Students may have difficulty with time because it is a bit different form other attributes that are commonly measured in that it is abstract and cannot be seen of felt.
- Students may have difficulty with simple fractions or decimals when solving word problems with measurement in length or money.
- Some students may have difficulty solving problems with elapsed time.

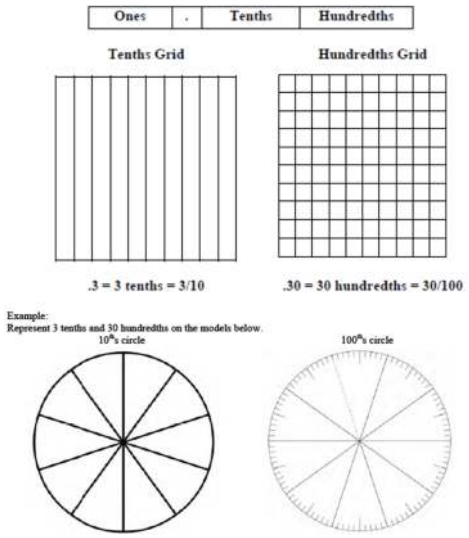
Resources from The Key Elements to Mathematics Success - KEMS Grade 4 for Building the Conceptual Understanding of this Module

LESSON 21 - FRACTION AND DECIMAL EQUIVALENCE
Additional Activities: Quiz – T644-T645; Fraction and Decimal Equivalence– Mystery Square T1012

LESSON 22 - COMPARING DECIMALS
Additional Activities: Quiz – T671; Comparing Decimals– Scavenger Hunt T1013

LESSON 23 - MEASUREMENT EQUIVALENCE
Additional Activities: Quiz – T700; Measurement Equivalence– Chain Reaction T1014

LESSON 24 –MEASUREMENT EQUIVALENCE WITH WORD PROBLEMS
Additional Activities: Quiz – T724-T725; Measurement Equivalence with Word Problems– Scavenger Hunt T1015-T1016

Mathematics Content Standard	Examples
4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (*See note.) For example, express* $\frac{3}{10}$ *as* $\frac{30}{100}$*, and add* $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$*.* *Note: Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.*	This standard continues the work of equivalent fractions by having students change fractions with a 10 in the denominator into equivalent fractions that have a 100 in the denominator. In order to prepare for work with decimals (4.NF.6 and 4.NF.7), experiences that allow students to shade decimal grids (10 × 10 grids) can support this work. Student experiences should focus on working with grids rather than algorithms. This work in fourth grade lays the foundation for performing operations with decimal numbers in fifth grade. Students can also use base ten blocks and other place value models to explore the relationship between fractions with denominators of 10 and denominators of 1 

Questions for 4.NF.5

1. If an equation is true, mark it with a check. If it is not true, write the corrected solution in the third column.

Check if Correct	Equation	Corrected Solution
	3 tenths + 6 hundredths = 36 hundredths	
	4 hundredths + 3 tenths = 43 hundredths	
	52 hundredths = 5 tenths + 2 hundredths	
	8 tenths + 18 hundredths = 26 hundredths	
	60 hundredths = 6 hundredths	

2. If an equation is true, mark is with a check. If an equation is not true, change the sum to make the equation true. Use a hundreds chart to support your answer.

Check	Equation	Correct Sum
	$\frac{30}{100} + \frac{4}{10} = \frac{70}{100}$	
	$\frac{4}{10} + \frac{3}{100} = \frac{7}{100}$	
	$\frac{4}{100} + \frac{3}{10} = \frac{43}{100}$	

Answer Key for Questions for 4.NF.5

1.

Check if Correct	Equation	Corrected Solution
X	3 tenths + 6 hundredths = 36 hundredths	
	4 hundredths + 3 tenths = 43 hundredths	34 hundredths
X	52 hundredths = 5 tenths + 2 hundredths	
	8 tenths + 18 hundredths = 26 hundredths	98 hundredths
	60 hundredths = 6 hundredths	6 tenths

2.

