

Unit 1: Understand Multiplication and Area

Unit 1 Project: Array Game!

Unit 1 Learning Mindset Focus: Challenge-Seeking / Defines Own Challenges

Module 1: Understand Multiplication

Recommended Pacing with Assessments: 9 Days

Module 1 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students used addition and subtraction within 100 to solve word problems.</p> <p>Students determined whether a group of objects has an odd or even number of members.</p> <p>Students used addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns.</p>	<p>Students interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects.</p> <p>Students use multiplication within 100 to solve word problems in situations involving equal groups and arrays.</p> <p>Students apply properties of operations as strategies to multiply.</p>	<p>Students will fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.</p> <p>Students will use the four operations with whole numbers to solve problems.</p>

Module 1 Vocabulary

equal groups	groups that have the same number of objects
array	a set of objects arranged in rows and columns
Commutative Property of Multiplication	the property that states that you can multiply two factors in any order and get the same product.
factor	a number that is multiplied by another number to find a product
multiply	to combine equal groups to find how many in all; the opposite operation of division
product	the answer in a multiplication problem

Lesson 1.1 Count Equal Groups

Build Understanding – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can count equal groups to find the total number of objects when the number of equal groups and the number of objects in each group is given.

Learning Objective

Use concrete and visual models to represent and solve problems when you know the number of equal groups and the number of objects in each group.

Language Objective

Explain how to find the total number of objects when the objects are in equal groups.

Vocabulary

Review: equal groups

Lesson Materials

two-color counters, connecting cubes, Number Lines (Teacher Resource Masters)

Lesson 1.2 Relate Addition and Multiplication

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.

Mathematical Practices and Processes

- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can write an addition equation and a multiplication equation to find a total to solve problems about equal groups.

Learning Objective

Use concrete and visual models or drawings to write related addition and multiplication equations.

Language Objective

Explain how multiplication and addition are similar and how they are different.

Vocabulary

New: factors, multiply, product

Lesson Materials

two-color counters, connecting cubes, Number Lines (Teacher Resource Masters)

Lesson 1.3 Represent Multiplication with Arrays

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can use arrays to represent problems about equal groups and to write multiplication equations.

Learning Objective

Use an array model to represent a multiplication problem. Write a multiplication equation for an array.

Language Objective

Explain how to show multiplication problems using array models.

Vocabulary

New: array

Lesson Materials

square tiles, two-color counters

Lesson 1.4 Understand the Commutative Property of Multiplication

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Model with mathematics.
- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can use the Commutative Property of Multiplication to write related multiplication equations.

Learning Objective

Use the Commutative Property of Multiplication to find products and to write related multiplication equations.

Language Objective

Share multiplication equations with a partner and explain how you can use the Commutative Property of Multiplication to find products.

Vocabulary

New: Commutative Property of Multiplication

Lesson Materials

two-color counters, square tiles, 1-Centimeter Grid Paper (Teacher Resource Masters)

Lesson 1.5 Represent Multiplication with Number Lines

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.

I Can Objective

I can use number lines to represent problems about equal groups and to write multiplication equations.

Learning Objective

Count equal groups on a number line to find how many.

Language Objective

Explain and demonstrate how you count equal groups to find how many.

Lesson Materials

square tiles, inch rulers, Number Lines (Teacher Resource Masters)

Lesson 1.6 Represent Multiplication with Bar Models

Build Understanding – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.

I Can Objective

I can use bar models to represent problems about equal groups and to write multiplication equations.

Learning Objective

Use a bar model to represent an unknown in a multiplication problem.

Language Objective

Explain to a partner how you can use a bar model to represent an unknown amount in a multiplication problem.

Lesson Materials

two-color counters, connecting cubes

Unit 1: Understand Multiplication and Area

Unit 1 Project: Array Game!

Unit 1 Learning Mindset Focus: Challenge-Seeking / Defines Own Challenges

Module 2: Relate Multiplication and Area

Recommended Pacing with Assessments and Performance Task: 8 Days

Module 2 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students partitioned a rectangle into rows and columns of same-sized squares and counted to find the total number of them.</p> <p>Students used addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns.</p>	<p>Students recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p>Students measure area by counting unit squares.</p> <p>Students relate area to the operations of multiplication and addition.</p>	<p>Students will apply the area and perimeter formulas for rectangles in real-world and mathematical problems.</p> <p>Students will recognize angle measure as additive.</p>

Module 2 Vocabulary

area	the measure of the number of unit squares needed to cover a surface
square unit	a unit used to measure area, such as square foot, square meter, and so on
unit square	a square with a side length of 1 unit, used to measure area

Lesson 2.1 Understand Area by Counting Unit Squares

Build Understanding – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Recognize area as an attribute of plane figures and understand concepts of area measurement.

A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Look for and make use of structure.

I Can Objective

I can describe area. I can find the area of a figure by counting unit squares.

Learning Objective

Explore area as an attribute of a two-dimensional shape, and explore how to find area by counting unit squares.

Language Objective

Explain to a partner different situations where you would need to find the area of a figure.

Vocabulary

New: area, square unit, unit square

Lesson Materials

square tiles, two-color counters, geoboards with rubber bands, 1-Inch Grid Paper (Teacher Resource Masters)

Lesson 2.2 Measure Area by Counting Unit Squares

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can describe area. I can measure and describe the area of a figure in square units.

Learning Objective

Use concrete representations of unit squares to cover a plane figure, and find the area by counting the number of unit squares.

Language Objective

Explain how to find the area of a figure by counting unit squares.

Lesson Materials

colored paper, scissors, square tiles (1-inch)

Lesson 2.3 Relate Area to Addition and Multiplication

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Relate area to the operations of multiplication and addition.

Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

Mathematical Practices and Processes

- Attend to precision.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use repeated addition or multiplication to find the area of a rectangle.

Learning Objective

Relate finding area to using an array to find a product.

Language Objective

Explain how finding the area of a rectangle is similar to using an array to find a product.

Lesson 2.4 Solve Problems with Area

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.

I Can Objective

I can multiply side lengths to find the area of a rectangle and solve real-world problems.

Learning Objective

Solve real-world problems by finding areas of rectangles.

Language Objective

Write and solve a real-world problem about finding the area of a rectangle.

Lesson Materials

square tiles, 1-Inch Grid Paper (Teacher Resource Masters)

Lesson 2.5 Find the Area of Combined Rectangles

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$.
Use area models to represent the distributive property in mathematical reasoning.

Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the nonoverlapping parts, applying this technique to solve real world problems.

Mathematical Practices and Processes

- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can break apart a figure made up of combined rectangles to find the area. I can multiply and add to find the area.

Learning Objective

Break apart a composite figure into smaller rectangles to find the area of combined figures.

Language Objective

Explain ways to break apart a combined rectangle to find the area.

Lesson Materials

1-Inch Grid Paper (Teacher Resource Masters)

Unit 2: Multiplication and Division

Unit 2 Project: Skate Sale

Unit 2 Learning Mindset Focus: Perseverance / Learns Effectively

Module 3: Understand Multiplication Strategies

Recommended Pacing with Assessments: 8 Days

Module 3 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students counted objects by 2s.</p> <p>Students wrote equations to represent the sum of equal addends.</p> <p>Students found the total number of objects arranged in rectangular arrays.</p>	<p>Students use multiplication within 100 to solve problems in situations involving equal groups, arrays, and measurement quantities, by using drawings and equations with a symbol for the unknown number to represent the problem.</p>	<p>Students will use the four operations with whole numbers to solve multistep problems.</p> <p>Students will multiply 3- and 4-digit numbers by 1-digit numbers, using strategies based on place value and the properties of operations.</p>

Module 3 Vocabulary

product	the answer in a multiplication problem
doubles	pairs of addends that are the same
multiple	a number that is the product of two counting numbers

Lesson 3.1 Multiply with 2 and 4

Connect Concepts and Skills – 2 Days Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can use different strategies to multiply with the factors 2 and 4 and solve equal groups problems.

Learning Objective

Achieve fluency with 2s and 4s multiplication facts.

Language Objective

Explain how to multiply with 2 and 4.

Vocabulary

New: doubles

Lesson Materials

two-color counters, square tiles

Lesson 3.2 Multiply with 5 and 10

Connect Concepts and Skills – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.

I Can Objective

I can use different strategies to multiply with the factors 5 and 10 and solve equal groups problems.

Learning Objective

Achieve fluency with 5s and 10s multiplication facts.

Language Objective

Explain to a partner different strategies you can use to multiply with the factors 5 and 10.

