

	<i>CCD Foundational Skills</i>
COMMON CORE MATHEMATICS	2016
Lesson Schedule & Plans <i>Common Core Basics</i> <i>Common Core Achieve</i>	

JANUARY	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 01.04 - 01.08</i>		
<i>Week of 01.11 - 01.15</i>		
<i>Week of 01.18 - 01.22</i>		
<i>Week of 01.25 - 01.29</i>		

FEBRUARY	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 02.01 - 02.05</i>		
<i>Week of 02.08 - 02.12</i>		
<i>Week of 02.15 - 02.19</i>		
<i>Week of 02.22 - 02.26</i>		
<i>Week of 02.29 - 03.04</i>		

MARCH	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 03.07 - 03.11</i>		
<i>Week of 03.14 - 03.18</i>		
<i>Week of 03.21 - 03.25</i>		
<i>Week of 03.28 - 04.01</i>		

A P R I L	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 04.04 - 04.08</i>		
<i>Week of 04.11 - 04.15</i>		
<i>Week of 04.18 - 04.22</i>		
<i>Week of 04.25 - 04.29</i>		

M A Y	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 05.02 - 05.06</i>		
<i>Week of 05.09 - 05.13</i>		
<i>Week of 05.16 - 05.20</i>		
<i>Week of 05.23 - 05.27</i>		
<i>Week of 05.30 - 06.03</i>		

J U N E	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 06.06 - 06.10</i>		
<i>Week of 06.13 - 06.17</i>		
<i>Week of 06.20 - 06.24</i>		
<i>Week of 06.27 - 07.01</i>		

J U L Y	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 07.04 - 07.08</i>		
<i>Week of 07.11 - 07.15</i>		
<i>Week of 07.18 - 07.22</i>		
<i>Week of 07.25 - 07.29</i>		

A U G U S T	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 08.01 - 08.05</i>		
<i>Week of 08.08 - 08.12</i>		
<i>Week of 08.15 - 08.19</i>		
<i>Week of 08.22 - 08.26</i>		
<i>Week of 08.29 - 09.02</i>		

S E P T E M B E R	<i>*Writing Emphasis - Apostrophes</i>	
	<i>Day One</i>	<i>Day Two</i>
<i>Week of 09.05 - 09.09</i>		
<i>Week of 09.12 - 09.16</i>		
<i>Week of 09.19 - 09.23</i>		
<i>Week of 09.26 - 09.30</i>		

OCTOBER	*Writing Emphasis - Apostrophes	
	Day One	Day Two
Week of 10.03 - 10.07		
Week of 10.10 - 10.14		
Week of 10.17 - 10.21		
Week of 10.24 - 10.28		
Week of 10.31 - 11.04		

NOVEMBER	*Writing Emphasis - Apostrophes	
	Day One	Day Two
Week of 11.07 - 11.11		
Week of 11.14 - 11.18		
Week of 11.21 - 11.25		
Week of 11.28 - 12.02		

DECEMBER	*Writing Emphasis - Apostrophes	
	Day One	Day Two
Week of 12.05 - 12.09		
Week of 12.012 - 12.16		
Week of 12.19 - 12.23		
Week of 12.26 - 12.30		

COMMON CORE BASICS

UNIT 1 NUMBER SENSE AND OPERATIONS

<i>Chapter 1 Whole Numbers</i>	1.1 PLACE VALUE 1.2 ADD AND SUBTRACT WHOLE NUMBERS 1.3 MULTIPLY AND DIVIDE WHOLE NUMBERS 1.4 FACTORING 1.5 ROUNDING AND ESTIMATION 1.6 ARITHMETIC EXPRESSIONS 1.7 PROBLEM SOLVING CHAPTER 1 REVIEW AND CHECK YOUR UNDERSTANDING
<i>Chapter 2 Decimals</i>	2.1: INTRODUCTION TO DECIMALS 2.2: ADD AND SUBTRACT DECIMALS 2.3: MULTIPLY DECIMALS 2.4: DIVIDE WITH DECIMALS CHAPTER 2: REVIEW AND CHECK YOUR UNDERSTANDING KHANACADEMY.ORG
<i>Chapter 3 Fractions</i>	3.1: INTRODUCTION TO FRACTIONS 3.2: ADD AND SUBTRACT FRACTIONS 3.3: MULTIPLY AND DIVIDE FRACTIONS 3.4: MIXED NUMBERS CHAPTER 3: REVIEW AND CHECK YOUR UNDERSTANDING KHANACADEMY.ORG

