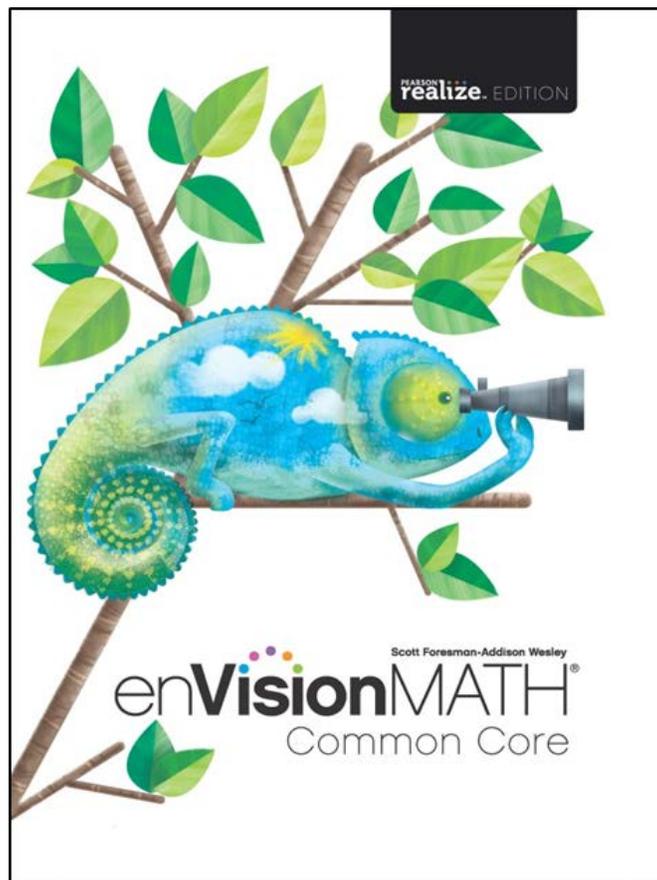


An Alignment of
Minnesota Academic Standards
for Mathematics 2007

Minnesota Department of
Education



To the Lessons of
enVisionMATH Common Core
©2015
Grade 4

**An Alignment of the Minnesota Academic Standards for Mathematics 2007
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Operations and Algebraic Thinking	
Topic 1: Multiplication and Division: Meanings and Facts	
Lesson 1-1: Meanings of Multiplication	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 1-2: Patterns for Facts	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p>

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<p>(Continued) Lesson 1-2: Patterns for Facts</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 1-3: Multiplication Properties</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p>

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<p>(Continued) Lesson 1-3: Multiplication Properties</p>	<p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 1-4: 3, 4, 6, 7, and 8 as Factors</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p>

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<p>(Continued) Lesson 1-4: 3, 4, 6, 7, and 8 as Factors</p>	<p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 1-5: Multiplication as Comparison</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p>

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<p>(Continued) Lesson 1-5: Multiplication as Comparison</p>	<p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 1-6: Meanings of Division</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p>

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(Continued) Lesson 1-6: Meanings of Division	<p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 1-7: Comparison Problems	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p>

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(Continued) Lesson 1-7: Comparison Problems	<p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 1-8: Special Quotients	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.2 Consider the context in which a problem is situated to select the most useful form of the quotient for the solution and use the context to interpret the quotient appropriately.</p>
Lesson 1-9: Using Multiplication Facts to Find Division Facts	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p>

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<p>(Continued) Lesson 1-9: Using Multiplication Facts to Find Division Facts</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 1-10: Problem Solving: Draw a Picture and Write an Equation</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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Topic 2: Generate and Analyze Patterns	
Lesson 2-1: Repeating Patterns	<p>4.2.1.1 Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table.</p> <p>5.2.1.1 Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.</p>
Lesson 2-2: Number Sequences	<p>4.2.1.1 Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table.</p> <p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.2.1.1 Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.</p>

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<p>Lesson 2-3: Extending Tables</p>	<p>4.2.1.1 Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table.</p> <p>4.4.1.1 Use tables, bar graphs, timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data.</p> <p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>3.4.1.1 Collect, display and interpret data using frequency tables, bar graphs, picture graphs and number line plots having a variety of scales. Use appropriate titles, labels and units.</p> <p>5.2.1.1 Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.</p>
<p>Lesson 2-4: Writing Rules for Situations</p>	<p>4.2.1.1 Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table.</p> <p>4.4.1.1 Use tables, bar graphs, timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data.</p>