Vocabulary

Review: product
New: multiple

Lesson Materials

play money (nickels, pennies, dimes), two-color counters

Lesson 3.3 Multiply with 3 and 6

Connect Concepts and Skills – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can use different strategies to multiply with the factors 3 and 6 and solve equal groups problems.

Learning Objective

Achieve fluency with 3s and 6s multiplication facts.

Language Objective

Work in pairs to explain strategies you can use to multiply with the factors 3 and 6.

Lesson Materials

square tiles, two-color counters

Unit 2: Multiplication and Division

Unit 2 Project: Skate Sale

Unit 2 Learning Mindset Focus: Perseverance / Learns Effectively

Module 4: Apply Multiplication Properties as Strategies

Recommended Pacing with Assessments: 10 Days

Module 4 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students applied properties of operations as strategies to add and subtract.</p> <p>Students counted within 1,000, counted by 5s, 10s, and 100s.</p> <p>Students determined whether a group of objects has an odd or even number of members by counting them by 2s.</p>	<p>Students apply properties of operations as strategies to multiply.</p> <p>Students fluently multiply within 100, using strategies such as properties of operations.</p> <p>Students identify arithmetic patterns in the multiplication table and explain them using properties of operations.</p>	<p>Students will multiply a whole number of up to four digits by a 1-digit whole number, and will multiply two 2-digit numbers, using strategies based on place value and the properties of operations.</p> <p>Students will generate a number pattern that follows a given rule; will identify apparent features of the pattern that were not explicit in the rule itself.</p>

Module 4 Vocabulary

Associative Property of Multiplication	the property that states that when the grouping of factors is changed, the product remains the same
Distributive Property	the property that states that multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products
Identity Property of Multiplication	the property that states that the product of any number and one is that number
Zero Property of Multiplication	the property that states that the product of zero and any number is zero

Lesson 4.1 Understand the Identity and Zero Properties of Multiplication

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Look for and make use of structure.

I Can Objective

I can use the Identity Property and Zero Property of Multiplication as strategies to multiply with 1 and 0.

Learning Objective

Use the Identity and Zero Properties of Multiplication and patterns to write multiplication equations with the factors 1 and 0.

Language Objectives

- Explain the Identity and Zero Properties of Multiplication.
- Use the properties of 0 and 1 to write multiplication equations.

Vocabulary

New: Identity Property of Multiplication, Zero Property of Multiplication

Lesson 4.2 Understand the Distributive Property

Build Understanding – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can understand and know how to use the Distributive Property to decompose factors as a strategy to multiply 1-digit numbers.

Learning Objective

Use the Distributive Property as a strategy to find products by breaking apart a factor.

Language Objective

Explain how you can use the Distributive Property to find products.

Vocabulary

New: Distributive Property

Lesson Materials

two-color counters, square tiles

Lesson 4.3 Understand the Associative Property of Multiplication

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Apply properties of operations as strategies to multiply and divide.

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Look for and make use of structure.

I Can Objective

I can multiply three factors by using the Associative and Commutative Properties of Multiplication.

Learning Objective

Use the Associative Property of Multiplication as a strategy to multiply with three factors.

Language Objective

Students will work in groups to demonstrate how using the Associative Property of Multiplication is an effective strategy to use when multiplying with three factors.

Vocabulary

New: Associative Property of Multiplication

Lesson Materials

square tiles, two-color counters

Lesson 4.4 Multiply with 7

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Look for and make use of structure.

I Can Objective

I can use several multiplication strategies to multiply with 7.

Learning Objective

Apply the Distributive Property or the Commutative Property of Multiplication, or use known facts to multiply with the factor 7.

Language Objective

Explain how using the Distributive or Commutative Properties of Multiplication helps you multiply with the factor 7.

Lesson Materials

square tiles, two-color counters, Number Line (Teacher Resource Masters)

Lesson 4.5 Multiply with 8

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.

I Can Objective

I can alternate between strategies and properties to multiply with 8. I can determine the best strategy to use for different factors and problems.

Learning Objective

Apply properties and use strategies to multiply with the factor 8.

Language Objective

Show and explain strategies to multiply with the factor 8.

Lesson Materials

square tiles, number line (Teacher Resource Masters)

Lesson 4.6 Multiply with 9

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Look for and make use of structure.

I Can Objective

I can apply the Distributive Property with multiplication and addition or subtraction. I can use patterns and strategies to multiply with 9.

Learning Objective

Use patterns with 9s facts and the Distributive Property with addition or subtraction to find products with the factor 9.

Language Objective

Explain how finding patterns and using the Distributive Property helps to find products with the factor 9.

Lesson Materials

square tiles, number line (Teacher Resource Masters)

Lesson 4.7 Identify Number Patterns on the Multiplication Table

Connect Concepts and Skills – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can identify arithmetic patterns in the multiplication table and explain them by using the properties of operations. I can use patterns and properties to find products in a table and to identify products as odd or even.

Learning Objective

Identify and explain patterns on the multiplication table by using properties of operations.

Language Objective

Show ways to find and explain patterns on the multiplication table by using properties.

Lesson Materials

two-color counters, connecting cubes

Unit 2: Multiplication and Division

Unit 2 Project: Skate Sale

Unit 2 Learning Mindset Focus: Perseverance / Learns Effectively

Module 5: Multiplication with Multiples of 10

Recommended Pacing with Assessments: 7 Days

Module 5 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students understood that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.</p> <p>Students used place value understanding and properties of operations to add and subtract.</p> <p>Students added up to four two-digit numbers using strategies based on place value and properties of operations.</p>	<p>Students multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.</p> <p>Students interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.</p> <p>Students use multiplication within 100 to solve word problems.</p> <p>Students use area models to represent the distributive property in mathematical reasoning.</p>	<p>Students will multiply a whole number of up to four digits by a one-digit whole number, and will multiply two two-digit numbers, using strategies based on place value and the properties of operations.</p> <p>Students interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.</p>

Module 5 Vocabulary

Associative Property of Multiplication	the property that states that when the grouping of the factors is changed, the product remains the same
Distributive Property	the property that states that multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products
multiple	a number that is the product of two counting numbers
place value	the value of each digit in a number, based on the location of the digit
regroup	to exchange amounts of equal value to rename a number

Lesson 5.1 Use the Distributive Property

Connect Concepts and Skills – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use the Distributive Property to find a product when one factor is a multiple of 10.

Learning Objective

Use the Distributive Property to break apart factors and find products in which one factor is a multiple of 10.

Language Objective

Explain how you can break apart a factor to help multiply when there is a factor that is a multiple of 10.

Vocabulary

Review: Distributive Property

Lesson Materials

Grid Paper (Teacher Resources Masters)

Lesson 5.2 Use the Associative Property of Multiplication

Connect Concepts and Skills – 1 Day Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.
- Use appropriate tools strategically.

I Can Objective

I can use the Associative Property to find a product when one factor is a multiple of 10.

Learning Objective

Use the Associative Property of Multiplication to break apart factors and find products in which one factor is a multiple of 10.

Language Objective

Explain how to use the Associative Property of Multiplication to break apart factors and find products when one factor is a multiple of 10.

Vocabulary

Review: Associative Property of Multiplication

Lesson 5.3 Use Place-Value Strategies to Multiply with Multiples of 10

Connect Concepts and Skills – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use place value to find a product when one factor is a multiple of 10.

Learning Objective

Use place value to break apart factors and find products in which one factor is a multiple of 10.

Language Objective

Describe how you can use place value to multiply when one factor is a multiple of 10.

Vocabulary

Review: place value, multiples

Lesson Materials

connecting cubes, Number Lines (Teacher Resource Masters), base-ten blocks

Lesson 5.4 Multiply Multiples of 10 by 1-Digit Numbers

Connect Concepts and Skills – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can use properties, place value, regrouping, and concrete and visual models to find a product when one factor is a multiple of 10.

Learning Objective

Use place value, regrouping, and visual and concrete models to find products of multiples of 10.

Language Objective

Describe strategies you can use to multiply with a multiple of 10.

Vocabulary

Review: regroup

Lesson Materials

base-ten blocks

Unit 2: Multiplication and Division

Unit 2 Project: Skate Sale

Unit 2 Learning Mindset Focus: Perseverance / Learns Effectively

Module 6: Understand Division

Recommended Pacing with Assessments: 9 Days

Module 6 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students determined whether a group of objects has an odd or even number of members.</p> <p>Students used addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns.</p>	<p>Students interpret whole-number quotients of whole numbers as the number of objects in each share or as the number of equal shares.</p> <p>Students use division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number.</p> <p>Students apply properties of operations as strategies to divide.</p>	<p>Students will divide to solve word problems involving multiplicative comparison.</p> <p>Students will find whole number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.</p>

Module 6 Vocabulary

array	a set of objects arranged in rows and columns
divide	to separate into equal groups; the opposite operation of multiplication
dividend	the number that is to be divided in a division problem
divisor	the number that divides the dividend
quotient	the number, not including the remainder, that results from dividing

Lesson 6.1 Represent Division

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.

