



# PISCATAWAY TOWNSHIP SCHOOLS

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## Math 4

**Content Area:** Mathematics  
**Grade Span:** 4  
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**Approval date:** August 2023

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## COURSE OVERVIEW

Description		
<p>This course aims to: develop understanding and fluency with multi-digit multiplication, develop an understanding of dividing to find quotients involving multi-digit dividends, fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers, understanding that geometric figures can be analyzed and classified based on their properties such as having parallel sides, perpendicular sides, particular angle measures and symmetry.</p>		
Goals		
<p><i>Operations and Algebraic Thinking</i></p> <ul style="list-style-type: none"> <li>• Use the four operations with whole numbers to solve problems.</li> <li>• Gain familiarity with factors and multiples.</li> <li>• Generate and analyze patterns.</li> </ul> <p><i>Number and Operations in Base Ten</i></p> <ul style="list-style-type: none"> <li>• Generalize place value understanding for multi-digit whole numbers.</li> <li>• Use place value understanding and properties of operations to perform multi-digit arithmetic.</li> </ul> <p><i>Number and Operations—Fractions</i></p> <ul style="list-style-type: none"> <li>• Extend understanding of fraction equivalence and ordering.</li> <li>• Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.</li> <li>• Understand decimal notation for fractions, and compare decimal fractions.</li> </ul> <p><i>Measurement and Data</i></p> <ul style="list-style-type: none"> <li>• Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</li> <li>• Represent and interpret data.</li> <li>• Geometric measurement: understand concepts of angle and measure angles.</li> </ul> <p><i>Geometry</i></p> <ul style="list-style-type: none"> <li>• Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</li> </ul> <p><i>Mathematical Practices</i></p> <ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them.</li> <li>• Reason abstractly and quantitatively.</li> <li>• Construct viable arguments and critique the reasoning of others.</li> <li>• Model with mathematics.</li> <li>• Use appropriate tools strategically.</li> <li>• Attend to precision.</li> <li>• Look for and make use of structure.</li> <li>• Look for and express regularity in repeated reasoning.</li> </ul>		
Scope and Sequence		
Unit	Topic	Length
Unit 1	Place Value, Addition & Subtraction	16 Days
Unit 2	Multiplication & Division	55 Days
Unit 3	Fractions & Decimals	43 Days
Unit 4	Geometry, Measurement & Data	44 Days

## Resources

**Core Text:** [www.hmhco.com](http://www.hmhco.com)

**Suggested Resources:**

<http://www.illustrativemathematics.org/>

<https://www.openmiddle.com/>

<https://wodb.ca/>

# UNIT 1: PLACE VALUE, ADDITION & SUBTRACTION

<b>Summary and Rationale</b>	
Developing understanding and fluency with multi-digit addition and subtraction. Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place.	
<b>Recommended Pacing</b>	
7 days • Ch.1 Whole Number Place Value 9 days • Ch.2 Addition & Subtraction within 10,000	
<b>State Standards</b>	
<b>Standard:</b> <b>Number and Operations in Base Ten</b>	
CPI #	Cumulative Progress Indicator (CPI)
<b>Generalize place value understanding for multi-digit whole numbers.</b>	
1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.
3	Use place value understanding to round multi-digit whole numbers to any place.
<b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b>	
4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.
<b>Standard:</b> <b>Operations &amp; Algebraic Thinking</b>	
<b>Use the four operations with whole numbers to solve problems.</b>	
3	Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
<b>Instructional Focus</b>	
<b>Unit Enduring Understandings</b>	
<ul style="list-style-type: none"> <li>• The same number can have different values.</li> <li>• There are various ways to represent the same thing.</li> <li>• There are various ways to compare.</li> <li>• Computational fluency is gained through understanding.</li> </ul>	
<b>Unit Essential Questions</b>	
<ul style="list-style-type: none"> <li>• How can location affect value?</li> <li>• How does a situation affect your choice of representation?</li> <li>• How do we compare and order numbers?</li> <li>• How do operations affect numbers?</li> </ul>	

## Objectives

### Students will know:

- how to model the 10 to 1 relationship amongst place value positions in the base ten number system.
- how to read and write whole numbers in standard form, word form, and expanded form.
- how to compare and order whole numbers based on the value of the digits in each number.
- how to round a whole number to any place.
- how to use expanded form to add three-digit numbers.
- how to use place value to add and subtract three-digit numbers.
- how to use the combine place value strategy to subtract three-digit numbers.
- how to solve two-step addition and subtraction problems by using the strategy draw a bar model.