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<p>(Continued) Lesson 2-4: Writing Rules for Situations</p>	<p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>3.4.1.1 Collect, display and interpret data using frequency tables, bar graphs, picture graphs and number line plots having a variety of scales. Use appropriate titles, labels and units.</p> <p>5.2.1.1 Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.</p>
<p>Lesson 2-5: Geometric Patterns</p>	<p>4.2.1.1 Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table.</p> <p>4.4.1.1 Use tables, bar graphs, timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data.</p> <p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>3.4.1.1 Collect, display and interpret data using frequency tables, bar graphs, picture graphs and number line plots having a variety of scales. Use appropriate titles, labels and units.</p> <p>5.2.1.1 Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.</p>

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Lesson 2-6: Problem Solving: Act It Out and Use Reasoning	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Number and Operations in Base Ten	
Topic 3: Place Value	
Lesson 3-1: Representing Numbers	<p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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(Continued) Lesson 3-1: Representing Numbers	<p>3.1.1.2 Use place value to describe whole numbers between 1000 and 100,000 in terms of ten thousands, thousands, hundreds, tens and ones.</p>
Lesson 3-2: Place Value Relationships	<p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.1.2 Use place value to describe whole numbers between 1000 and 100,000 in terms of ten thousands, thousands, hundreds, tens and ones.</p>
Lesson 3-3: Comparing Numbers	<p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>(Continued) Lesson 3-3: Comparing Numbers</p>	<p>3.1.1.2 Use place value to describe whole numbers between 1000 and 100,000 in terms of ten thousands, thousands, hundreds, tens and ones.</p> <p>3.1.1.5 Compare and order whole numbers up to 100,000.</p>
<p>Lesson 3-4: Rounding Whole Numbers</p>	<p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.1.4 Round numbers to the nearest 10,000, 1000, 100 and 10. Round up and round down to estimate sums and differences.</p>
<p>Lesson 3-5: Problem Solving: Make an Organized List</p>	<p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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(Continued) Lesson 3-5: Problem Solving: Make an Organized List	<p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>5.2.1.1 Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.</p>
Topic 4: Addition and Subtraction of Whole Numbers	
Lesson 4-1: Using Mental Math to Add and Subtract	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>2.1.2.4 Use mental strategies and algorithms based on knowledge of place value and equality to add and subtract two-digit numbers. Strategies may include decomposition, expanded notation, and partial sums and differences.</p> <p>2.1.2.2 Demonstrate fluency with basic addition facts and related subtraction facts.</p> <p>3.1.2.1 Add and subtract multi-digit numbers, using efficient and generalizable procedures based on knowledge of place value, including standard algorithms.</p>

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<p>Lesson 4-2: Estimating Sums and Differences of Whole Numbers</p>	<p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>2.1.2.3 Estimate sums and differences up to 100.</p>
<p>Lesson 4-3: Adding Whole Numbers</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>2.1.2.2 Demonstrate fluency with basic addition facts and related subtraction facts.</p> <p>3.1.2.1 Add and subtract multi-digit numbers, using efficient and generalizable procedures based on knowledge of place value, including standard algorithms.</p>

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<p>Lesson 4-4: Subtracting Whole Numbers</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>2.1.2.2 Demonstrate fluency with basic addition facts and related subtraction facts.</p> <p>3.1.2.1 Add and subtract multi-digit numbers, using efficient and generalizable procedures based on knowledge of place value, including standard algorithms.</p>
<p>Lesson 4-5: Subtracting Across Zeros</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>2.1.2.1 Use strategies to generate addition and subtraction facts including making tens, fact families, doubles plus or minus one, counting on, counting back, and the commutative and associative properties. Use the relationship between addition and subtraction to generate basic facts.</p> <p>2.1.2.2 Demonstrate fluency with basic addition facts and related subtraction facts.</p> <p>3.1.2.1 Add and subtract multi-digit numbers, using efficient and generalizable procedures based on knowledge of place value, including standard algorithms.</p>

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<p>Lesson 4-6: Problem Solving: Draw a Picture and Write an Equation</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>2.1.2.5 Solve real-world and mathematical addition and subtraction problems involving whole numbers with up to 2 digits.</p> <p>3.1.2.1 Add and subtract multi-digit numbers, using efficient and generalizable procedures based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.2 Use addition and subtraction to solve real-world and mathematical problems involving whole numbers. Use various strategies, including the relationship between addition and subtraction, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Topic 5: Number Sense: Multiplying by 1-Digit Numbers</p>	
<p>Lesson 5-1: Arrays and Multiplying by 10 and 100</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p>