UNIT 2 BASIC ALGEBRA

<i>Chapter 4 Integers</i>	4.1: INTRODUCTION TO INTEGERS AND ABSOLUTE VALUE 4.2: ADD INTEGERS 4.3: SUBTRACT INTEGERS 4.4: MULTIPLY AND DIVIDE INTEGERS 4.5: THE COORDINATE GRID CHAPTER 4: REVIEW AND CHECK YOUR UNDERSTANDING KHANACADEMY.ORG
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Chapter 5 Expressions and Equations	5.1: EXPRESSIONS 5.2: SOLVE ONE-STEP EQUATIONS 5.3: SOLVE TWO-STEP EQUATIONS 5.4: SOLVE ONE- AND TWO-STEP EQUATIONS 5.5: IDENTIFY PATTERNS CHAPTER 5: REVIEW AND CHECK YOUR UNDERSTANDING KHANACADEMY.ORG
Chapter 6 Linear Equations and Functions	6.1: LINEAR EQUATIONS 6.2: GRAPHING LINEAR EQUATIONS 6.2: GRAPHING LINEAR EQUATIONS 6.3: PAIRS OF LINEAR EQUATIONS 6.4: SCATTER PLOTS 6.5: FUNCTIONS
UNIT 3 MORE NUMBER SENSE AND OPERATIONS	
Chapter 7 Ratios, Proportions, and Percents	7.1: RATIOS AND RATES 7.2: UNIT RATES AND PROPORTIONAL RELATIONSHIPS 7.3: SOLVE PROPORTIONS 7.4: INTRODUCTION TO PERCENTS 7.5: SOLVE PERCENT PROBLEMS 7.6: USE PERCENTS IN THE REAL WORLD CHAPTER 7: REVIEW AND CHECK YOUR UNDERSTANDING
Chapter 8 Exponents and Roots	8.1: EXPONENTS 8.2: ROOTS 8.3: SCIENTIFIC NOTATION CHAPTER 8: REVIEW AND CHECK YOUR UNDERSTANDING
UNIT 4 DATA ANALYSIS AND PROBABILITY	
Chapter 10 Probability	9.1: MEASURES OF CENTRAL TENDENCY AND RANGE 9.2: GRAPHS AND LINE PLOTS 9.3: PLOTS AND MISLEADING LINE GRAPHS CHAPTER 9: REVIEW AND CHECK YOUR UNDERSTANDING

<i>Chapter 10 Probability</i>	<u>10.1: COUNTING METHODS</u> <u>10.2: INTRODUCTION TO PROBABILITY</u> <u>10.3: COMPOUND EVENTS</u> CHAPTER 10: REVIEW AND CHECK YOUR UNDERSTANDING
UNIT 5 MEASUREMENT AND GEOMETRY	
<i>Chapter 11 Measurement</i>	<u>11.1: CUSTOMARY UNITS</u> <u>11.2: METRIC UNITS</u> CHAPTER 11: REVIEW AND CHECK YOUR UNDERSTANDING
<i>Chapter 12 Geometry</i>	<u>12.1: GEOMETRIC FIGURES</u> <u>12.2: PERIMETER AND CIRCUMFERENCE</u> <u>12.3: SCALE DRAWINGS AND MEASUREMENT</u> SIMILAR TRIANGLES <u>12.3: SCALE DRAWINGS AND MEASUREMENT</u> <u>12.4: AREA</u> <u>12.5: PYTHAGOREAN THEOREM</u> <u>12.6: GEOMETRIC SOLIDS AND VOLUME</u> <u>12.7: VOLUME OF CONES, CYLINDERS, AND SPHERES</u> CHAPTER 12: REVIEW AND CHECK YOUR UNDERSTANDING
	PRE-TEST POST-TEST