### Students will be able to:

- describe the value of a digit.
- read and write numbers up to 1,000,000 using standard form, expanded form, and word form.
- use number lines and symbols to compare and order numbers.
- round multi-digit whole numbers to any place.
- use expanded form to add.
- use place value to add and subtract three-digit numbers.
- combine place values to subtract three-digit numbers.
- solve two-step addition and subtraction problems.

## Resources

**Core Text:** [www.hmhco.com](http://www.hmhco.com)

## UNIT 2: MULTIPLICATION & DIVISION

### Summary and Rationale

Students develop understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

### Recommended Pacing

*14 days*

- Chapter 3 Multiply by 1-Digit Numbers

*10 days*

- Chapter 4 Multiply by 2-Digit Numbers

*8 days*

- Chapter 5 Division Strategies

*9 days*

- Chapter 6 Divide by 1-Digit Numbers

*7 days*

- Chapter 7 Apply Multiplication to Perimeter & Area

*7 days*

- Chapter 8 Factors, Multiples, and Number Patterns

### State Standards

**Standard:  
Operations and Algebraic Thinking**

<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b>
<b>Use the four operations with whole numbers to solve problems.</b>	
1	Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2	Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

<b>Gain familiarity with factors and multiples.</b>	
4	Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.
<b>Generate and analyze patterns.</b>	
5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.
<b>Standard: Numbers and Operations in Base Ten</b>	
<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b>
<b>Generalize place value understanding for multi-digit whole numbers.</b>	
1	Recognize that in a multi-digit whole number, a digit in one place represents 10 times what it represents in the place to its right.
3	Use place value understanding to round multi-digit numbers to any place.
<b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b>	
5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
<b>Standard: Measurement and Data</b>	
<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b>
<b>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</b>	
3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
<b>Instructional Focus</b>	
<b>Unit Enduring Understandings</b>	
<ul style="list-style-type: none"> <li>• There are different ways to solve a problem.</li> <li>• Reasonableness matters.</li> <li>• Models help to solve problems.</li> <li>• There are a various ways to determine the accuracy of the answer.</li> </ul>	
<b>Unit Essential Questions</b>	
<ul style="list-style-type: none"> <li>• How do you decide when to use a certain strategy?</li> <li>• Why is estimation important?</li> <li>• Why would you need multiple representations?</li> <li>• Is precision always necessary?</li> </ul>	
<b>Objectives</b>	
<b>Students will know:</b>	
<ul style="list-style-type: none"> <li>• how to relate multiplication equations and comparison statements.</li> <li>• how to solve problems involving multiplicative comparison and additive comparison.</li> <li>• how to multiply tens, hundreds, and thousands by whole numbers through 10.</li> <li>• how to estimate products by rounding and determine if exact answers to multiplication problems are</li> </ul>	

reasonable.