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(Continued) Lesson 5-1: Arrays and Multiplying by 10 and 100	<p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 5-2: Multiplying by Multiples of 10 and 100	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p>

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(Continued) Lesson 5-2: Multiplying by Multiples of 10 and 100	<p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 5-3: Breaking Apart to Multiply	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 5-4: Using Mental Math to Multiply</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 5-5: Using Rounding to Estimate</p>	<p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>3.1.1.4 Round numbers to the nearest 10,000, 1000, 100 and 10. Round up and round down to estimate sums and differences.</p>

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<p>(Continued) Lesson 5-5: Using Rounding to Estimate</p>	<p>5.1.1.3 Estimate solutions to arithmetic problems in order to assess the reasonableness of results.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 5-6: Problem Solving: Reasonableness</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>3.2.1.1 Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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Topic 6: Developing Fluency: Multiplying by 1-Digit Numbers	
Lesson 6-1: Arrays and Using an Expanded Algorithm	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 6-2: Connecting the Expanded and Standard Algorithms	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p>

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<p>(Continued) Lesson 6-2: Connecting the Expanded and Standard Algorithms</p>	<p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 6-3: Multiplying 2-Digit by 1-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p>

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<p>(Continued) Lesson 6-3: Multiplying 2-Digit by 1-Digit Numbers</p>	<p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 6-4: Multiplying 3- and 4-Digit by 1-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 6-5: Multiplying by 1-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 6-6: Problem Solving: Missing or Extra Information</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>(Continued) Lesson 6-6: Problem Solving: Missing or Extra Information</p>	<p>4.2.2.1 Understand how to interpret number sentences involving multiplication, division and unknowns. Use real-world situations involving multiplication or division to represent number sentences.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>3.2.2.2 Use multiplication and division basic facts to represent a given problem situation using a number sentence. Use number sense and multiplication and division basic facts to find values for the unknowns that make the number sentences true.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Topic 7: Number Sense: Multiplying by 2-Digit Numbers</p>	
<p>Lesson 7-1: Arrays and Multiplying 2-Digit Numbers by Multiples of 10</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p>

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<p>(Continued) Lesson 7-1: Arrays and Multiplying 2-Digit Numbers by Multiples of 10</p>	<p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 7-2: Using Mental Math to Multiply 2-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p>

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(Continued) Lesson 7-2: Using Mental Math to Multiply 2-Digit Numbers	<p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 7-3: Using Rounding to Estimate	<p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>3.1.1.4 Round numbers to the nearest 10,000, 1000, 100 and 10. Round up and round down to estimate sums and differences.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.3 Estimate solutions to arithmetic problems in order to assess the reasonableness of results.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 7-4: Using Compatible Numbers to Estimate</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>3.1.1.4 Round numbers to the nearest 10,000, 1000, 100 and 10. Round up and round down to estimate sums and differences.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.3 Estimate solutions to arithmetic problems in order to assess the reasonableness of results.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 7-5: Problem Solving: Multiple-Step Problems</p>	<p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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Topic 8: Developing Fluency: Multiplying by 2-Digit Numbers	
Lesson 8-1: Arrays and Multiplying 2-Digit Numbers	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 8-2: Arrays and an Expanded Algorithm</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 8-3: Multiplying 2-Digit Numbers by Multiples of Ten</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.2 Use an understanding of place value to multiply a number by 10, 100 and 1000.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 8-4: Multiplying 2-Digit by 2-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.</p> <p>3.1.2.5 Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 8-5: Problem Solving: Two-Question Problems</p>	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p>

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(Continued) Lesson 8-5: Problem Solving: Two-Question Problems	<p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Topic 9: Number Sense: Dividing by 1-Digit Divisors	
Lesson 9-1: Using Mental Math to Divide	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 9-2: Estimating Quotients</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>5.1.1.3 Estimate solutions to arithmetic problems in order to assess the reasonableness of results.</p>
<p>Lesson 9-3: Estimating Quotients for Greater Dividends</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.4 Estimate products and quotients of multi-digit whole numbers by using rounding, benchmarks and place value to assess the reasonableness of results.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p>

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<p>(Continued) Lesson 9-3: Estimating Quotients for Greater Dividends</p>	<p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.</p> <p>5.1.1.3 Estimate solutions to arithmetic problems in order to assess the reasonableness of results.</p>
<p>Lesson 9-4: Dividing with Remainders</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p>

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<p>(Continued) Lesson 9-4: Dividing with Remainders</p>	<p>5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 9-5: Multiplication and Division Stories</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p>