COMMON CORE ACHIEVE

	PRE-TEST POST-TEST
	1.1: ORDER RATIONAL NUMBERS 1.2: APPLY NUMBER PROPERTIES 1.3: COMPUTE WITH EXPONENTS 1.4: COMPUTE WITH ROOTS CHAPTER 1: REVIEW AND CHECK YOUR UNDERSTANDING
	2.1: APPLY RATIOS AND PROPORTIONS 2.2: CALCULATE REAL-WORLD PERCENTAGES 2.3: USE COUNTING TECHNIQUES 2.4: DETERMINE PROBABILITY CHAPTER 2: REVIEW AND CHECK YOUR UNDERSTANDING
	3.1: EVALUATE LINEAR EXPRESSIONS 3.2: SOLVE LINEAR EQUATIONS 3.3: SOLVE LINEAR INEQUALITIES 3.4: USE EXPRESSIONS, EQUATIONS, AND INEQUALITIES TO SOLVE REAL-WORLD PROBLEMS CHAPTER 3: REVIEW AND CHECK YOUR UNDERSTANDING
	4.1: EVALUATE POLYNOMIALS 4.2: FACTOR POLYNOMIALS 4.3: SOLVE QUADRATIC EQUATIONS 4.4: EVALUATE RATIONAL EXPRESSIONS CHAPTER 4: REVIEW AND CHECK YOUR UNDERSTANDING
	5.1: INTERPRET SLOPE 5.2: WRITE THE EQUATION OF A LINE 5.3: GRAPH LINEAR EQUATIONS 5.4: SOLVE SYSTEMS OF LINEAR EQUATIONS CHAPTER 5: REVIEW AND CHECK YOUR UNDERSTANDING
	6.1: IDENTIFY A FUNCTION 6.2: IDENTIFY LINEAR AND QUADRATIC FUNCTIONS

	6.3: IDENTIFY KEY FEATURES OF A GRAPH 6.4: COMPARE FUNCTIONS CHAPTER 6: REVIEW AND CHECK YOUR UNDERSTANDING 7.1: COMPUTE PERIMETER AND AREA OF POLYGONS 7.2: COMPUTE CIRCUMFERENCE AND AREA OF CIRCLES 7.3: COMPUTE SURFACE AREA AND VOLUME 7.4: COMPUTE PERIMETER, AREA, SURFACE AREA AND VOLUME OF COMPOSITE FIGURES CHAPTER 7: REVIEW AND CHECK YOUR UNDERSTANDING
ACHIEVE	8.1: CALCULATE MEASURES OF CENTRAL TENDENCY 8.2: DISPLAY CATEGORICAL DATA 8.3: DISPLAY ONE-VARIABLE DATA 8.4: DISPLAY TWO-VARIABLE DATA CHAPTER 8: REVIEW AND CHECK YOUR UNDERSTANDING KHANACADEMY.ORG

*DECIMALS**MATERIALS*

- o CCB Mathematics pages 50 - 53
- o [One is one... or is it?](#)
- o Place Value Chart

CCR STANDARDS

- o MP.4: Model with mathematics.
- o Apply and extend previous understandings of numbers to the system of rational numbers.

OBJECTIVES

- o Understand decimals as part of the place value system
- o Use strategies for rounding decimals
- o Compare and order decimal number

KEY CONCEPT

- o Decimals represent a part of a number. They are an extension of the place-value system.

VOCABULARY (DEFINE & MODEL)

<i>Tier 2</i>	<ul style="list-style-type: none"> o Cent o Decimal
<i>Tier 3</i>	<ul style="list-style-type: none"> o Decimal Point o Hundredth o Tenth
<i>Test Words</i>	<ul style="list-style-type: none"> o Compare

INTERACTIVE STRATEGY

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WRITING TOPIC

- o "How do you use decimals every day?"

WRITING PRACTICE

- o

2.1: Introduction to Decimals**BEFORE LESSON**

Decimals represent part of a whole, are used in metric measurement and in our monetary system.

- o Point out the decimals and have students read them.
- o Ask students to share other ways decimals are used.

GUIDED PRACTICE**Understanding Decimals****Place Value in Decimals****Compare Decimals****Round Decimals****CORE SKILL****Model with Mathematics**

- o Have Students create place value charts.

Apply Number Sense Concepts

Number sense applies to a general understanding of numbers, the quantities they represent, and their relationships with each other.

- o **Challenge:** Name four ways to show the number 435 as an example.
- o **Sidebar:** Have pairs apply reasoning to their decisions and then share and justify their conclusions with the class.