Check	Equation	Correct Sum
X	$\frac{30}{100}+\frac{4}{10}=\frac{70}{100}$	
	$\frac{4}{10}+\frac{3}{100}=\frac{7}{100}$	$\frac{40}{100}+\frac{3}{100}=\frac{43}{100}$
	$\frac{4}{100}+\frac{3}{10}=\frac{43}{100}$	$\frac{4}{100}+\frac{30}{100}=\frac{34}{100}$

Tasks for 4.NF.5

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Illustrative Math Task: Adding Tenths and Hundredths
https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/153
Illustrative Math Task: Expanded Fractions and Decimals
https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/145
Illustrative Math Task: How Many Tenths and Hundredths?
https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/103
Illustrative Math Task: Dimes and Pennies
https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/152
Illustrative Math Task: Fraction Equivalence
https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/154

Extra Questions for Warm-ups and Homework for 4.NF.5

1. On her homework Jackie had a problem where she had to compare $\frac{3}{10}$ and $\frac{3}{100}$. She said that the two fractions are equal. Do you agree or disagree? Be prepared to explain and support your answer using a concrete representation.

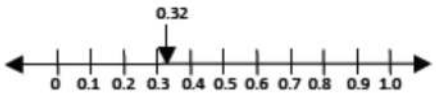
2. A jar can hold 100 marbles. For each of the situations below, find the amount for the various colors of marbles.

Jar A: The jar contains $\frac{3}{10}$ blue, $\frac{2}{10}$ white, and $\frac{19}{100}$ red marbles. The rest are yellow. What fraction represents the number of yellow marbles? _____

Jar B: $\frac{7}{10}$ green, $\frac{1}{10}$ purple, and $\frac{4}{100}$ brown. The rest are white. What fraction represents the number of white marbles? _____

3. A group of 100 fourth graders are on the playground. $\frac{2}{10}$ of the group are wearing black shirts. $\frac{11}{100}$ of the group are wearing blue shirts. $\frac{3}{10}$ of the group are wearing white shirts. The rest of the class is wearing green or yellow shirts. There are more children wearing yellow shirts than green shirts. What fraction of the group is wearing yellow

shirts? Green shirts? (There is more than one possible solution.)

Mathematics Content Standard	Examples
4.NF.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*	Decimals are introduced for the first time. Students should have ample opportunities to explore and reason about the idea that a number can be represented as both a fraction and a decimal. Students make connections between fractions with denominators of 10 and 100 and the place value chart. By reading fraction names, students say $\frac{32}{100}$ as thirty-two hundredths and rewrite this as 0.32 or represent it on a place value model as shown below. Hundreds | Tens | Ones | • | Tenths | Hundredths | | | • | 3 | 2 Students use the representations explored in 4.NF.5 to understand $\frac{32}{100}$ can be expanded to $\frac{3}{10}$ and $\frac{2}{100}$. Students represent values such as 0.32 or $\frac{32}{100}$ on a number line. $\frac{32}{100}$ is more than $\frac{30}{100}$ (or $\frac{3}{10}$) and less than $\frac{40}{100}$ (or $\frac{4}{10}$). It is closer to $\frac{30}{100}$ so it would be placed on the number line near that value. 

Questions for 4.NF.6

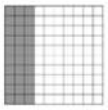
1. Mrs. Jamison asks her students to write 0.30 as a fraction. Tom wrote $\frac{3}{10}$. Christy wrote $\frac{30}{100}$. Explain how both students are correct. Use words and a pictorial model to explain your answer.

2. Karen is planting vegetables in her 10' x 10' garden. She wants $\frac{3}{10}$ of the garden to be tomatoes. If Karen has already planted peas in 0.25 of the garden, how much space will she have left for other vegetables**?**

3. The hundreds grid is shaded to represent a value that is less than 1 whole**.**

Circle all of the values below that are equivalent to shaded model.