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(Continued) Lesson 9-5: Multiplication and Division Stories	<p>5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
Lesson 9-6: Problem Solving: Draw a Picture and Write an Equation	<p>4.1.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p> <p>3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.</p> <p>5.1.1.2 Consider the context in which a problem is situated to select the most useful form of the quotient for the solution and use the context to interpret the quotient appropriately.</p>
Topic 10: Developing Fluency: Dividing by 1-Digit Divisors	
Lesson 10-1: Division as Repeated Subtraction	<p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p>

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<p>(Continued) Lesson 10-1: Division as Repeated Subtraction</p>	<p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 10-2: Using Objects to Divide: Division as Sharing</p>	<p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>

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<p>Lesson 10-3: Dividing 2-Digit by 1-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.</p>
<p>Lesson 10-4: Dividing 3-Digit by 1-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p>

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<p>(Continued) Lesson 10-4: Dividing 3-Digit by 1-Digit Numbers</p>	<p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p> <p>5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.</p>
<p>Lesson 10-5: Deciding Where to Start Dividing</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p>

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<p>(Continued) Lesson 10-5: Deciding Where to Start Dividing</p>	<p>5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.</p> <p>5.1.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.</p>
<p>Lesson 10-6: Dividing 4-Digit by 1-Digit Numbers</p>	<p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p>

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(Continued) Lesson 10-6: Dividing 4-Digit by 1-Digit Numbers	5.1.1.1 Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.
Lesson 10-7: Problem Solving: Multiple-Step Problems	4.1.1.1 Demonstrate fluency with multiplication and division facts. 4.2.1.1 Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table. 3.1.2.4 Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems. 5.1.1.2 Consider the context in which a problem is situated to select the most useful form of the quotient for the solution and use the context to interpret the quotient appropriately.
Number and Operations – Fractions	
Topic 11: Fraction Equivalence and Ordering	
Lesson 11-1: Factors	For related content, please see: 4.1.1.1 Demonstrate fluency with multiplication and division facts. 4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.

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(Continued) Lesson 11-1: Factors	<p>6.1.1.5 Factor whole numbers; express a whole number as a product of prime factors with exponents.</p>
Lesson 11-2: Prime and Composite Numbers	<p>For related content, please see:</p> <p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.1.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide multi-digit whole numbers by one- or two-digit numbers. Strategies may include mental strategies, partial quotients, the commutative, associative, and distributive properties and repeated subtraction.</p> <p>6.1.1.5 Factor whole numbers; express a whole number as a product of prime factors with exponents.</p>
Lesson 11-3: Multiples	<p>For related content, please see:</p> <p>4.1.1.1 Demonstrate fluency with multiplication and division facts.</p> <p>4.2.1.1 Create and use input-output rules involving addition, subtraction, multiplication and division to solve problems in various contexts. Record the inputs and outputs in a chart or table.</p> <p>3.1.2.3 Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division.</p>

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Lesson 11-4: Equivalent Fractions	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>5.1.2.4 Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts.</p> <p>6.1.1.4 Determine equivalences among fractions, decimals and percents; select among these representations to solve problems.</p>
Lesson 11-5: Number Lines and Equivalent Fractions	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>4.1.2.2 Locate fractions on a number line. Use models to order and compare whole numbers and fractions, including mixed numbers and improper fractions.</p> <p>3.1.3.3 Order and compare unit fractions and fractions with like denominators by using models and an understanding of the concept of numerator and denominator.</p> <p>5.1.2.3 Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.</p> <p>5.1.2.4 Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts.</p>

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Lesson 11-6: Comparing Fractions	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>4.1.2.2 Locate fractions on a number line. Use models to order and compare whole numbers and fractions, including mixed numbers and improper fractions.</p> <p>3.1.3.3 Order and compare unit fractions and fractions with like denominators by using models and an understanding of the concept of numerator and denominator.</p> <p>5.1.2.3 Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.</p>
Lesson 11-7: Ordering Fractions	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>4.1.2.2 Locate fractions on a number line. Use models to order and compare whole numbers and fractions, including mixed numbers and improper fractions.</p> <p>3.1.3.3 Order and compare unit fractions and fractions with like denominators by using models and an understanding of the concept of numerator and denominator.</p> <p>5.1.2.3 Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.</p>

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Lesson 11-8: Problem Solving: Writing to Explain	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>3.1.3.2 Understand that the size of a fractional part is relative to the size of the whole.</p>
Topic 12: Adding and Subtracting Fractions and Mixed Numbers with Like Denominators	
Lesson 12-1: Modeling Addition of Fractions	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.1 Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p> <p>5.1.3.2 Model addition and subtraction of fractions and decimals using a variety of representations.</p>
Lesson 12-2: Adding Fractions with Like Denominators	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p>