EXTENSION**Practice Pronunciation**

Have students practice saying place-value names, such as hundred, hundredth, thousand, thousandth, and so on.

Compare Data

Remind students that many sports use statistics that involve decimals.

LESSON REVIEW

*DECIMALS**MATERIALS*

- CCB Mathematics pages 54 - 59

CCR STANDARDS

- MP.6: Attend to precision.
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- Add Decimals
- Subtract Decimals

KEY CONCEPT

- Decimals are added and subtracted by using place value much as whole numbers are added and subtracted

VOCABULARY (PRIOR KNOWLEDGE)

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ Align ○ Annexed
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Place Value ○ Vertically
<i>Test Words</i>	<ul style="list-style-type: none"> ○ Organize ○ Topic

INTERACTIVE STRATEGY

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WRITING TOPIC

-

WRITING PRACTICE

- Identify Topic Sentences

2.2: Add and Subtract Decimals**BEFORE LESSON**

Write addition and subtraction problems on the board and have students copy and solve them. Have students consider why they are lining them up the way they are. Have them consider what those numbers would look like as whole dollars.

GUIDED PRACTICE**Add Decimals****Subtract Decimals****CORE SKILL****Perform Operations**

Ask a volunteer to identify the four basic math operations (addition, subtraction, multiplication, and division). Then have each create for problems for their neighbors.

Then have pairs work on **Sidebar** activity.

Attend to Precision

Write the following on the board: 3.5 dollars and 2.05 dollars. Have students work through two ways of solving and then explain which way is more accurate.

EXTENSION**Use Real-World Examples**

Have students list out prices of things they may have recently bought and find their total values.

Modify Decimals

Have students name several 'random' three-digit numbers. After doing so, have them to combine three numbers to come closest to 100. They are allowed to place a decimal anywhere in the number except to make it whole.

- Have a volunteer explain their reasoning
- Try again allowing subtraction.

LESSON REVIEW

*DECIMALS**MATERIALS*

- CCB Mathematics pages 60 - 63

CCR STANDARDS

- MP.5: Use appropriate tools strategically.
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- Multiply Decimals

KEY CONCEPT

- Multiplying Decimals is a process that is similar to multiplying whole numbers

VOCABULARY (PRIOR KNOWLEDGE)

<i>Tier 2</i>	○ Product
<i>Tier 3</i>	○ Factor ○ Multiplication
<i>Test Words</i>	○

INTERACTIVE STRATEGY

- Tic-Tac-Toe
- Place Value Grids

WRITING TOPIC

- “When working with decimals it is easy to see numbers less than one. What is a product of two numbers which are < 1 ? Experiment, Is it always $<$, $>$, $= 1$? Why is this?”

WRITING PRACTICE

○

2.3: Multiply Decimals**BEFORE LESSON**

Remind students that when they multiply whole numbers, they are finding a total amount.

GUIDED PRACTICE**Multiply Decimals****CORE SKILL****Apply Number Sense Concepts**

Ask students to explain the relationship between multiplication and repeated addition, and why using multiplication is often easier and more efficient than using repeated addition.

- Challenge students to work in pairs to find a way to use repeated addition to find the product of another two decimals.

Represent Real-World Problems

Explain to students that decimals serve a purpose in many real-world problems. Ask students to describe the link between locations and decimals.

EXTENSION**LESSON REVIEW**

DECIMALS**MATERIALS**

- o CCB Mathematics pages 64 - 69

CCR STANDARDS

- o MP.8: Look for and express regularity in repeated reasoning.
- o Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- o Divide Decimals

KEY CONCEPT

- o Dividing Decimals is similar to dividing whole numbers. The key difference is the placement of the decimal point in the quotient, or answer

VOCABULARY (PRIOR KNOWLEDGE)

<i>Tier 2</i>	<ul style="list-style-type: none"> o Dividend o Divisor o Quotient
<i>Tier 3</i>	<ul style="list-style-type: none"> o Reasoning
<i>Test Words</i>	<ul style="list-style-type: none"> o Evaluate o Summarize

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o “Create a way for you to remember the rules for dividing decimals.”

WRITING PRACTICE

- o Summarize Ideas

2.4: Divide Decimals**BEFORE LESSON**

Give students time to find quotients for a few long division problems, including those with remainders.