I Can Objective

I can use the information in a division problem to find the number of groups or the number in each group.

Learning Objective

Represent and solve division problems.

Language Objective

Explain how information given in a problem helps you to represent and solve division problems.

Vocabulary

New: divide

Lesson Materials

square tiles, two-color counters, connecting cubes

Lesson 6.2 Separate Objects into Equal Groups

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can separate objects into equal groups to find the number of objects in each group.

Learning Objective

Use concrete or visual models to separate objects into equal groups.

Language Objective

Show ways to separate objects into equal groups using drawings. Describe the whole group and the equal groups.

Lesson Materials

square tiles, two-color counters, connecting cubes

Lesson 6.3 Find the Number of Equal Groups

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can separate a number of objects into equal groups of a given size to find the number of equal groups.

Learning Objective

Use concrete or visual models to find the number of equal groups.

Language Objective

Use concrete models to show ways to divide a group into equal groups and find the number of groups. Describe the whole group and the equal groups.

Lesson Materials

square tiles, two-color counters, connecting cubes

Lesson 6.4 Relate Subtraction and Division

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can show how subtraction and division are related. I can use repeated subtraction or a number line to solve a division problem.

Learning Objective

Use repeated subtraction and number lines to relate subtraction and division.

Language Objectives

- Use subtraction and number lines to describe how to divide.
- Use the terms dividend, divisor, and quotient to describe parts of the division equation.

Vocabulary

New: dividend, divisor, quotient

Lesson Materials

square tiles, two-color counters, connecting cubes, Number Lines (Teacher Resource Masters)

Lesson 6.5 Represent Division with Arrays

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Model with mathematics.
- Use appropriate tools strategically.

I Can Objective

I can make or draw an array to solve division problems to find the number of objects in each row or the number of rows.

Learning Objective

Use arrays to represent division.

Language Objective

Show and describe arrays using words for division.

Vocabulary

Review: array

Lesson Materials

two-color counters, square tiles, connecting cubes

Lesson 6.6 Represent Division with Bar Models

Build Understanding – 1 Day Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.

I Can Objective

I can use a bar model to represent and solve a division problem and to write a division equation.

Learning Objective

Use bar models to represent division.

Language Objective

Explain to a partner how you can use bar models to show the parts of a division problem.

Lesson Materials

connecting cubes, two-color counters, Number Lines (Teacher Resource Masters), square tiles

Lesson 6.7 Apply Division Rules for 1 and 0

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Look for and make use of structure.

I Can Objective

I can use properties and visual models to apply the rules for dividing with 1 and 0.

Learning Objective

Identify and apply rules for dividing with 1 and 0.

Language Objective

Explain and show how to use division rules for 1 and 0.

Lesson Materials

connecting cubes, two-color counters, square tiles

Unit 2: Multiplication and Division

Unit 2 Project: Skate Sale

Unit 2 Learning Mindset Focus: Perseverance / Learns Effectively

Module 7: Relate Multiplication and Division

Recommended Pacing with Assessments: 13 Days

Module 7 Mathematical Progressions

Prior Learning	Current Development	Future Connections
Students used addition and subtraction within 100 to solve word problems.	Students use multiplication and division within 100 to solve word problems.	Students will multiply a whole number of up to four digits by a 1-digit whole number, and will multiply two 2-digit numbers using place value strategies and properties.
Students counted by 5s, 10s, and 100s.	Students determine the unknown whole number in a multiplication or division equation.	Students will find quotients and remainders with up to 4-digit dividends and 1-digit divisors using properties and/or multiplication and division relationships.
Students fluently added and subtracted within 20 using mental strategies.	Students apply properties of operations as strategies to multiply and divide.	Students will multiply or divide to solve word problems involving multiplicative comparison.
Students used addition to find the total number of objects arranged in rectangular arrays.	Students understand division as an unknown factor problem.	
Students wrote an equation to express the total as a sum of equal addends.	Students fluently multiply and divide within 100.	

Module 7 Vocabulary

inverse operations	opposite operations, or operations that undo one another, such as addition and subtraction or multiplication and division
related facts	a set of related addition and subtraction, or multiplication and division, equations

Lesson 7.1 Relate Multiplication and Division

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Understand division as an unknown-factor problem.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can use related multiplication and division equations to solve problems.

Learning Objective

Relate multiplication and division as inverse operations using concrete and visual models.

Language Objective

Work in pairs and use visual models to explain how multiplication and division are related.

Vocabulary

New: inverse operations

Lesson Materials

square tiles, 1-Inch Grid Paper (Teacher Resource Masters), two-color counters

Lesson 7.2 Write Related Facts

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Look for and make use of structure.

I Can Objective

I can write related multiplication and division equations to solve problems.

Learning Objective

Write related multiplication and division facts.

Language Objective

Explain the relationship between multiplication and division.

Vocabulary

New: related facts

Lesson Materials

square tiles, two-color counters, connecting cubes

Lesson 7.3 Multiply and Divide with 2, 4, and 8

Apply and Practice – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can use more than one strategy to solve multiplication and division problems with 2, 4, and 8 as factors and divisors.

Learning Objective

Multiply and divide with 2, 4, and 8 as factors and divisors.

Language Objectives

- Write problems that involve equal groups of 2, 4, and 8.
- Explain different strategies that help you solve problems involving equal groups of 2, 4, and 8.

Lesson Materials

connecting cubes, square tiles, Number Lines (Teacher Resource Masters)

Lesson 7.4 Multiply and Divide with 5 and 10

Apply and Practice – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Look for and make use of structure.

I Can Objective

I can use more than one strategy to solve multiplication and division problems with 5 and 10 as factors and divisors.

Learning Objective

Multiply and divide with 5 and 10 as factors and divisors.

Language Objective

Explain different strategies for solving multiplication and division problems with equal groups of 5 and 10.

Lesson Materials

two-color counters, Number Lines (Teacher Resource Masters)

Lesson 7.5 Multiply and Divide with 3 and 6

Apply and Practice – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Look for and make use of structure.

I Can Objective

I can use more than one strategy to solve multiplication and division problems with 3 and 6 as factors and divisors.

Learning Objective

Multiply and divide with 3 and 6 as factors and divisors.

Language Objective

Explain to a partner how to multiply and divide using 3 and 6 as factors and divisors.

Lesson Materials

square tiles, Number Lines (Teacher Resource Masters)

Lesson 7.6 Multiply and Divide with 7 and 9

Apply and Practice – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

Apply properties of operations as strategies to multiply and divide.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can use more than one strategy to solve multiplication and division problems with 7 and 9 as factors and divisors.

Learning Objective

Multiply and divide with 7 and 9 as factors and divisors.

Language Objective

Write and solve problems using 7 and 9 as factors and divisors, and explain to a partner the strategies you used to solve the problems.

Lesson Materials

1-Inch Grid Paper (Teacher Resource Masters), square tiles

Lesson 7.7 Build Fluency with Multiplication and Division

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.

I Can Objective

I can use more than one strategy to recall multiplication and division facts to solve problems.

Learning Objective

Multiply and divide within 100 fluently.

Language Objective

Explain effective strategies for recalling multiplication and division facts.

Lesson Materials

connecting cubes, two-color counters, Number Lines (Teacher Resource Masters)

Unit 2: Multiplication and Division

Unit 2 Project: Skate Sale

Unit 2 Learning Mindset Focus: Perseverance / Learns Effectively

Module 8: Apply Multiplication and Division

Recommended Pacing with Assessments and Performance Task: 10 Days

Module 8 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students counted within 1000; count by 5s, 10s, and 100s.</p> <p>Students used addition and subtraction within 100 to solve problems.</p> <p>Students determined whether a group (up to 20) has an odd or even number of members.</p> <p>Students used addition to find the total number of objects in rectangular arrays.</p> <p>Students determined the unknown number in an addition or subtraction equation.</p>	<p>Students use multiplication and division within 100 to solve problems.</p> <p>Students determine the unknown whole number in a multiplication or division equation.</p> <p>Students understand division as an unknown factor problem.</p> <p>Students solve two-step problems using the four operations, and equations with a letter.</p> <p>Students identify arithmetic patterns.</p>	<p>Students will generate a number or shape pattern that follows a given rule; will identify apparent features of the pattern.</p> <p>Students will solve multistep problems posed with whole numbers and having whole-number answers using the four operations.</p> <p>Students will represent problems using equations with a letter standing for the unknown quantity.</p> <p>Students will multiply or divide to solve problems involving multiplicative comparison.</p>

Module 8 Vocabulary

growing pattern	a pattern in which the number changes by the same amount from one number to the next
rule	an instruction that tells you the correct way to do something

Lesson 8.1 Apply Multiplication and Division

Build Understanding – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

Mathematical Practices and Processes

- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can identify and extend patterns and use patterns to solve problems.