$\frac{30}{100}$	$\frac{3}{10}$	$\frac{3}{100}$	0.03	0.30	3.0



Choose one of the values you did not circle. Explain why that fraction or decimal is not equivalent to the shaded model above.

Answer Key for Questions for 4.NF.6

1. Answers will vary.
Ex: Both students are correct because $\frac{3}{10}$ is equivalent to $\frac{30}{100}$.

2. $\frac{3}{10}$ = 0.3 ; 0.3 + 0.25 = 0.55; 1 – 0.55 = 0.45; Karen has 0.45 of the garden for other vegetables.

3. Should be circled: $\frac{30}{100}$ $\frac{3}{10}$ 0.30 Answers will vary: 3.0 means 3 wholes.

Tasks for 4.NF.6

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Task: Where am I now? How much farther?

Part 1: You have walked 0.32 of the way from your house to the school.

A) What is that distance as a fraction?
B) If you walk another 17/100 of the way to the school, how far have you gone now in terms of both a fraction and a decimal?
C) If you walk another 3/10 of the way to the school, how far have you gone now in terms of both of a fraction and a decimal?
D) Draw a number line from 0 to 1 and label each tenth on the number line. Plot the three distances above as both fractions and decimals.

Part 2: Write an explanation explaining how you worked with equivalent fractions and decimals to solve this task

Illustrative Math Task: Expanded Fractions and Decimals

https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/145

Illustrative Math Task: How Many Tenths and Hundredths?

https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/103

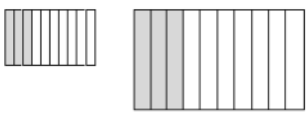
Illustrative Math Task: Dimes and Pennies

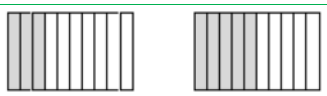
https://tasks.illustrativemathematics.org/content-standards/4/NF/C/5/tasks/152

Extra Questions for Warm-ups and Homework for 4.NF.6

1. Evie is working on her math homework. She is writing a list of fractions as decimals. She has completed all of her homework but one problem. The last problem she has is to write $\frac{41}{100}$ as a decimal. How can she write that fraction as a decimal?

2. Write the following fractions as decimals: $\frac{4}{10}$, $\frac{23}{100}$, $\frac{14}{100}$, $\frac{7}{10}$

Mathematics Content Standard	Examples
4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	Students should reason that comparisons are only valid when they refer to the same whole. Visual models include area models, decimal grids, decimal circles, number lines, and meter sticks. Students build area and other models to compare decimals. Through these experiences and their work with fraction models, they build the understanding that comparisons between decimals or fractions are only valid when the whole is the same for both cases. Each of the models below shows $\frac{3}{10}$ but the whole on the right is much bigger than the whole on the left. They are both $\frac{3}{10}$ but the model on the right is a much larger quantity than the model on the left.  When the wholes are the same, the decimals or fractions can be compared. Example: Draw a model to show that 0.3 < 0.5. (Students would sketch two models of approximately the same size to show the area that represents three-tenths is smaller than the area that represents five-tenths.



Questions for 4.NF.7

1. Create a pictorial model to show the comparison of 0.78 and 0.8.

2. Place the two numbers to the right on the number line below. 85.5 85.25

Compare the two numbers on the line below using the symbols <, >, or =. Explain your thinking.

3. Tianna ran 0.6 of a mile. Stacey ran 0.64 of a mile. Tianna thinks she ran more than Stacey.

Do you agree or disagree? _____

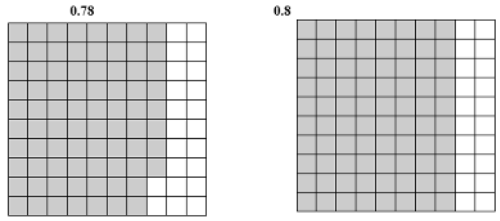
Justify your answer with a written explanation and a visual model.

4. Richie, Charlotte, and Kenny had a contest to see whose paper airplane could fly the farthest. Richie's went 6.8 meters, Charlotte's went 6.88 meters, and Kenny's went 8.68 meters. Who won the contest?