GUIDED PRACTICE**Divide Decimals****CORE SKILL****Evaluate Reasoning**

Remind students to evaluate, or check the details of their work, to determine if the solutions they get are reasonable, meaning they can be verified, or proven to be true.

Apply Number Sense Concepts

What does the operation of division do? Why is it ‘helpful’ to do this with whole number?

Why is moving the decimal to both divisor and dividend important? What operation did you use to accomplish this result?

EXTENSION**Retell Problems and Solutions**

Invite students to select a particular example from the lesson and explain the problem and steps of the solution in their own words.

Identify Patterns

Write the following problems on the board. Challenge students to identify a pattern as they solve the problems: $56 \div 7$, $56 \div 0.7$, $56 \div 0.07$. Ask students to reveal the pattern they observed.

LESSON REVIEW

*FRACTIONS**MATERIALS*

- CCB Mathematics pages 74 - 81

CCR STANDARDS

- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- Understand fractions
- Name equivalent fractions
- Compare and order fractions

KEY CONCEPT

-

VOCABULARY (WORD BENCH)

<i>Tier 2</i>	○ Represent
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Common Multiple ○ Denominator ○ Equivalent Fraction ○ Fraction ○ Lowest Terms ○ Numerator
<i>Test Words</i>	○ Diagram

INTERACTIVE STRATEGY

- Paper Folding

WRITING TOPIC

- Extension: Retell

WRITING PRACTICE

- Recognize Details

3.1: Introduction to Fractions**BEFORE LESSON**

Hold up a piece of paper for students to see. Fold the paper in half and open it. Ask students to identify how much of the whole each part represents. Then refold the paper and fold it again to make fourths and then eighths. Then shade or use a marker to mark a given number of fractional parts and ask students how many parts of the whole are shaded.

GUIDED PRACTICE**Understand Fractions****Name Equivalent Fractions****Compare and Order Fractions****CORE SKILL****Interpret Data Displays**

Guide students through the explanation of diagrams, asking them to explain the varied purposes a diagram can have. Then have them draw a diagram to represent the fraction $\frac{2}{3}$ and explain how the diagram fulfills its purpose.

Perform Operations

Discuss the explanation of equivalent fractions as a class. Then give students an opportunity to solve the problem. Afterward, ask volunteers to show and explain their work.

EXTENSION**Retell**

Have students explain the diagrams on page 76 again, using the term equivalent fraction in their explanations.

Make Observations about Fractions

Write the fraction $\frac{8}{24}$ on the board. Ask students to use the fraction to explain the process of using common multiples to rewrite the fraction in its lowest terms. Challenge students to support their explanation with one or more diagrams.

LESSON REVIEW

FRACTIONS**MATERIALS**

- CCB Mathematics pages 82 - 87

CCR STANDARDS

- MP.8: Look for and express regularity in repeated reasoning.
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- Add and subtract fractions with like denominators
- Add and subtract fractions with unlike denominators

KEY CONCEPT

- Understand and apply strategies for finding the sums and differences of fractions that have like or unlike denominators

VOCABULARY (SEMANTIC MAP)

<i>Tier 2</i>	○ Simplify
<i>Tier 3</i>	○ Common Denominator ○ Like Denominator ○ Unlike Denominator
<i>Test Words</i>	○

INTERACTIVE STRATEGY

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WRITING TOPIC

- Pair and Share

WRITING PRACTICE

-

3.2: Add and Subtract Fractions**BEFORE LESSON**

Write the fraction $\frac{4}{5}$ on the board and have students write a set of equivalent fractions. Then write the fraction $\frac{9}{12}$ on the board and ask students to rewrite the fraction in its lowest terms

GUIDED PRACTICE**Add and Subtract Fractions with Like Denominators****Add and Subtract Fractions with Unlike Denominators****CORE SKILL****Perform Operations**

Have students read the text. Then invite them to share experiences in which they were first learning to add and subtract whole numbers.

Apply Number Sense

Ask students what they know about fractions, and how this understanding contributes to their general number sense. Identify three types of fractions, and then have students work in pairs to solve sidebar.

EXTENSION**Pair and Explain**

Tell students to turn to page 84. Have students work in pairs.