Learning Objective

Identify and extend arithmetic patterns to solve problems.

Language Objective

Explain how patterns can be used to help solve problems.

Vocabulary

New: growing pattern, rule

Lesson Materials

counters

Lesson 8.2 Find Unknown Factors and Numbers

Connect Concepts and Skills – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

Understand division as an unknown-factor problem.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.

I Can Objective

I can use multiplication and division equations with unknown numbers to solve problems.

Learning Objective

Determine the unknown number in a multiplication or division equation.

Language Objectives

- Explain how to solve multiplication problems with unknown numbers.
- Explain how to solve division problems with unknown numbers.

Lesson Materials

Square tiles, counters

Lesson 8.3 Use Multiplication and Division to Solve Problem Situations

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.

I Can Objective

I can represent and solve problems using multiplication and division and unknown numbers.

Learning Objective

Model and solve equations that represent multiplication and division situations.

Language Objective

Explain how to write and solve equations that represent multiplication and division situations.

Lesson 8.4 Solve Two-Step Problems

Apply and Practice – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.

I Can Objective

I can write equations using the four operations with an unknown to solve two-step problems.

Learning Objective

Develop strategies and use reasoning to represent and solve two-step word problems.

Language Objective

Write a list of strategies that you can use to solve two-step word problems.

Lesson 8.5 Practice with One- and Two-Step Problems

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Use appropriate tools strategically.

I Can Objective

I can write equations with unknowns using the four operations to solve one- and two-step word problems.

Learning Objective

Solve one- and two-step problems that involve all four operations and a letter to represent the unknown.

Language Objectives

- Write a problem that involves two operations.
- Explain how you are able to solve a problem using an unknown in an equation.

Unit 3: Addition and Subtraction Strategies and Applications

Unit 3 Project: Monumental Heights

Unit 3 Learning Mindset Focus: Resilience / Manages the Learning Process

Module 9: Addition and Subtraction Strategies

Recommended Pacing with Assessments: 8 Days

Module 9 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students fluently added and subtracted within 100; added up to four 2-digit numbers.</p> <p>Students used addition and subtraction within 100 to solve word problems.</p> <p>Students explained addition and subtraction using place value and properties.</p> <p>Students determined whether a group of objects (up to 20) is odd or even.</p>	<p>Students use place value to round whole numbers to the nearest 10 and 100.</p> <p>Students fluently add and subtract within 1,000 using strategies based on place value, properties, and/or the relationship between addition and subtraction.</p> <p>Students solve two-step word problems using the four operations; assess the reasonableness of answers.</p> <p>Students identify arithmetic patterns.</p>	<p>Students will generate a number or shape pattern that follows a given rule; will identify apparent features of the pattern that were not explicit in the rule itself.</p> <p>Students will determine if an equation is true using comparative relational thinking.</p> <p>Students will fluently add and subtract multidigit whole numbers using the standard algorithm.</p> <p>Students will use place value to round multi-digit whole numbers to any place.</p>

Module 9 Vocabulary

Commutative Property of Addition	the property that states that you can add two or more numbers in any order and get the same sum
Associative Property of Addition	the property states that you can group addends in different ways and still get the same sum
compatible numbers	numbers that are easy to compute with mentally
estimate	a number close to an exact amount
Identity Property of Addition	the property that states that the sum of any number and zero is that number
round	to replace a number with another number that tells about how many or how much

Lesson 9.1 Identify Number Patterns on the Addition Table

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.

I Can Objective

I can identify number patterns on an addition table. I can use the Identity and Commutative Properties of Addition to complete equations.

Learning Objective

Identify and explain number patterns on the addition table by applying the Commutative and Identity Properties of Addition and by describing sums as even or odd.

Language Objective

Use the Commutative and Identity Properties of Addition to explain number patterns on the addition table and describe sums as even or odd.

Vocabulary

New: Commutative Property of Addition, Identity Property of Addition

Lesson Materials

square tiles, connecting cubes, Addition Table (Teacher Resource Masters)

Lesson 9.2 Use Mental Math Strategies for Addition and Subtraction

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use mental math strategies to add and subtract with 2- and 3-digit numbers.

Learning Objective

Use mental math strategies to find sums and differences.

Language Objective

Explain how to use mental math strategies to find sums and differences.

Lesson Materials

Place-Value Chart (Teacher Resource Masters), Number Lines (Teacher Resource Masters)

Lesson 9.3 Use Properties to Add

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Look for and make use of structure.

I Can Objective

I can use the Commutative and Associative Properties of Addition to find the sum of more than two addends.

Learning Objective

Use the Commutative and Associative Properties of Addition to add more than two addends.

Language Objective

Explain how to use the Commutative and Associative Properties of Addition to find the sum of three addends.

Vocabulary

New: Associative Property of Addition

Review: Commutative Property of Addition

Lesson Materials

base-ten blocks (tens and ones), Number Lines (Teacher Resource Masters), Place-Value Chart (Teacher Resource Masters)

Lesson 9.4 Use Mental Math to Assess Reasonableness

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use mental math to determine the reasonableness of statements and answers.

Learning Objective

Use mental math strategies to assess reasonableness of sums and differences.

Language Objective

Explain how you can use mental math to decide if a sum or difference is reasonable.

Lesson Materials

base-ten blocks, Number Lines (Teacher Resource Masters)

Lesson 9.5 Round to the Nearest Ten or Hundred

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use place value understanding to round whole numbers to the nearest 10 or 100.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use and explain how to use place value to round whole numbers to the nearest ten or hundred.

Learning Objective

Round whole numbers to the nearest ten or hundred.

Language Objective

Explain how to round a number to the nearest ten and to the nearest hundred.

Vocabulary

New: round

Lesson Materials

Number Lines (Teacher Resource Masters),
Place-Value Charts (Teacher Resource Masters)

Lesson 9.6 Use Estimation with Sums and Differences

Connect Concepts and Skills – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Use place value understanding to round whole numbers to the nearest 10 or 100.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use rounding and compatible numbers to estimate sums and differences and solve problems.

Learning Objective

Use rounding and compatible numbers to estimate sums and differences.

Language Objectives

- Explain how to use rounding to estimate sums and differences.
- Explain how to use compatible numbers to estimate sums and differences.

Vocabulary

New: estimate, compatible numbers

Lesson Materials

Number Lines (Teacher Resource Masters),
Place-Value Charts (Teacher Resource Masters)

Unit 3: Addition and Subtraction Strategies and Applications

Unit 3 Project: Monumental Heights

Unit 3 Learning Mindset Focus: Resilience / Manages the Learning Process

Module 10: Addition and Subtraction within 1,000

Recommended Pacing with Assessments: 11 Days

Module 10 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students fluently added and subtracted within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p>Students used addition and subtraction within 100 to solve one- and two-step word problems, by using drawings and equations with a symbol for the unknown number to represent the problem.</p>	<p>Students fluently add and subtract within 1,000 using strategies and algorithms based on place value.</p> <p>Students solve two-step word problems using the four operations; represent problems using equations with a letter standing for the unknown quantity; assess the reasonableness of answers to problems using mental computation and estimation strategies.</p>	<p>Students will fluently add and subtract multi-digit numbers using the standard algorithm.</p> <p>Students will solve multistep problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted; will represent these problems using equations with a letter standing for the unknown quantity; will assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>

Module 10 Vocabulary

regroup	to exchange amounts of equal value to rename a number
expanded form	a way to write numbers by showing the value of each digit

Lesson 10.1 Use Expanded Form to Add

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can use expanded form and partial sums to add 2- and 3-digit numbers.

Learning Objective

Use expanded form and partial sums to add 2- and 3-digit numbers.

Language Objective

Explain how you can use expanded form and partial sums to add 2- and 3-digit numbers.

Vocabulary

New: expanded form

Lesson Materials

base-ten blocks; Place-Value Charts (to Hundreds) (Teacher Resource Masters)

Lesson 10.2 Use Place Value to Add

Connect Concepts and Skills – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practices and Processes

- Model with mathematics.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use place value and regrouping to add 2- and 3-digit numbers.