5. Mrs. Thomas bought 3 pumpkins. The first one weighed 10.12 kilograms, the second one weighed 10.21 kilograms, and the third one weighed 10.2 kilograms. Which pumpkin weighed the least?

Answer Key for Questions for 4.NF.7

1.



2.

85.25 < 85.5

3. Disagree Explanations will vary.

4. Kenny won the contest.

5. The pumpkin that weighed the least was 10.12 kilograms.

Tasks for 4.NF.7

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Task: Who Jumps Farther?

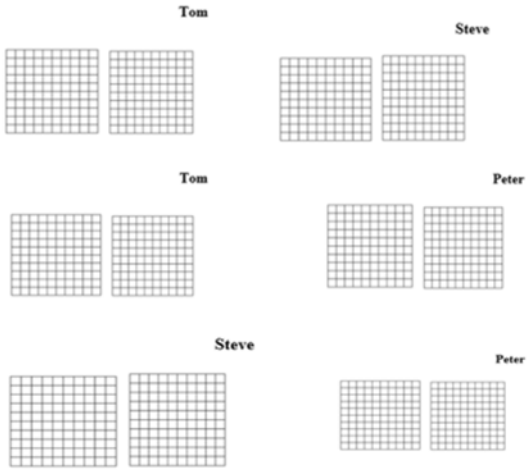
Part 1:
Tom, Steve, and Peter each jump in a jumping contest. They measure their jumps and then discuss who jumped farther.

Tom said, "I jumped 1 and 34 hundredths of a meter."
Steve said, "I jumped 1 and 43 hundredths of a meter."
Peter said, "I jumped 1 and 4 tenths of a meter."

For each distance, shade in the decimal grid and write a comparison statement using >, <, or =.

Which boy jumped farther between Tom and Steve? How do you know?
Which boy jumped farther between Tom and Peter? How do you know?
Which boy jumped farther between Steve and Peter? How do you know?

Part 1:



Part 2:

Mitch jumped a distance between Steve and Peter. How far could he have jumped?
Alex jumped a distance between Tom and Peter. How far could he have jumped?

Illustrative Math Task: Using Place Value (4.NF.7)

https://tasks.illustrativemathematics.org/content-standards/4/NF/C/7/tasks/182

Extra Questions for Warm-ups and Homework for 4.NF.7

1. Compare the following decimals using the symbols: <, >, or =

0.64_____0.46; 0.78_____0.7; 0.4_____0.04

2. Pamela and her brother are saving money to buy their dad a gift for his birthday. Pamela has saved $9.75 and her brother has saved $9.70. Which of the two has saved the most money? Support your answer using a number line.

3. Compare the following decimals using the symbols: <, >, or =

0.62_____0.26; 0.9_____0.09; 0.14_____0.41

4. Michael has 4 pieces of wood. The lengths of the pieces of wood are 3.35 inches, 3.46 inches, 3.01 inches, and 3.33 inches long. What are the lengths of the pieces of word in order from shortest to longest?

5. Johnny, Kevin, and Sam all play on the little league baseball team. Johnny's batting average is 0.445. Kevin's batting average is 0.332 and Sam's batting average is 0.25. What are the batting averages in order from least to greatest?

6. Write three decimal pairs to compare using a <, >, or = sign. Exchange papers with your partner and fill in the blanks for their problems.