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<p>(Continued) Lesson 12-2: Adding Fractions with Like Denominators</p>	<p>5.1.3.2 Model addition and subtraction of fractions and decimals using a variety of representations.</p>
<p>Lesson 12-3: Modeling Subtraction of Fractions</p>	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.1 Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p> <p>5.1.3.2 Model addition and subtraction of fractions and decimals using a variety of representations.</p>
<p>Lesson 12-4: Subtracting Fractions with Like Denominators</p>	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.2 Model addition and subtraction of fractions and decimals using a variety of representations.</p>

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<p>Lesson 12-5: Adding and Subtracting on the Number Line</p>	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.2 Model addition and subtraction of fractions and decimals using a variety of representations.</p>
<p>Lesson 12-6: Improper Fractions and Mixed Numbers</p>	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.2.3 Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.</p> <p>5.1.2.4 Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts.</p>

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<p>Lesson 12-7: Modeling Addition and Subtraction of Mixed Numbers</p>	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.1 Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p> <p>5.1.3.2 Model addition and subtraction of fractions and decimals using a variety of representations.</p>
<p>Lesson 12-8: Adding Mixed Numbers</p>	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.1 Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p>

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Lesson 12-9: Subtracting Mixed Numbers	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.1 Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p>
Lesson 12-10: Decomposing and Composing Fractions	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.3.1 Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p>
Lesson 12-11: Problem Solving: Draw a Picture and Write an Equation	<p>4.1.2.3 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations. Develop a rule for addition and subtraction of fractions with like denominators.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p>

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(Continued) Lesson 12-11: Problem Solving: Draw a Picture and Write an Equation	5.1.3.4 Solve real-world and mathematical problems requiring addition and subtraction of decimals, fractions and mixed numbers, including those involving measurement, geometry and data.
Topic 13: Extending Fraction Concepts	
Lesson 13-1: Fractions as Multiples of Unit Fractions: Using Models	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>3.1.3.3 Order and compare unit fractions and fractions with like denominators by using models and an understanding of the concept of numerator and denominator.</p> <p>6.1.3.1 Multiply and divide decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p>
Lesson 13-2: Multiplying a Fraction by a Whole Number: Using Models	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>4.1.2.2 Locate fractions on a number line. Use models to order and compare whole numbers and fractions, including mixed numbers and improper fractions.</p> <p>3.1.3.3 Order and compare unit fractions and fractions with like denominators by using models and an understanding of the concept of numerator and denominator.</p> <p>6.1.3.1 Multiply and divide decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p>

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<p>Lesson 13-3: Multiplying a Fraction by a Whole Number: Using Symbols</p>	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>6.1.3.1 Multiply and divide decimals and fractions, using efficient and generalizable procedures, including standard algorithms.</p>
<p>Lesson 13-4: Fractions and Decimals</p>	<p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>4.1.2.4 Read and write decimals with words and symbols; use place value to describe decimals in terms of thousands, hundreds, tens, ones, tenths, hundredths and thousandths.</p> <p>3.1.3.3 Order and compare unit fractions and fractions with like denominators by using models and an understanding of the concept of numerator and denominator.</p> <p>5.1.2.4 Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts.</p>

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<p>Lesson 13-5: Fractions and Decimals on the Number Line</p>	<p>4.1.2.2 Locate fractions on a number line. Use models to order and compare whole numbers and fractions, including mixed numbers and improper fractions.</p> <p>4.1.2.4 Read and write decimals with words and symbols; use place value to describe decimals in terms of thousands, hundreds, tens, ones, tenths, hundredths and thousandths.</p> <p>4.1.2.5 Compare and order decimals and whole numbers using place value, a number line and models such as grids and base 10 blocks.</p> <p>3.1.3.1 Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line.</p> <p>5.1.2.3 Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.</p>
<p>Lesson 13-6: Equivalent Fractions and Decimals</p>	<p>4.1.2.6 Read and write tenths and hundredths in decimal and fraction notations using words and symbols; know the fraction and decimal equivalents for halves and fourths.</p> <p>5.1.2.4 Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts.</p>