- Have one student in each pair explain the procedure for adding fractions with unlike denominators.
- Then have the other student explain the procedure for subtracting fractions with unlike denominators.
- Have them support each other if a partner is having difficulty with explanations

Apply a Plan to Solve a Multi-Step Problem

Write the following problems on the board: $\frac{3}{4} + 2/7$ and $\frac{6}{8} - 2/3$. Have students write a plan that can be applied to solve both problems.

LESSON REVIEW

FRACTIONS**MATERIALS**

- CCB Mathematics pages 88 - 91

CCR STANDARDS

- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- Multiply fractions
- Divide fractions

KEY CONCEPT

- Extend and develop ideas about multiplication and division to include multiplying and dividing fractions

VOCABULARY (PREDICT MEANING)

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ Invert ○ Reciprocal
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Multiplicative Inverse
<i>Test Words</i>	<ul style="list-style-type: none"> ○

INTERACTIVE STRATEGY

-

WRITING TOPIC

- “When multiplying two proper fractions, will the product ever be greater than 1? Explain?”

WRITING PRACTICE

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3.3: Multiply and Divide Fractions**BEFORE LESSON**

Write the fractions $\frac{8}{10}$, $\frac{12}{20}$, $\frac{6}{24}$ on the board. Ask to students to simplify each fraction.

GUIDED PRACTICE**Multiply Fractions****Divide Fractions****CORE SKILL****Apply Number Sense**

Have students work in groups on the sidebar. Encourage students to copy and use the diagram to help them find the answer. Challenge students to solve for a sum that Juan might earn in one day of snow shoveling or have students calculate how much Juan and each of his employees earned that day.

Perform Operations

Allow students time to read and copy the sidebar explaining the steps for dividing two fractions.

EXTENSION**Elaborate Using the Vocabulary Words**

Explain to students that inverting a fraction creates its multiplicative inverse, or reciprocal. Have students practice inverting fractions. Ask them to explain the steps of the process using the vocabulary words.

Sketch Math Models

Challenge students to create visual models to demonstrate the process of multiplying and dividing fractions.

LESSON REVIEW

FRACTIONS**MATERIALS**

- o CCB Mathematics pages 92 - 97

CCR STANDARDS

- o Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- o Add and subtract mixed numbers
- o Multiply and divide mixed numbers

KEY CONCEPT

- o Understand mixed numbers and perform the basic operations of addition, subtraction, multiplication, and division with mixed numbers

VOCABULARY (WORD PARTS)

<i>Tier 2</i>	<ul style="list-style-type: none"> o Reduce o Rename
<i>Tier 3</i>	<ul style="list-style-type: none"> o Improper Fraction o Mixed Fraction o Proper Fraction
<i>Test Words</i>	<ul style="list-style-type: none"> o Detail

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o Works with a partner, summarize the details presented within this unit.

WRITING PRACTICE

- o Summarize Supporting Details

3.4: Mixed Numbers**BEFORE LESSON**

Have multiple volunteers to write, solve, and explain the processes involved in adding, subtracting, multiplying, and dividing fractions.

GUIDED PRACTICE**Add and Subtract Mixed Numbers****Multiply and Divide Mixed Numbers****CORE SKILL****Represent Real-World Problems**

Ask students to visualize themselves in a grocery or hardware store. Ask: What can you buy in the store that has a per-pound cost? How often does your purchase weigh a whole number amount?

- o Have students create word problems for the class to solve
- o Then, work in pairs to solve sidebar

Evaluate Arguments

What questions should you ask before accepting a claim or argument?

EXTENSION**Use Visuals**

Use pictures of real objects to help students understand mixed numbers. For example, show pictures of three pizzas and say: Suppose we ordered three pizzas. Each pizza had eight slices, and we ate 19 slices. How many pizzas would we have eaten?

Compare Mixed Numbers

Write the following mixed numbers on the board: $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{2}{5}$, $1\frac{1}{2}$?

- o Determine which of the mixed numbers, when multiplied by itself, comes closest to but does not exceed 2.
- o Order from least to greatest
- o Change to decimals

LESSON REVIEW

*INTEGERS**MATERIALS*

- o CCB Mathematics pages 104 - 107

CCR STANDARDS

- o Apply and extend previous understandings of numbers to the system of rational numbers.