Mathematics Content Standard	**Examples**
4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …*	The units of measure that have not been addressed in prior years are cups, pints, quarts, gallons, pounds, ounces, kilometers, milliliters, and seconds. Students' prior experiences were limited to measuring length, mass (metric and customary systems), liquid volume (metric only), and elapsed time. Students did not convert measurements. Students need ample opportunities to become familiar with these new units of measure and explore the patterns and relationships in the conversion tables that they create. Students may use a two-column chart to convert from larger to smaller units and record equivalent measurements. They make statements such as, if one foot is 12 inches, then 3 feet has to be 36 inches because there are 3 groups of 12. Example 1: Customary length conversion table Yards / Feet: 1 / 3; 2 / 6; 3 / 9; *n* / *n* x 3 Foundational understandings to help with measure concepts: • Understand that larger units can be subdivided into equivalent units (partition). • Understand that the same unit can be repeated to determine the measure (iteration). • Understand the relationship between the size of a unit and the number of units needed (compensatory principal). • The units of measure that have not been addressed in prior years are seconds. Students' prior experiences were limited to determining elapsed time. Students did not convert measurements. Students need ample opportunities to become familiar with these new units of measure and explore the patterns and relationships in the conversion tables that they create. Students may use a two-column chart to convert from larger to smaller units and record equivalent measurements. They make statements such as, if one minute is 60 seconds, then 3 minutes has to be 180 seconds because there are 3 groups of 60 seconds. Example 2: Time conversion table Minutes / Seconds: 1 / 60; 2 / 120; 3 / 180; *n* / *n* x 3

Questions for 4.MD.1

1. Measure the length and width of one of your books. Have your partner choose a different book and measure its length and width. What units did you use? Compare the lengths and widths of the two books.

2. Explain what it means if two measurements are equivalent.

3. There is a long table in the dining room that is 3 meters long. Explain how to determine the length of the table in centimeters.

4. Fill in the blanks for the following measurements:

2,000 milliliters =_____liters

5 kilograms =_____grams

8 liters = _____milliliters

900 grams = _____kilograms

5. Circle the measurements that are equal to 2 hours.

A. 60 minutes B. 120 minutes C. 7,200 seconds D. 2000 seconds

Answer Key for Questions for 4.MD.1

1. Answers will vary.

2. Answers will vary.
Ex: Two measurements are equivalent if they measure the same distance but use different units of measure.

400 centimeters = 4 meters 5 meters = 500 centimeters

3. Answers will vary.
Ex: 1 meter = 100 centimeters, so 3 meters would equal 300 centimeters

4. 2,000 milliliters = 2 liters

5 kilograms = 5,000 grams

8 liters = 8,000 milliliters

900 grams = 0.9 kilograms

5. B. 120 minutes C. 7,200 seconds

Tasks for 4.MD.1

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Illustrative Math Task: Who's The Tallest?
https://tasks.illustrativemathematics.org/content-standards/4/MD/A/1/tasks/1508

Extra Questions for Warm-ups and Homework for 4.MD.1

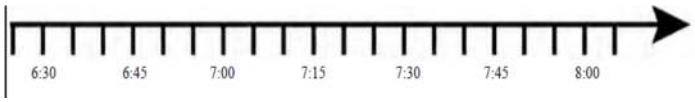
1. Look at the following list and determine which items would be measured in centimeter and which would be measured in meters: length of your finger, the length of the school hallway, the distance around a football field, the thickness of your math book

2. Make a list of five things that can be measured using a meter stick.

3. Measure 2 items in the classroom using a meter stick with your partner.

4. Explain how to convert kilometers to meters.**5.** John's dog has a leash that is 5 feet long. What is the length of the leash in inches?

Mathematics Content Standard	**Examples**

4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	This standard includes multi-step word problems related to expressing measurements from a larger unit in terms of a smaller unit (e.g., hours to minutes). Students should have ample opportunities to use number line diagrams to solve word problems. Example 1: Addition: Mason ran for an hour and 15 minutes on Monday, 25 minutes on Tuesday, and 40 minutes on Wednesday. What was the total number of minutes Mason ran? Number line diagrams that feature a measurement scale can represent measurement quantities. Examples include a timetable showing hours throughout the day.  Example 2: At 7:00 a.m. Candace wakes up to go to school. It takes her 8 minutes to shower, 9 minutes to get dressed and 17 minutes to eat breakfast. How many minutes does she have until the bus comes at 8:00 a.m.? Use the number line to help solve the problem. Example 3: At 7:00 a.m. Melisa wakes up to go to school. It takes her 8 minutes to shower, 9 minutes to get dressed and 17 minutes to eat breakfast. How many minutes does she have until the bus comes at 8:00 a.m.? Use the number line to help solve the problem.