- how to use the distributive property to multiply a 2-digit number by a 1-digit number.
- how to use expanded form to multiply a multi-digit number by a 1-digit number.
- how to use place value and multiplication properties to multiply by tens.
- how to estimate products by rounding or by using compatible numbers.
- how use area models and partial products to multiply by 2-digit numbers.
- how to use place value and partial products to multiply.
- how to use regrouping to multiply whole numbers.
- how choose a method to multiply 2-digit and 3-digit numbers.
- how to use models to divide whole numbers that do not divide evenly.
- how to use remainders to solve division problems.
- how to divide tens, hundreds, and thousands by whole number to 10.
- how to use compatible numbers to estimate quotients.
- how to use the Distributive Property to find quotients.
- how to use repeated subtraction and multiples to find quotients.
- how to use partial quotients to divide.
- how to use base ten blocks model division with regrouping.
- how to use place value to determine where to place the first digit of a quotient.
- how to divide multi-digit numbers by 1-digit divisors.
- how to solve multi-step division problems by using a strategy draw a diagram.
- how to use a formula to find the perimeter of a rectangle.
- how to use a formula to find the area of a rectangle.
- how to, given the perimeter or area, find the unknown measure of a side of a rectangle.
- how to use the strategy solve a simpler problem to solve area problems.
- how to determine if a number is a factor of a given number.
- the relationships between factors and multiples, and how to determine whether a number is a multiple of a given number.
- how to determine whether a number is prime or composite.
- how to generate a number pattern and describe features of the pattern.

**Students will be able to:**

- use models and equations to solve multiplication comparisons.
- draw models and write equations to help solve comparison problems.
- use place value and other strategies to multiply tens, hundreds, and thousands.
- estimate products by rounding and determine if exact are reasonable.
- use models, equations, and the Distributive Property to solve 2-digit by 1-digit multiplication problems.
- use expanded form to multiply a multi-digit number by a 1-digit number.
- use different strategies to multiply by tens.
- use different strategies to estimate products.
- use area models and partial products to multiply by 2-digit numbers.
- use partial products to multiply.
- use regrouping to multiply whole numbers.
- use multiple strategies to multiply 2-digit and 3-digit numbers by 2-digit and 3-digit numbers.
- use models to solve division problems with remainders.
- interpret remainders in a division problem.



- use place value to divide a whole number up to four digits by a one-digit whole number.
- use estimation to help solve division problems.
- use the Distributive Property to help solve division problems.
- use repeated subtraction to find quotients.
- use partial products to divide by 1-digit divisors.
- use base-ten blocks and drawings to model division with regrouping.
- use place value to know where to place the first digit in the quotient.
- divide numbers up to 9,999 by a 1-digit number.
- solve multi-step real-world division problems.
- use a formula to find the perimeter of a rectangle.
- use a formula to find the area of a rectangle.
- find an unknown measure of a rectangle given its area or perimeter.
- solve real-world problems involving the area of rectangles.
- determine if one number is a factor of another number.
- recognize how factors and multiples are related.
- determine whether a whole number is prime or composite.
- make, describe, and extend patterns.