Learning Objective

Use place-value strategies to add 2- and 3-digit numbers.

Language Objective

Explain how you can use place-value strategies to add 2- and 3-digit numbers.

Vocabulary

Review: regroup

Lesson Materials

base-ten blocks

Lesson 10.3 Combine Place Value to Subtract

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can combine place values and use flexible grouping to subtract 2- and 3-digit numbers.

Learning Objective

Use flexible grouping to combine place values to subtract 2- and 3-digit numbers.

Language Objective

Explain how you can combine place values and use flexible grouping to subtract 2- and 3-digit numbers.

Lesson Materials

base-ten blocks

Lesson 10.4 Use Place Value to Subtract

Connect Concepts and Skills – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Model with mathematics.
- Look for and make use of structure.

I Can Objective

I can regroup first and then use place value to subtract 2- and 3-digit numbers.

Learning Objective

Use place-value strategies to subtract 2- and 3-digit numbers.

Language Objective

Explain how to solve subtraction problems by regrouping and using place value.

Vocabulary

Review: regroup

Lesson Materials

base-ten blocks

Lesson 10.5 Choose a Strategy to Add or Subtract

Apply and Practice – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Attend to precision.

I Can Objective

I can apply strategies I have learned to solve addition and subtraction problems.

Learning Objective

Choose a strategy to add or subtract to solve a problem.

Language Objective

Explain why you might choose one strategy over another to add or subtract to solve a problem.

Lesson Materials

base-ten blocks; Place-Value Charts (to Hundreds) (Teacher Resource Masters)

Lesson 10.6 Model and Solve Two-Step Problems

Apply and Practice – 2 Days

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.

I Can Objective

I can write equations with letters for unknown quantities to solve two-step problems.

Learning Objective

Model and solve two-step problems.

Language Objective

Explain how you can use an equation to model and solve two-step problems.

Unit 3: Addition and Subtraction Strategies and Applications

Unit 3 Project: Monumental Heights

Unit 3 Learning Mindset Focus: Resilience / Manages the Learning Process

Module 11: Understand Perimeter

Recommended Pacing with Assessments: 7 Days

Module 11 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students counted the same-size squares in the rows and columns of rectangles to find the totals.</p> <p>Students measured the length of an object by selecting and using appropriate tools.</p> <p>Students used addition and subtraction to solve word problems involving length and represented by equations with a symbol for the unknown number.</p>	<p>Students find the perimeter of polygons.</p> <p>Students find unknown side lengths of polygons.</p> <p>Students show rectangles with the same perimeter and different areas or with the same area and different perimeters.</p>	<p>Students will apply area and perimeter formulas for rectangles to solve real world and mathematical problems.</p>

Module 11 Vocabulary

area	the measure of the number of unit squares needed to cover a surface
perimeter	the distance around a figure

Lesson 11.1 Describe Perimeter

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Mathematical Practices and Processes

- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can count or use addition or multiplication to find the distance around a polygon.

Learning Objective

Explore and find perimeter of polygons using grid paper or dot paper.

Language Objective

Explain to a partner how you can find the distance around a polygon.

Vocabulary

Review: area

New: perimeter

Lesson Materials

1-inch square tiles, grid paper (Teacher Resource Masters)

Lesson 11.2 Find Perimeter

Connect Concepts and Skills – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can measure the lengths of the sides of polygons using inch or centimeter units to find the perimeter of a polygon. I can add side lengths to find the perimeter.

Learning Objective

Estimate and measure perimeter of polygons using inch and centimeter rulers.

Language Objective

Explain how to find the perimeter of a polygon using a ruler to measure in inches and centimeters.

Lesson Materials

1-inch square tiles, inch ruler, grid paper (Teacher Resource Masters), centimeter ruler

Lesson 11.3 Find Unknown Side Lengths

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Look for and make use of structure.
- Attend to precision.

I Can Objective

I can find the unknown side length of a polygon when I know the other side lengths and the perimeter of a polygon. I can add, subtract, multiply, and divide to find the unknown side length.

Learning Objective

Find the unknown side length of a polygon when the perimeter and one side length is known.

Language Objective

Explain how to find the unknown side length of a polygon when you know the perimeter and one side length.

Lesson Materials

grid paper (Teacher Resource Masters)

Lesson 11.4 Represent Rectangles with the Same Area and Different Perimeters

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use perimeter to compare rectangles with the same area.

Learning Objective

Understand that rectangles with the same area can have different perimeters.

Language Objective

Explain how the difference between the length and width of rectangles with the same area is related to the perimeters.

Lesson Materials

square tiles, 1-inch Grid Paper (Teacher Resource Masters)

Lesson 11.5 Represent Rectangles with the Same Perimeter and Different Area

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can use area to compare rectangles with the same perimeter.

Learning Objective

Understand that rectangles with the same perimeter can have different areas.

Language Objective

Explain how the difference between the length and width of rectangles with the same perimeter is related to the areas.

Lesson Materials

square tiles, 1-inch Grid Paper (Teacher Resource Masters)

Unit 3: Addition and Subtraction Strategies and Applications

Unit 3 Project: Monumental Heights

Unit 3 Learning Mindset Focus: Resilience / Manages the Learning Process

Module 12: Time Measurement and Intervals

Recommended Pacing with Assessments and Performance Task: 8 Days

Module 12 Mathematical Progressions

Prior Learning	Current Development	Future Connections
Students told and wrote time from analog and digital clocks to the nearest five minutes.	<p>Students tell and write time from analog and digital clocks to the nearest minute.</p> <p>Students measure time intervals in minutes.</p> <p>Students solve word problems involving addition and subtraction of time intervals in minutes.</p>	<p>Students will know relative sizes of measurement units within one measurement system.</p> <p>Students will express measurements in a larger unit in terms of a smaller unit within one measurement system.</p> <p>Students will use the four operations to solve problems involving intervals of time.</p>

Module 12 Vocabulary

a.m.	the time after midnight and before noon
elapsed time	the time that passes from the start of an activity to the end of that activity
midnight	12:00 at night
minute	a unit used to measure short amounts of time; in one minute, the minute hand on an analog clock moves from one mark to the next
noon	12:00 in the day
p.m.	the time after noon and before midnight

Lesson 12.1 Tell and Write Time to the Minute

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can tell and write time to the nearest minute.

Learning Objective

Read, write, and tell time on analog and digital clocks to the nearest minute.

Language Objective

Explain how to tell the time on an analog clock to the nearest minute.

Vocabulary

New: minute

Lesson Materials

Large Analog Clock (Teacher Resource Masters)

Lesson 12.2 Use a.m. and p.m. to Describe Time

Connect Concepts and Skills – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can use a.m. and p.m. to describe time.

Learning Objective

Decide when to use a.m. and p.m. when telling time to the nearest minute.

Language Objective

Explain how to decide when to use a.m. and p.m. when telling time to the nearest minute.

Vocabulary

New: a.m., p.m., midnight, noon

Lesson Materials

Large Analog Clock (Teacher Resource Masters),
Open Number Lines (Teacher Resource Masters)

Lesson 12.3 Measure Time Intervals

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can find elapsed time when I know the start time and the end time.

Learning Objective

Use an analog clock or a number line to measure time intervals in minutes.

Language Objective

Explain how to find how long an activity lasts when you know the start time and the end time.

Vocabulary

New: elapsed time

Lesson Materials

Large Analog Clock (Teacher Resource Masters),
Open Number Lines (Teacher Resource Masters)

Lesson 12.4 Find Start and End Times

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.

I Can Objective

I can find the start time or the end time when I know the elapsed time.

Learning Objective

Use a number line or an analog clock to add or subtract time intervals to find start times or end times.

Language Objective

Explain how to find a start time or an end time when you know the elapsed time.

Lesson 12.5 Solve Time Interval Problems

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.

I Can Objective

I can use a number line to find the end time or the start time when I know two amounts of elapsed time.

Learning Objective

Apply strategies to solve word problems involving addition and subtraction of time intervals.

Language Objective

Explain how to solve a word problem involving adding time intervals or subtracting time intervals.