Questions for 4.MD.2

1. On Monday, Jason ran $3\frac{1}{2}$ kilometers before he needed to take a break. Kelly ran 7 laps on the track, and then she needed to rest. If each lap Kelly ran was 400 meters, who ran a longer distance on Monday: Jason or Kelly?

2. The bus comes to Steve's house at 8:15 a.m. Prior to getting on the bus, he needs to:

Eat breakfast: 15 minutes

Shower: 8 minutes

Get dressed: 7 minutes

Read a book: 12 minutes

What is the latest that Steve can get up and still be on time for the bus?

3. Jillian's mom had a baby. Jillian is very excited about the new baby girl in their family. When her sister was born, she weighed 7 pounds, 6 ounces. What is the baby's weight in ounces?

4. The perimeter of the dog pen in Jesse's backyard is 16 feet. What is the perimeter in inches?

5. Franco was practicing for a track meet. He ran 5.4 kilometers on Tuesday after school. How many meters did he run?

Answer Key for Questions for 4.MD.2

1. Jason ran $3\frac{1}{2}$ kilometers, which is 3,500 meters. Kelly ran 7 × 400 = 2,800 meters Jason ran the longer distance.

2. 15 + 8 + 7 + 12 = 42 minutes total to get ready. 42 minutes before 8:15 is 7:33. The latest Steve can get up is 7:33 a.m.

3. 7 pounds, 6 ounces = 118 ounces The baby weighs 118 ounces.

4. 16 feet = 192 inches The perimeter is 192 inches.

5. 5.4 kilometers = 5,400 meters Franco ran 5,400 meters after school on Tuesday.

Tasks for 4.MD.2

*Teacher Note: Please read the Commentary section for the Illustrative Math Tasks. Some tasks will be instructional requiring more teacher modeling and direction. Others will provide the opportunity for students to demonstrate their knowledge of a concept.

Task: Weighing the Books Mrs. Floyd and her students want to know how heavy a few of the books in their classroom are.

Part 1: They want to know the masses of the objects in ounces; however the scale only gives the mass in pounds. Using the table below, find out how many ounces each book is.

Math book	$2\frac{1}{2}$ pounds
Science book	$3\frac{1}{4}$ pounds
Dictionary	$5\frac{2}{8}$ pounds

Part 2: Two copies of one book and two copies of another book weigh a total of 6 pounds. Each book weighs a whole number of ounces. How many ounces could each book weigh? Explain how you solved this problem.

Illustrative Math Task: Margie Buys Apples

https://tasks.illustrativemathematics.org/content-standards/4/MD/A/2/tasks/873

Extra Questions for Warm-ups and Homework for 4.MD.2

1. Jack and Abby are in swim class together. They challenged each other to see who could hold their breath underwater the longest. Jack and Abby's coach, Coach Foster, timed them with a stopwatch when they went underwater. Jack stayed underwater for $10\frac{1}{4}$ seconds, while Abby was able to stay under for 14 seconds. How much longer did Abby stay under water. Explain how you determined your answer.

2. Patty's mom made a batch of homemade lemonade. The container held 2 liters. How many milliliters of lemonade did she make?

Works Referenced in the Development of the Module

Common Core State Standards Initiative www.corestandards.org	Ohio Department of Education http://education.ohio.gov/Topics/Learning-in-Ohio/Mathematics
Illustrative Mathematics Project https://illustrativemathematics.org/	North Carolina Math Tools for Teachers https://tools4ncteachers.com/
Mathematics Assessment Project https://www.map.mathshell.org/index.php	Smarter Balanced Assessment Consortium https://smarterbalanced.org/
PARCC http://parcconline.org/	Utah Education Network https://www.uen.org/core/math/
NOYCE Foundation: https://www.insidemathematics.org/	