### Resources

**Core Text:** [www.hmhco.com](http://www.hmhco.com)

## UNIT 3: FRACTIONS AND DECIMALS

<b>Summary and Rationale</b>	
<p>Students develop an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers. They recognize that two different fractions can be equal (e.g., <math>15/9 = 5/3</math>), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.</p>	
<b>Recommended Pacing</b>	
<p><i>9 days</i></p> <ul style="list-style-type: none"> <li>• Chapter 9 Fraction Equivalence</li> </ul> <p><i>6 days</i></p> <ul style="list-style-type: none"> <li>• Chapter 10 Compare Fractions</li> </ul> <p><i>10 days</i></p> <ul style="list-style-type: none"> <li>• Chapter 11 Add and Subtract Fractions</li> </ul> <p><i>6 days</i></p> <ul style="list-style-type: none"> <li>• Chapter 12 Multiply Fractions and Whole Numbers</li> </ul> <p><i>12 days</i></p> <ul style="list-style-type: none"> <li>• Chapter 13 Relate Fractions and Decimals</li> </ul>	
<b>State Standards</b>	
<p><b>Standard:</b> <b>Number and Operations-Fractions</b></p>	
CPI #	Cumulative Progress Indicator (CPI)
<b>Extend understanding of fraction equivalence and ordering.</b>	
1	Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
2	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model.
<b>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.</b>	
3	Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$ .
3a	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole
3b	Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.
3c	Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
3d	Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
4a	Understand a fraction $a/b$ as a multiple of $1/b$ . For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$ , recording the conclusion by the equation $5/4 = 5 \times (1/4)$ .
4b	Understand a multiple of $a/b$ as a multiple of $1/b$ , and use this understanding to multiply a fraction by a whole number.
4c	Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.
<b>Understand decimal notation for fractions, and compare decimal fractions.</b>	
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.
6	Use decimal notation for fractions with denominators 10 or 100
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.
<b>Instructional Focus</b>	
<b>Unit Enduring Understandings</b>	
<ul style="list-style-type: none"> <li>• There are various ways to represent the same number.</li> <li>• The form of a number utilized depends on the situation.</li> <li>• There are various ways to solve a problem.</li> </ul>	
<b>Unit Essential Questions</b>	
<ul style="list-style-type: none"> <li>• What is the best way to represent a number?</li> <li>• How do operations affect numbers?</li> <li>• What is the best way to solve a problem?</li> </ul>	
<b>Objectives</b>	
<p><b>Students will know:</b></p> <ul style="list-style-type: none"> <li>• how to use models to show equivalent fractions.</li> <li>• how to use multiplication to generate equivalent fractions.</li> <li>• how to use division to generate equivalent fractions.</li> <li>• how to solve real-world problems by finding equivalent fractions.</li> <li>• how to decompose a fraction by writing it as a sum of fractions with the same denominators.</li> <li>• how to write fractions greater than 1 as mixed numbers and write mixed numbers as fractions greater than 1.</li> <li>• how to compare fractions using benchmarks.</li> <li>• how to compare fractions by first writing them as fractions with a common numerator or a common denominator.</li> <li>• how to compare and order fractions.</li> <li>• to add or subtract fractions they must refer to parts of the same whole.</li> <li>• how to use models to represent and find sums involving fractions.</li> <li>• how to use models to represent and find differences involving fractions.</li> <li>• how to use benchmarks to estimate and to assess the reasonableness of the calculations.</li> <li>• how to solve word problems involving addition and subtraction with fractions.</li> <li>• how to add and subtract mixed numbers.</li> <li>• how to write a fraction as a product of a whole number and a unit fraction.</li> <li>• how to write a product of a whole number and a fraction as a product of a whole number and a unit fraction.</li> <li>• how to use a model to multiply a fraction by a whole number.</li> <li>• how to model tenths and hundredths.</li> </ul>	

- how to record tenths and hundredths as fractions and decimals.
- how to translate among representations of fractions, decimals, and money.
- how to model decimal addition using base-ten blocks.

**Students will be able to:**

- use models to show equivalent fractions.
- use multiplication find equivalent fractions.
- use division to generate equivalent fractions.
- solve real-world problems by finding equivalent fractions.
- decompose a fraction less than a whole into a sum of fractions with the same denominators.
- decompose mixed numbers and fractions greater than 1 into a sum of fractions with the same denominators.
- use benchmarks to compare fractions.
- use a number line to compare fractions.
- use number lines to compare and order fractions.
- add or subtract fractions with like denominators.
- add fractions with like denominators using models.
- subtract fractions with like denominators using models.
- use benchmarks to estimate the sum or difference and determine if the solution is reasonable.
- solve real-world problems involving addition and subtraction of fractions.
- add and subtract mixed numbers with like denominators.
- find multiples of a unit fraction by multiplying a unit fraction by a whole number.
- find multiples of fractions by multiplying a fraction by a whole number.
- use a model to multiply a fraction by a whole number.
- use decimal notation to represent fractions with denominators of 10 or 100.
- model and express fractions with a denominator of 10 and identify numbers that are one-tenth more or less.
- model and express equivalent fractions for the tenths and hundredths as well as use decimal notation.
- relate fractions and decimals to money and write equivalent forms.
- solve money problems by using the strategy act it out.