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Lesson 13-7: Decimal Place Value	<p>4.1.2.4 Read and write decimals with words and symbols; use place value to describe decimals in terms of thousands, hundreds, tens, ones, tenths, hundredths and thousandths.</p> <p>5.1.2.1 Read and write decimals using place value to describe decimals in terms of groups from millionths to millions.</p> <p>5.1.2.3 Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.</p>
Lesson 13-8: Comparing Decimals	<p>4.1.2.5 Compare and order decimals and whole numbers using place value, a number line and models such as grids and base 10 blocks.</p> <p>5.1.2.3 Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.</p> <p>5.1.2.4 Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts.</p>
Lesson 13-9: Using Money to Understand Decimals	<p>4.1.2.4 Read and write decimals with words and symbols; use place value to describe decimals in terms of thousands, hundreds, tens, ones, tenths, hundredths and thousandths.</p> <p>4.1.2.6 Read and write tenths and hundredths in decimal and fraction notations using words and symbols; know the fraction and decimal equivalents for halves and fourths.</p> <p>5.1.3.4 Solve real-world and mathematical problems requiring addition and subtraction of decimals, fractions and mixed numbers, including those involving measurement, geometry and data.</p>

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Lesson 13-10: Problem Solving: Draw a Picture	<p>4.1.2.5 Compare and order decimals and whole numbers using place value, a number line and models such as grids and base 10 blocks.</p> <p>4.1.2.6 Read and write tenths and hundredths in decimal and fraction notations using words and symbols; know the fraction and decimal equivalents for halves and fourths.</p> <p>5.1.3.4 Solve real-world and mathematical problems requiring addition and subtraction of decimals, fractions and mixed numbers, including those involving measurement, geometry and data.</p>
Measurement and Data	
Topic 14: Measurement Units and Conversions	
Lesson 14-1: Using Customary Units of Length	<p>For related content, please see:</p> <p>1.3.2.1 Measure the length of an object in terms of multiple copies of another object.</p> <p>2.3.2.2 Demonstrate an understanding of the relationship between length and the numbers on a ruler by using a ruler to measure lengths to the nearest centimeter or inch.</p> <p>3.3.2.1 Use half units when measuring distances.</p> <p>3.3.2.3 Measure distances around objects.</p>
Lesson 14-2: Customary Units of Capacity	<p>For related content, please see:</p> <p>5.3.2.3 Understand that the volume of a three-dimensional figure can be found by counting the total number of same-sized cubic units that fill a shape without gaps or overlaps. Use cubic units to label volume measurements.</p>

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(Continued) Lesson 14-2: Customary Units of Capacity	<p>5.3.2.4 Develop and use the formulas $V = lwh$ and $V = Bh$ to determine the volume of rectangular prisms. Justify why base area B and height h are multiplied to find the volume of a rectangular prism by breaking the prism into layers of unit cubes.</p> <p>6.3.1.1 Calculate the surface area and volume of prisms and use appropriate units, such as cm^2 and cm^3. Justify the formulas used. Justification may involve decomposition, nets or other models.</p>
Lesson 14-3: Units of Weight	<p>For related content, please see: 6.3.3.2 Estimate weights, capacities and geometric measurements using benchmarks in measurement systems with appropriate units.</p>
Lesson 14-4: Changing Customary Units	<p>For related content, please see: 6.3.3.1 Solve problems in various contexts involving conversion of weights, capacities, geometric measurements and times within measurement systems using appropriate units.</p>
Lesson 14-5: Problem Solving: Writing to Explain	<p>For related content, please see: 2.3.2.2 Demonstrate an understanding of the relationship between length and the numbers on a ruler by using a ruler to measure lengths to the nearest centimeter or inch.</p> <p>3.3.2.3 Measure distances around objects.</p> <p>5.3.2.3 Understand that the volume of a three-dimensional figure can be found by counting the total number of same-sized cubic units that fill a shape without gaps or overlaps. Use cubic units to label volume measurements.</p> <p>6.3.3.2 Estimate weights, capacities and geometric measurements using benchmarks in measurement systems with appropriate units.</p>

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Lesson 14-6: Using Metric Units of Length	<p>For related content, please see:</p> <p>1.3.2.1 Measure the length of an object in terms of multiple copies of another object.</p> <p>2.3.2.2 Demonstrate an understanding of the relationship between length and the numbers on a ruler by using a ruler to measure lengths to the nearest centimeter or inch.</p> <p>3.3.2.1 Use half units when measuring distances.</p> <p>3.3.2.3 Measure distances around objects.</p>
Lesson 14-7: Metric Units of Capacity	<p>For related content, please see:</p> <p>5.3.2.3 Understand that the volume of a three-dimensional figure can be found by counting the total number of same-sized cubic units that fill a shape without gaps or overlaps. Use cubic units to label volume measurements.</p> <p>5.3.2.4 Develop and use the formulas $V = lwh$ and $V = Bh$ to determine the volume of rectangular prisms. Justify why base area B and height h are multiplied to find the volume of a rectangular prism by breaking the prism into layers of unit cubes.</p> <p>6.3.1.1 Calculate the surface area and volume of prisms and use appropriate units, such as cm^2 and cm^3. Justify the formulas used. Justification may involve decomposition, nets or other models.</p>
Lesson 14-8: Units of Mass	<p>For related content, please see:</p> <p>6.3.3.2 Estimate weights, capacities and geometric measurements using benchmarks in measurement systems with appropriate units.</p>