Unit 4: Fractions

Unit 4 Project: Pixelated Portraits

Unit 4 Learning Mindset Focus: Strategic Help-Seeking / Identifies Sources of Help

Module 13: Understand Fractions as Numbers

Recommended Pacing with Assessments: 9 Days

Module 13 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students partitioned circles and rectangles into equal shares described as halves, thirds, and fourths.</p> <p>Students understood that equal shares of the same wholes may have different shapes.</p> <p>Students represented whole numbers as lengths from 0 on a number line.</p> <p>Students used a ruler to measure the length of an object to the nearest inch.</p>	<p>Students partition shapes into equal areas.</p> <p>Students understand a fraction $\frac{1}{b}$ when a whole is partitioned into b equal parts; represent a fraction $\frac{1}{b}$ on a number line; represent fraction $\frac{a}{b}$; understand equivalent fractions; express whole numbers as fractions; measure lengths in halves and fourths of an inch.</p>	<p>Students will recognize and generate equivalent fractions.</p> <p>Students will add and subtract fractions and mixed numbers with like denominators.</p> <p>Students will express measurements in a larger unit in terms of a smaller unit within one system of units.</p> <p>Students will make line plots to display data sets of measurements in fractions of a unit.</p>

Module 13 Vocabulary

denominator	the part of a fraction below the line, which tells how many equal parts there are in the whole or in the group
equal parts	parts that are exactly the same size
fraction	a number that names part of a whole or part of a group
numerator	the part of a fraction above the line, which tells how many parts are being counted

Lesson 13.1 Describe Equal Parts of a Whole

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.

I Can Objective

I can identify, draw, and name equal parts of a whole that is divided in different ways.

Learning Objective

Use visual models of whole shapes partitioned into equal-sized parts to identify and represent halves, thirds, fourths, sixths, and eighths.

Language Objective

Explain how visual models can be used to show equal parts of a whole.

Vocabulary

New: eighths, equal parts, fourths, halves, sixths, thirds, whole

Lesson Materials

grid paper (Teacher Resource Masters), sheets of color paper, scissors

Lesson 13.2 Represent and Name Unit Fractions

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.

I Can Objective

I can represent and identify one equal part of a whole or group as a unit fraction.

Learning Objective

Represent and identify one equal part of a whole as a unit fraction, and use fraction notation to name unit fractions that correspond to a part of a whole or a single item in a group of items.

Language Objective

Show and describe how to use fractions to name unit fractions as a part of a whole or a single item in a group of items.

Vocabulary

New: fraction, unit fraction

Lesson Materials

grid paper (Teacher Resource Masters), square tiles, scissors, color paper

Lesson 13.3 Represent and Name Fractions of a Whole

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use a fraction to name an equal part of a whole or an equal part of a group.

Learning Objective

Use visual models to represent and identify fractional parts of a whole or group that are composed of one or more unit fractions.

Language Objective

Show and describe how fractions name parts of a whole or group.

Vocabulary

New: denominator, numerator

Lesson Materials

fraction circles

Lesson 13.4 Represent and Name Fractions on a Number Line

Build Understanding – 1 Day

Professional Learning Video

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.

Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can identify, describe, represent, and locate fractions on a number line.

Learning Objective

Identify, describe, and represent fractions on a number line, and relate fractions on a number line to parts of a whole and group fraction models.

Language Objective

Describe how to use a number line to identify and locate fractions.

Lesson Materials

fraction strips, number lines, color sheets of paper

Lesson 13.5 Express Whole Numbers as Fractions

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.

I Can Objective

I can draw visual models to show how to write fractions that name whole numbers.

Learning Objective

Relate fractions and whole numbers by expressing whole numbers as fractions and recognizing fractions that are equivalent to whole numbers.

Language Objective

Explain how fractions and whole numbers can be equivalent.

Lesson Materials

fraction circles, fraction strips

Lesson 13.6 Represent and Name Fractions Greater than 1

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can identify fractions greater than 1 on a number line and write them in fraction form and as mixed numbers.

Learning Objective

Identify, name, and represent fractions greater than 1 and write a fraction greater than 1 as a mixed number.

Language Objectives

- Explain how to use and represent fractions greater than 1.
- Write fractions greater than 1 as mixed numbers.

Vocabulary

New: fraction greater than 1, mixed number

Lesson Materials

fraction circles

Lesson 13.7 Use Fractions to Measure Lengths

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can measure lengths to the nearest half or fourth of an inch using a ruler.

Learning Objective

Measure lengths using a ruler that is marked off in fractional units to the nearest half or fourth of an inch.

Language Objective

Show and describe how to accurately measure lengths to the nearest half or fourth inch on a ruler.

Lesson Materials

inch ruler

Unit 4: Fractions

Unit 4 Project: Pixelated Portraits

Unit 4 Learning Mindset Focus: Strategic Help-Seeking / Identifies Sources of Help

Module 14: Relate Shapes, Fractions, and Area

Recommended Pacing with Assessments: 5 Days

Module 14 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students counted to find the number of same-sized squares in a rectangle divided into rows and columns.</p> <p>Students partitioned rectangles into two, three, or four equal shares and described the shares using the words halves, thirds, half of, a third of, etc.</p>	<p>Students partition shapes into parts with equal areas.</p> <p>Students write unit fractions to describe the area of each equal part of a whole.</p>	<p>Students will decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation.</p> <p>Students will justify decompositions, e.g., by using a visual fraction model.</p>

Module 14 Vocabulary

area	the measure of the number of unit squares needed to cover a surface
square unit	a unit used to measure area, such as square foot , square meter , and so on
unit square	a square with a side length of 1 unit, used to measure area

Lesson 14.1 Relate Fractions and Area

Build Understanding – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Partition shapes into parts with equal areas.
Express the area of each part as a unit fraction of the whole.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can use a fraction to show that equal parts of a whole shape have the same area.

Learning Objective

Explore and identify equal areas of whole shapes.

Language Objective

Work in groups to explain ways to identify equal areas of whole shapes.

Lesson Materials

1-Centimeter Grid Paper (Teacher Resource Masters), scissors

Lesson 14.2 Partition Shapes into Equal Area

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Partition shapes into parts with equal areas.
Express the area of each part as a unit fraction of the whole.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can divide shapes into parts with equal areas and write each equal part as a fraction.

Learning Objective

Partition shapes into parts with equal areas.

Language Objective

Work with a partner to draw and explain how to divide shapes into parts with equal areas.

Lesson Materials

1-Centimeter Grid Paper (Teacher Resource Masters), scissors

Lesson 14.3 Use Unit Fractions to Describe Area

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Partition shapes into parts with equal areas.
Express the area of each part as a unit fraction of the whole.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Reason abstractly and quantitatively.
- Look for and make use of structure.
- Look for repeated reasoning or express repeated reasoning.

I Can Objective

I can write a unit fraction to represent the area of each equal part of a whole shape.

Learning Objective

Identify the unit fraction that names the area of each part of a shape partitioned into equal areas.

Language Objective

How can you find and describe the unit fraction shown in a shape?

Lesson Materials

rulers, 1-Centimeter Grid Paper (Teacher Resource Masters), pattern blocks, tracing paper, scissors

Unit 4: Fractions

Unit 4 Project: Pixelated Portraits

Unit 4 Learning Mindset Focus: Strategic Help-Seeking / Identifies Sources of Help

Module 15: Compare Fractions

Recommended Pacing with Assessments: 6 Days

Module 15 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students compared two 3-digit numbers based on place value.</p> <p>Students used $>$, $<$, and $=$ to record comparisons.</p>	<p>Students compare two fractions by reasoning about their size.</p> <p>Students compare two fractions with the same numerator or the same denominator.</p>	<p>Students will compare two fractions with different numerators or denominators by creating common numerators or denominators or using a benchmark fraction.</p> <p>Students will use $>$, $<$, and $=$ to compare.</p>

Module 15 Vocabulary

equal to (=)	having the same value
greater than (>)	a symbol used to compare two numbers when the greater number is given first
less than (<)	a symbol used to compare two numbers when the lesser number is given first

Lesson 15.1 Compare Fractions Using Concrete and Visual Models

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

Mathematical Practices and Processes

- Use appropriate tools strategically.

I Can Objective

I can use concrete and visual models to compare fractions.

Learning Objective

Use concrete and visual models to compare two fractions.

Language Objective

Draw and describe visual and concrete models of fractions, and explain how they help with comparing two fractions.

Vocabulary

Review: equal to ($=$), greater than ($>$), less than ($<$)

Lesson Materials

Fraction Strips, Fraction Circles, 1-Centimeter Grid Paper (Teacher Resource Masters)

Lesson 15.2 Compare Fractions with the Same Denominator

Connect Concepts and Skills – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Attend to precision.

I Can Objective

I can compare fractions that are divided into an equal number of same-sized parts.

Learning Objective

Use concrete or visual models and reasoning strategies to compare two fractions with the same denominator.

Language Objective

Work in groups and explain to each other how visual models and reasoning can help you to compare fractions with the same denominator.

Lesson Materials

Fraction Strips, Fraction Circles, Fraction Number Lines (Teacher Resource Masters)

Lesson 15.3 Compare Fractions with the Same Numerator

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Attend to precision.