### Resources

**Core Text:** [www.hmhco.com](http://www.hmhco.com)

## UNIT 4: GEOMETRY, MEASUREMENT, AND DATA

<b>Summary and Rationale</b>	
Students understand that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry. Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.	
<b>Recommended Pacing</b>	
<i>10 days</i>	
<ul style="list-style-type: none"> <li>• Chapter 14 Two-Dimensional Figures</li> </ul>	
<i>8 days</i>	
<ul style="list-style-type: none"> <li>• Chapter 15 Measure Angles</li> </ul>	
<i>10 days</i>	
<ul style="list-style-type: none"> <li>• Chapter 16 Customary and Metric Units</li> </ul>	
<i>6 days</i>	
<ul style="list-style-type: none"> <li>• Chapter 17 Temperature and Time</li> </ul>	
<i>10 days</i>	
<ul style="list-style-type: none"> <li>• Chapter 18 Represent and Interpret Data</li> </ul>	
<b>State Standards</b>	
<b>Standard:</b>	
<b>Operations and Algebraic Thinking</b>	
<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b>
<b>Generate and analyze patterns.</b>	
5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.
<b>Standard:</b>	
<b>Geometry</b>	
<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b>
<b>Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</b>	
1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
<b>Standard:</b>	
<b>Measurement &amp; Data</b>	
<b>CPI #</b>	<b>Cumulative Progress Indicator (CPI)</b>
<b>Geometric measurement: understand concepts of angle and measure angles.</b>	
5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and

	understand concepts of angle measurement.
5a	An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure angles.
5b	An angle that turns through $n$ one-degree angles is said to have an angle measure of $n$ degrees.
6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.
1	Know relative sizes of measurement units within one system of units including km, m, cm, mm; 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.
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.
4	Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

### Instructional Focus

#### Unit Enduring Understandings

- There are various ways to measure.
- There are various ways to interpret data.

#### Unit Essential Questions

- What is the best way to measure?
- What is the best way to model data?

#### Objectives

##### Students will know:

- how to identify and draw two-dimensional figures using definitions.
- how to identify angles within a triangle in order to classify it.
- how to use definitions to classify sets of lines.
- how to represent patterns to extend them and solve problems.
- how to relate angles and fractional parts of a circle.
- how to relate degrees to fractional parts of a circle by understanding that an angle that measure  $n$  degrees turns through  $n/360$  degrees of a circle.
- how to use a protractor to measure an angle and draw an angle with a given measure.
- how to use benchmarks to understand the relative sizes of measurement units.
- how to use models to compare customary units of length.
- how to use models to compare customary units of weight.
- how to use models to compare customary units of liquid volume.
- how to solve problems involving mixed measures.
- how to use models to compare metric units of length.
- how to compare metric units of mass and liquid volume.

- how to estimate and measure temperature in degrees Fahrenheit and degrees Celsius.
- how to use models to compare units of time.
- how to use the strategy draw a diagram to solve elapsed time problems.
- how to collect and represent data in a frequency table.
- how to solve problems using a frequency table.
- how to describe a set of data using mode, median, and range.
- how to make a line plot to display a set of data with whole numbers and fractions.
- how to use line plots to solve real-world problems involving whole numbers, fractions, and decimals.
- how to make stem and leaf plots with whole numbers.

**Students will be able to:**

- identify and draw points, lines, line segments, rays, and angles.
- classify triangles by the sizes of their angles.
- identify and draw parallel lines and perpendicular lines.
- use the strategy act it out to solve pattern problems.
- relate angles and fractional parts of a circle.
- estimate angle measurements using benchmarks.
- use a protractor to measure and draw angles.
- use benchmarks to help identify the type of unit measurement to use when measuring objects.
- convert and compare length measurements in customary units.
- convert and compare weight measurements.
- convert and compare mass and liquid volume measurements in metric units.
- estimate and measure temperature using a thermometer.
- use models to compare units of time.
- solve real-world problems involving elapsed time.
- collect and represent data in a frequency table.
- solve problems using a frequency table.
- describe a set of data use mode, median, and range.
- make line plot to display a set of data with whole numbers and fractions.
- use line plots to solve real-world problems involving whole numbers, fractions, and decimals.
- make stem-and-leaf plots with whole numbers.

### Resources

**Core Text:** [www.hmhco.com](http://www.hmhco.com)