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Lesson 14-9: Changing Metric Units	For related content, please see: 6.3.3.1 Solve problems in various contexts involving conversion of weights, capacities, geometric measurements and times within measurement systems using appropriate units.
Lesson 14-10: Units of Time	2.3.3.1 Tell time to the quarter-hour and distinguish between a.m. and p.m. 3.3.3.2 Know relationships among units of time.
Lesson 14-11: Problem Solving: Work Backward	For related content, please see: 2.3.3.1 Tell time to the quarter-hour and distinguish between a.m. and p.m. 3.3.3.1 Tell time to the minute, using digital and analog clocks. Determine elapsed time to the minute. 3.3.3.2 Know relationships among units of time.
Topic 15: Solving Measurement and Data Problems	
Lesson 15-1: Making Line Plots	4.4.1.1 Use tables, bar graphs, timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data. 3.4.1.1 Collect, display and interpret data using frequency tables, bar graphs, picture graphs and number line plots having a variety of scales. Use appropriate titles, labels and units. 5.4.1.2 Create and analyze double-bar graphs and line graphs by applying understanding of whole numbers, fractions and decimals. Know how to create spreadsheet tables and graphs to display data.

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Lesson 15-2: Solving Problems Involving Line Plots	<p>4.4.1.1 Use tables, bar graphs, timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data.</p> <p>3.4.1.1 Collect, display and interpret data using frequency tables, bar graphs, picture graphs and number line plots having a variety of scales. Use appropriate titles, labels and units.</p> <p>5.4.1.2 Create and analyze double-bar graphs and line graphs by applying understanding of whole numbers, fractions and decimals. Know how to create spreadsheet tables and graphs to display data.</p>
Lesson 15-3: Solving Perimeter and Area Problems	<p>4.3.2.3 Understand that the area of a two-dimensional figure can be found by counting the total number of same size square units that cover a shape without gaps or overlaps. Justify why length and width are multiplied to find the area of a rectangle by breaking the rectangle into one unit by one unit squares and viewing these as grouped into rows and columns.</p> <p>4.3.2.4 Find the areas of geometric figures and real-world objects that can be divided into rectangular shapes. Use square units to label area measurements.</p> <p>3.3.2.2 Find the perimeter of a polygon by adding the lengths of the sides.</p> <p>5.3.2.1 Develop and use formulas to determine the area of triangles, parallelograms and figures that can be decomposed into triangles.</p>

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Lesson 15-4: Solving Measurement Problems	<p>For related content, please see:</p> <p>3.3.2.1 Use half units when measuring distances.</p> <p>3.3.2.2 Find the perimeter of a polygon by adding the lengths of the sides.</p> <p>3.3.2.3 Measure distances around objects.</p> <p>5.3.2.4 Develop and use the formulas $V = lwh$ and $V = Bh$ to determine the volume of rectangular prisms. Justify why base area B and height h are multiplied to find the volume of a rectangular prism by breaking the prism into layers of unit cubes.</p>
Lesson 15-5: Solving Problems Involving Money	<p>For related content, please see:</p> <p>4.1.2.1 Represent equivalent fractions using fraction models such as parts of a set, fraction circles, fraction strips, number lines and other manipulatives. Use the models to determine equivalent fractions.</p> <p>2.3.3.2 Identify pennies, nickels, dimes and quarters. Find the value of a group of coins and determine combinations of coins that equal a given amount.</p> <p>3.3.3.3 Make change up to one dollar in several different ways, including with as few coins as possible.</p> <p>5.1.3.4 Solve real-world and mathematical problems requiring addition and subtraction of decimals, fractions and mixed numbers, including those involving measurement, geometry and data.</p>