I Can Objective

I can compare fractions that count the same number of equal parts when the whole is divided into a different number of equal parts.

Learning Objective

Use concrete or visual models and reasoning strategies to compare two fractions with the same numerator.

Language Objective

Describe ways to compare fractions with the same numerator.

Lesson Materials

Fraction Strips, Fraction Circles, Fraction Number Lines (Teacher Resource Masters)

Lesson 15.4 Use Reasoning Strategies to Compare Fractions

Connect Concepts and Skills – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Attend to precision.

I Can Objective

I can use different reasoning strategies to compare fractions.

Learning Objective

Use strategies to compare two fractions by reasoning with same-sized pieces or the same number of pieces.

Language Objective

List strategies that you can use to compare fractions.

Lesson Materials

Fraction Strips, Fraction Circles (Teacher Resource Masters)

Unit 4: Fractions

Unit 4 Project: Pixelated Portraits

Unit 4 Learning Mindset Focus: Strategic Help-Seeking / Identifies Sources of Help

Module 16: Understand Equivalent Fractions

Recommended Pacing with Assessments and Performance Task: 6 Days

Module 16 Mathematical Progressions

Prior Learning	Current Development	Future Connections
Students partitioned circles and rectangles into equal shares described as halves, thirds, and fourths.	<p>Students understand that two fractions are equivalent if they are the same size or the same point on a number line.</p> <p>Students using a model, recognize and generate equivalent fractions with denominators of 2, 3, 4, 6, and 8.</p>	Students will use multiplication of the numerator and denominator to recognize and generate equivalent fractions.

Module 16 Vocabulary

equivalent fractions two or more fractions that name the same amount

Lesson 16.1 Represent Equivalent Fractions with Smaller Parts

Connect Concepts and Skills – 1 Day

Professional Learning Video

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can represent a fraction with equal parts that are smaller in size than the equal parts of an equivalent fraction.

Learning Objective

Use concrete and visual models to recognize and generate equivalent fractions in which the same whole is divided into a greater number of smaller equal parts.

Language Objective

Explain to a partner how you can represent equivalent fractions with the same whole divided into a greater number of smaller equal parts.

Vocabulary

New: equivalent fractions

Lesson Materials

sheets of paper; fraction strips

Lesson 16.2 Represent Equivalent Fractions with Larger Parts

Connect Concepts and Skills – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can represent a fraction with equal parts that are larger in size than the equal parts of an equivalent fraction.

Learning Objective

Use concrete and visual models to recognize and generate equivalent fractions in which the same whole is divided into a smaller number of larger equal parts.

Language Objective

Explain how you can show a fraction that is equivalent to another fraction using equal parts that are greater in size.

Lesson Materials

fraction strips

Lesson 16.3 Recognize and Generate Equivalent Fractions

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Look for and make use of structure.

I Can Objective

I can represent a fraction with equal parts that are smaller or larger in size than the equal parts of an equivalent fraction.

Learning Objective

Recognize and generate equivalent fractions using visual models in which the same whole is divided into a smaller number of larger equal parts or a greater number of smaller equal parts.

Language Objective

Describe how you can find a fraction that is equivalent to another fraction using equal parts that are smaller or greater in size.

Lesson Materials

fraction strips

Unit 5: Measurement and Data

Unit 5 Project: Playground Picks

Unit 5 Learning Mindset Focus: Resilience / Responds to Feedback

Module 17: Liquid Volume and Mass

Recommended Pacing with Assessments: 6 Days

Module 17 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students measured and estimated length using inches, feet, centimeters, and meters.</p> <p>Students used addition and subtraction to solve word problems involving lengths given in the same units.</p>	<p>Students measure and estimate liquid volume using liters.</p> <p>Students measure and estimate mass using grams and kilograms.</p> <p>Students use the four operations to solve one-step word problems involving liquid volumes or masses given in the same units.</p>	<p>Students will know relative sizes of units within one system of measurement.</p> <p>Students within one system of measurement, will express measurements in larger unit in terms of a smaller unit.</p> <p>Students will use the four operations to solve word problems involving distances, intervals of time, and money.</p>

Module 17 Vocabulary

gram (g)	a metric unit for measuring mass
kilogram (kg)	a metric unit used to measure mass
liquid volume	the amount of liquid in a container
liter (L)	a metric unit used to measure capacity and liquid volume
mass	the amount of matter in an object

Lesson 17.1 Estimate and Measure Liquid Volume

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can use metric units to estimate and measure liquid volume.

Learning Objective

Use reasoning and benchmarks to estimate, and use tools to measure liquid volume in liters.

Language Objective

Explain how benchmarks can be used to estimate liquid volume and show how tools can help.

Vocabulary

New: liquid volume, liter (L)

Lesson Materials

various-sized containers, 1-liter measuring cup, water

Lesson 17.2 Estimate and Measure Mass

Connect Concepts and Skills – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Measure and estimate liquid volume and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can use metric units to estimate and measure the mass of objects.

Learning Objective

Use reasoning to estimate, and use tools to measure mass in grams and kilograms.

Language Objective

Explain how to estimate and measure the mass of an object in grams or kilograms.

Vocabulary

New: gram (g), kilogram (kg), mass

Lesson Materials

pan balance, various classroom objects, paper clip (1 gram), book (1 kilogram), gram masses, kilogram masses

Lesson 17.3 Solve Problems About Liquid Volume and Mass

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use Tools.
- Attend to precision.

I Can Objective

I can solve word problems that involve liquid volume and mass.

Learning Objective

Use representations and the four operations to solve one-step word problems involving liquid volume and mass.

Language Objective

Describe how to solve a problem about liquid volume and about mass.

Lesson Materials

pan balance with gram and kilogram masses

Unit 5: Measurement and Data

Unit 5 Project: Playground Picks

Unit 5 Learning Mindset Focus: Resilience / Responds to Feedback

Module 18: Represent and Interpret Data

Recommended Pacing with Assessments and Performance Task: 10 Days

Module 18 Mathematical Progressions

Prior Learning	Current Development	Future Connections
Students drew picture graphs with a single-unit scale.	Students draw scaled picture graphs.	Students will display a data set of measurements in fractions of a unit.
Students drew bar graphs with a single-unit scale.	Students draw scaled bar graphs.	Students will use line plots to solve problems involving addition and subtraction of fractions.
Students used bar graphs to solve one-step word problems.	Students use picture and bar graphs to solve one- and two-step comparison problems.	
Students generated data and measured lengths in whole units and displayed in line plots.	Students generate data by measuring lengths in fractions of an inch and display in line plots.	
	Students fluently add and subtract within 1,000.	

Module 18 Vocabulary

bar graph	a graph that uses bars to show data
horizontal bar graph	a bar graph in which the bars go from left to right
key	the part of a map or graph that explains the symbols
line plot	a graph that records each piece of data on a number line
picture graph	a graph that uses pictures to show and compare information
scale	the numbers placed at fixed distances on a graph to help label the graph
vertical bar graph	a bar graph in which the bars go up from the bottom to the top

Lesson 18.1 Use Picture Graphs

Build Understanding – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Attend to precision.

I Can Objective

I can use data in a picture graph to solve how many more and how many less problems.

Learning Objective

Use information in a picture graph to solve one-step comparison problems.

Language Objective

Show how to use a picture graph to solve a problem about how many more or how many less.

Vocabulary

New: key, picture graph

Lesson 18.2 Make Picture Graphs

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can draw a scaled picture graph to solve how many more and how many less problems.

Learning Objective

Represent data in picture graphs and use the information to solve one-step comparison problems.

Language Objective

Explain to a partner how to represent data in a picture graph.

Lesson Materials

two-color counters

Lesson 18.3 Use Bar Graphs

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Model with mathematics.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can use data in a scaled bar graph to solve how many more and how many less problems.

Learning Objective

Use information in a bar graph to solve one-step comparison problems.

Language Objective

Explain how a bar graph can be used to help solve how many more and how many less problems.

Vocabulary

New: bar graph, horizontal bar graph, scale, vertical bar graph

Lesson 18.4 Make Bar Graphs

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can draw a scaled bar graph to solve how many more and how many less problems.

Learning Objective

Represent data in scaled bar graphs and use the information to solve one-step comparison problems.

Language Objective

Show and describe how to make a bar graph with a scale that is greater than 1.

Lesson Materials

connecting cubes, base-ten blocks, square tiles

Lesson 18.5 Use Line Plots to Display Measurement Data

Connect Concepts and Skills – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Use appropriate tools strategically.
- Attend to precision.