OBJECTIVES

- o Identify integers
- o Compare and order integers
- o Find the absolute value of an integer

KEY CONCEPT

- o Identify, compare, and order integers, as well as find their absolute value, in order to better understand the meaning and value of integers

VOCABULARY(PRIOR KNOWLEDGE)

<i>Tier 2</i>	<ul style="list-style-type: none"> o Infinite o Opposite
<i>Tier 3</i>	<ul style="list-style-type: none"> o Absolute Value o Integer
<i>Test Words</i>	<ul style="list-style-type: none"> o

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

4.1: Introduction to Integers and Absolute Value**BEFORE LESSON**

Integers are the set of whole numbers and their opposites.

Research marine organisms; identify three organisms that live at different depths.

- o Create a diagram

GUIDED PRACTICE**Understand Integers****Absolute Value****CORE SKILL****Apply Number Sense**

After reading the section, explain to students that they will learn about absolute value on the next page. Tell them to consider what absolute value means and how it could apply to real life as they read the next page.

Represent Real-World Problems

Give students time to read the sidebar. To help them answer the assignment at the end, ask them if they have ever purchased something and then returned it the following month. Discuss reasons why credit card companies use positive numbers to represent the balance of money loaned.

EXTENSION**Interpret a Model**

Show students a thermometer, or an illustration of a thermometer. Ask students to explain how a thermometer works as a model of positive and negative integers. Encourage students to use the words integers, opposites, and absolute value in their discussions. Provide students with more real-world examples if they are having difficulty with these terms.

Collect and Display

Have students use print or online resources to find real-world examples of positive and negative numbers, such as the elevation of landforms relative to sea level or the loss and gain of yards during play in a football game. Ask students to create a printed or digital display of the example and explain its relevance to positive and negative numbers.

LESSON REVIEW

INTEGERS**MATERIALS**

- o CCB Mathematics pages 108 - 113

CCR STANDARDS

- o MP.2: Reason abstractly and quantitatively.
- o Apply and extend previous understandings of numbers to the system of rational numbers.
- o Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- o Use a number line to find the sum of two integers
- o Use integer addition rules to find the sum of two integers

KEY CONCEPT

- o Two ways to find the sum of two integers include using a number line and using a sequence of rules

VOCABULARY (ACT THEM OUT)

<i>Tier 2</i>	<ul style="list-style-type: none"> o Negative o Positive o Sign
<i>Tier 3</i>	<ul style="list-style-type: none"> o Addend
<i>Test Words</i>	<ul style="list-style-type: none"> o Illustrate o Sequence

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

4.2: Add Integers**BEFORE LESSON**

A number line continues infinitely in opposite directions, representing both positive and negative integers. Absolute Value is the distance between 0 and the number on the number line, positive or negative.

GUIDED PRACTICE**Use A Number Line to Add Integers****Use Rules to Add Integers****CORE SKILL****Reason Abstractly**

Abstract can express a characteristic, feature, or quantity apart from objects. (2 + 3 = 5) Represents real objects

How are positive and negative numbers represented abstractly (symbols + and --)

Allow students time to read and think about the sidebar. Ask if they can think of other math examples that are abstract. One example is a number line. It is an abstraction that students can use to manipulate numbers, but it doesn't really exist as an object. Ask students to brainstorm other examples of abstractions they can use to work with numbers and values. Students may say, for example, that coordinate grids don't really exist, but they are abstractions that show the relationships between pairs of numbers.

Perform Operations

Remind $2 + 3 = 5$

(+) means addition

Use number lines

Have students read the sidebar independently. Remind them to refer to the number line in Example 3 as they read, to help them understand the text. After students have written their explanations, ask them to share their ideas.

For students who need an alternative to a number line to illustrate integer addition, give students counters in two colors. Let one color represent positive numbers and the other color represent negative numbers. Have students use the counters to practice finding zero sums. You can use small objects such as paper clips and erasers if counters are not available.

EXTENSION**Build Vocabulary**

Invite students to play a game. Use tape to draw a number line along one edge of a table. Mark the center of the tape 0. Mark numbers to the right as

positive integers and numbers to the left as negative integers. Have a volunteer stand in front of the 0 and push a paper clip or counter in a positive direction. Ask the student to announce the distance the counter moved. Then have the volunteer push it back in the opposite direction, again announcing how far the counter moved. Have a volunteer record the measurements on the board. Then ask the player to determine how far the counter moved in all while explaining the problem solving process using the vocabulary words. Invite other students to play.