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Lesson 15-6: Problem Solving: Solve a Simpler Problem and Make a Table	<p>4.4.1.1 Use tables, bar graphs, timelines and Venn diagrams to display data sets. The data may include fractions or decimals. Understand that spreadsheet tables and graphs can be used to display data.</p> <p>3.4.1.1 Collect, display and interpret data using frequency tables, bar graphs, picture graphs and number line plots having a variety of scales. Use appropriate titles, labels and units.</p> <p>5.4.1.2 Create and analyze double-bar graphs and line graphs by applying understanding of whole numbers, fractions and decimals. Know how to create spreadsheet tables and graphs to display data.</p>
Geometry	
Topic 16: Lines, Angles, and Shapes	
Lesson 16-1: Points, Lines, and Planes	<p>For related content, please see:</p> <p>4.3.3.1 Apply translations (slides) to figures.</p> <p>4.3.3.2 Apply reflections (flips) to figures by reflecting over vertical or horizontal lines and relate reflections to lines of symmetry.</p> <p>4.3.3.3 Apply rotations (turns) of 90° clockwise or counterclockwise.</p> <p>3.3.1.1 Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right triangles, rectangles, parallelograms and trapezoids.</p> <p>5.2.1.2 Use a rule or table to represent ordered pairs of positive integers and graph these ordered pairs on a coordinate system.</p>

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Lesson 16-2: Line Segments, Rays, and Angles	<p>4.3.2.1 Measure angles in geometric figures and real-world objects with a protractor or angle ruler.</p> <p>4.3.2.2 Compare angles according to size. Classify angles as acute, right and obtuse.</p> <p>3.3.1.1 Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right triangles, rectangles, parallelograms and trapezoids.</p>
Lesson 16-3: Understanding Angles and Unit Angles	<p>4.3.2.1 Measure angles in geometric figures and real-world objects with a protractor or angle ruler.</p> <p>4.3.2.2 Compare angles according to size. Classify angles as acute, right and obtuse.</p>
Lesson 16-4: Measuring with Unit Angles	<p>4.3.2.1 Measure angles in geometric figures and real-world objects with a protractor or angle ruler.</p> <p>4.3.2.2 Compare angles according to size. Classify angles as acute, right and obtuse.</p>
Lesson 16-5: Measuring Angles	<p>4.3.2.1 Measure angles in geometric figures and real-world objects with a protractor or angle ruler.</p> <p>4.3.2.2 Compare angles according to size. Classify angles as acute, right and obtuse.</p>

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Lesson 16-6: Adding and Subtracting Angle Measures	<p>For related content, please see:</p> <p>4.3.2.1 Measure angles in geometric figures and real-world objects with a protractor or angle ruler.</p> <p>4.3.2.2 Compare angles according to size. Classify angles as acute, right and obtuse.</p> <p>6.3.2.2 Determine missing angle measures in a triangle using the fact that the sum of the interior angles of a triangle is 180°. Use models of triangles to illustrate this fact.</p> <p>6.3.2.3 Develop and use formulas for the sums of the interior angles of polygons by decomposing them into triangles.</p>
Lesson 16-7: Polygons	<p>4.3.1.1 Describe, classify and sketch triangles, including equilateral, right, obtuse and acute triangles. Recognize triangles in various contexts.</p> <p>4.3.1.2 Describe, classify and draw quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms and kites. Recognize quadrilaterals in various contexts.</p> <p>3.3.1.2 Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.</p>
Lesson 16-8: Triangles	<p>4.3.1.1 Describe, classify and sketch triangles, including equilateral, right, obtuse and acute triangles. Recognize triangles in various contexts.</p> <p>4.3.1.2 Describe, classify and draw quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms and kites. Recognize quadrilaterals in various contexts.</p>

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(Continued) Lesson 16-8: Triangles	<p>3.3.1.2 Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.</p>
Lesson 16-9: Quadrilaterals	<p>4.3.1.1 Describe, classify and sketch triangles, including equilateral, right, obtuse and acute triangles. Recognize triangles in various contexts.</p> <p>4.3.1.2 Describe, classify and draw quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms and kites. Recognize quadrilaterals in various contexts.</p> <p>3.3.1.2 Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.</p>
Lesson 16-10: Line Symmetry	<p>4.3.3.2 Apply reflections (flips) to figures by reflecting over vertical or horizontal lines and relate reflections to lines of symmetry.</p>
Lesson 16-11: Problem Solving: Make and Test Generalizations	<p>4.3.1.1 Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right triangles, rectangles, parallelograms and trapezoids.</p> <p>4.3.1.2 Describe, classify and draw quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms and kites. Recognize quadrilaterals in various contexts.</p> <p>3.3.1.2 Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons.</p>