I Can Objective

I can use a line plot to display measurement data.

Learning Objective

Read and interpret line plots involving data with fractional units of length.

Language Objective

Explain how you can use a line plot to solve problems with measurement data given in halves, fourths, and whole inches.

Vocabulary

New: line plot

Lesson Materials

rulers marked in quarter inches

Lesson 18.6 Make Line Plots to Display Measurement Data

Connect Concepts and Skills – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Mathematical Practices and Processes

- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can measure lengths to the nearest quarter inch and make a line plot to display the data.

Learning Objective

Plot fractional data of standard units of length on a line plot.

Language Objective

Show and describe how to make a line plot using measurement data given in halves, fourths, and whole inches.

Lesson Materials

rulers marked in quarter inches

Lesson 18.7 Solve One- and Two-Step Problems Using Data

Apply and Practice – 1 Day

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Attend to precision.
- Use appropriate tools strategically.

I Can Objective

I can use data in picture graphs, bar graphs, and line plots to solve one- and two-step how many more and how many less problems.

Learning Objective

Represent data in picture graphs, bar graphs, and line plots and use the information to solve one- and two-step comparison problems.

Language Objective

Show and describe how to use a picture graph, a bar graph, and a line plot to show data. Explain how a graph or line plot helps you solve one- and two-step problems.

Unit 6: Geometry

Unit 6 Project: Gems and Jewelry

Unit 6 Learning Mindset Focus: Perseverance / Collects and Tries Multiple Strategies

Module 19: Define Two-Dimensional Shapes

Recommended Pacing with Assessments: 6 Days

Module 19 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students recognized and drew shapes having specified attributes, such as a given number of angles.</p> <p>Students identified triangles, quadrilaterals, pentagons, and hexagons.</p>	<p>Students understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category.</p> <p>Students recognize rhombuses, rectangles, and squares as examples of quadrilaterals.</p>	<p>Students will classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size.</p> <p>Students will identify right triangles.</p>

Module 19 Vocabulary

quadrilateral	a polygon with four sides and four angles
rectangle	a quadrilateral with two pairs of parallel sides, two pairs of sides of equal length, and four right angles
square	a quadrilateral with two pairs of parallel sides, four sides of equal length, and four right angles
angle	a shape formed by two rays that share an endpoint
parallel lines	lines in the same plane that never cross and are always the same distance apart
parallelogram	a quadrilateral whose opposite sides are parallel and of equal length
polygon	a closed plane shape with straight sides that are line segments
rhombus	a quadrilateral with two pairs of parallel sides and four sides of equal length
right angle	an angle that forms a square corner
trapezoid (exclusive)	a quadrilateral with exactly one pair of parallel sides
trapezoid (inclusive)	a quadrilateral with at least one pair of parallel sides
vertex	the point at which two rays of an angle or two (or more) line segments meet in a plane shape

Lesson 19.1 Describe Shapes

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.

I Can Objective

I can describe shapes as open or closed, as polygons, and by the number of sides and the number of angles.

Learning Objective

Describe open and closed shapes in terms of their sides, angles, and other attributes.

Language Objective

Explain how you can use sides, angles, and other attributes to describe open and closed shapes.

Vocabulary

New: angle, closed shape, line segment, open shape, plane shape, polygon, side, vertex

Lesson Materials

rulers, pattern blocks, Dot Paper (Square) (Teacher Resource Masters)

Lesson 19.2 Describe Angles in Shapes

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Use appropriate tools strategically.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

I Can Objective

I can identify angles that are right angles, greater than a right angle, or less than a right angle in shapes.

Learning Objective

Describe the angles of polygons and define and identify right angles.

Language Objectives

- Compare the shape of a right angle to a square corner.
- Describe each angle of a shape by comparing it to a right angle.

Vocabulary

New: right angle

Lesson Materials

Dot Paper (Square) (Teacher Resource Masters), Geoboards and bands, rulers, color sheets of paper

Lesson 19.3 Describe Sides of Shapes

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can identify whether the sides of a shape are equal or not equal in length. I can identify parallel sides of a shape.

Learning Objective

Describe and compare the sides of polygons as equal in length and as parallel.

Language Objectives

- Describe the sides of a shape as equal or not equal in length.
- Identify parallel sides of a shape.

Vocabulary

New: parallel lines

Lesson Materials

Dot Paper (square) (Teacher Resource Masters), rulers, Geoboards

Lesson 19.4 Define Quadrilaterals

Build Understanding – 1 Day

Professional Learning Video

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Look for and make use of structure.

I Can Objective

I can use the number of sides, the number of angles, the number of sides of equal length, and the number of right angles to describe and identify quadrilaterals.

Learning Objective

Identify attributes of quadrilaterals and use the attributes to name those quadrilaterals.

Language Objective

Explain how you can use attributes of quadrilaterals to name those quadrilaterals.

Vocabulary

Review: quadrilateral, rectangle, square
New: parallelogram, rhombus, trapezoid

Lesson Materials

Dot Paper (Square) (Teacher Resource Masters), rulers

Unit 6: Geometry

Unit 6 Project: Gems and Jewelry

Unit 6 Learning Mindset Focus: Perseverance / Collects and Tries Multiple Strategies

Module 20: Categorize Two-Dimensional Shapes

Recommended Pacing with Assessments and Performance Task: 6 Days

Module 20 Mathematical Progressions

Prior Learning	Current Development	Future Connections
<p>Students recognized and drew shapes having specified attributes, such as a given number of angles.</p> <p>Students identified triangles, quadrilaterals, pentagons, and hexagons.</p>	<p>Students understand that shapes in different categories may share attributes.</p> <p>Students understand that the shared attributes of shapes can define a larger category.</p> <p>Students recognize rhombuses, rectangles, and squares as types of quadrilaterals.</p> <p>Students draw examples of quadrilaterals that do not belong to any of these subcategories.</p>	<p>Students will draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines and will identify these in two-dimensional figures.</p> <p>Students will classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or based on having angles of a specified size.</p> <p>Students will identify right triangles.</p>

Module 20 Vocabulary

parallelogram	a quadrilateral whose opposite sides are parallel and of equal length
plane shape	a shape on a flat surface that is formed by curves, line segments, or both
rhombus	a quadrilateral with two pairs of parallel sides and four sides of equal length
trapezoid (exclusive)	a quadrilateral with exactly one pair of parallel sides
trapezoid (inclusive)	a quadrilateral with at least one pair of parallel sides

Lesson 20.1 Draw Quadrilaterals

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of the subcategories.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Attend to precision.

I Can Objective

I can draw a quadrilateral given descriptions of the sides and angles in the shape. I can group quadrilaterals using the side lengths or number of right angles.

Learning Objective

Identify and draw quadrilaterals that may or may not belong to the same subcategory, such as square, rectangle, or rhombus.

Language Objectives

- Describe the attributes of the sides and angles of a square, of a rectangle, and of a rhombus.
- Group quadrilaterals into subcategories and explain the reasoning.

Lesson Materials

Dot Paper (square) (Teacher Resource Masters), geoboard and bands, straightedge

Lesson 20.2 Categorize Quadrilaterals

Build Understanding – 1 Day

Conceptual
Build Understanding

Conceptual and Procedural
Connect Concepts and Skills

Procedural
Apply and Practice

Mathematics Standards

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Mathematical Practices and Processes

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.

I Can Objective

I can identify whether a shape belongs in a group by the number of sides, number of angles, sides that are equal in length, parallel sides, and by some shape names and attributes.

Learning Objective

Categorize quadrilaterals with respect to the number of parallel sides, sides of equal length, and right angles they have.

Language Objective

Explain how to categorize quadrilaterals.

Lesson Materials

Dot Paper (square) (Teacher Resource Masters), geoboard and bands, straightedge

Lesson 20.3 Categorize Plane Shapes

Build Understanding – 1 Day

Professional Learning Video

Conceptual Build Understanding	Conceptual and Procedural Connect Concepts and Skills	Procedural Apply and Practice
--	---	---

Mathematics Standards

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Mathematical Practices and Processes

- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.

I Can Objective

I can identify whether a plane shape belongs in a category by the number of parallel sides, sides of equal length, and right angles.

Learning Objective

Categorize plane shapes with respect to the number of parallel sides, sides of equal length, and right angles.

Language Objectives

- Use information about the number of parallel sides, sides of equal length, and right angles to explain whether a plane shape belongs in a specific category.
- Use information about the number of parallel sides, sides of equal length, and right angles to describe the relationships between categories of plane shapes.

Lesson Materials

Venn Diagram (Teacher Resource Masters) Tally Table (Teacher Resource Masters)