Classify Concepts

Have students research the use of submersibles to explore the layers or zones of the ocean, from the surface, or Sunlight Zone, to the trenches, or Hadalpelagic Zone. Have students use their research to explain the concept of positive and negative integers.

LESSON REVIEW

INTEGERS**MATERIALS**

- o CCB Mathematics pages 114 - 117

CCR STANDARDS

- o Apply and extend previous understandings of numbers to the system of rational numbers.
- o Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- o Use a number line to subtract integers
- o Use addition of opposite integers to find the difference between two integers Key Concept

KEY CONCEPT

- o Subtract two integers by adding the opposite of the integer that is being subtracted

VOCABULARY (EVERYDAY WORDS)

<i>Tier 2</i>	<ul style="list-style-type: none"> o Point o Solve
<i>Tier 3</i>	<ul style="list-style-type: none"> o Tic Mark
<i>Test Words</i>	<ul style="list-style-type: none"> o

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

4.3: Subtract Integers**BEFORE LESSON**

- o Recognize that subtracting integers is an extension of adding integers.
- o What is the relationship between addition and subtraction?
- o Predict how subtracting integers will relate to adding integers?

GUIDED PRACTICE**Use a Number Line to Subtract Integers****Use Addition to Subtract Integers****CORE SKILL****Perform Operations**

Use a number line to model the operation of subtraction, just as they have with addition

$$(6 - 2 = 4)$$

Read the text with students, helping them understand that subtracting one number from another is the same as adding the opposite of the number. For example, write the problems $5 - 2$ and $5 + - 2$ on the board. Draw a number line from 0 to 5 beneath the problems. Use the number line to demonstrate how the second problem is the same as the first, and the answer is the same. Next, have students complete the activity presented in the last paragraph of the sidebar. Encourage students to share their number lines and explanations with the class.

Represent Real-World Problems

Operations with negative numbers are sometimes used to solve real-world problems.

Examine lines of longitude and latitude NOTE: prime meridian and equator
After reading the sidebar, encourage students to work together to solve the problem. Have them draw a number line from -15 to $+15$ to model the solution. Allow students to find another way to solve the problem, too, such as drawing a picture. Afterward, encourage students to share the model they used to solve the real-world problem.

EXTENSION**Make Connections**

Pair English language learner with fluent English speakers to discuss how subtracting integers is similar to and different from adding integers and subtracting whole numbers. Encourage students to use lesson vocabulary as much as possible.

Explain Phenomena in Terms of Concepts

Have students research weather records in any location of interest that has records going back at least five decades. Ask students to determine the record highs and lows for each decade, and calculate the variation between the two. Then have them explain the variations in the context of the principle of positive and negative integers.

LESSON REVIEW

*INTEGERS**MATERIALS*

- CCB Mathematics pages 118 - 129
- Tic-Tac-Toe Integers

CCR STANDARDS

- MP.5: Use appropriate tools strategically.
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

OBJECTIVES

- Multiply two integers
- Divide two integers

KEY CONCEPT

- Use rules to find products and quotients of integers

VOCABULARY (VISUALIZE)

<i>Tier 2</i>	○ Repeated
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Column ○ Inverse ○ Row ○ Table
<i>Test Words</i>	○ Title

INTERACTIVE STRATEGY

○

WRITING TOPIC

○

WRITING PRACTICE

○

4.4 Multiply and Divide Integers**BEFORE LESSON**

Remind multiplication can be thought of as repeated addition.

$$(-2 * 4) = (-2) + (-2) + (-2) + (-2) = 8$$

What is the sign of the sum? Product?

Predict the sign in the division of negative numbers.

GUIDED PRACTICE**Multiply Integers****Read a Table****Divide integers****CORE SKILL****Interpret Data Displays**

Tables can be useful for displaying data, making the data easy to understand or interpret.

How have tables been used to organize and display data in previous lessons?

Give students time to read the text in the sidebar. Then, together, discuss the features of the table. Ask the question that follows, and invite volunteers to answer. Students may say, for example, that it would be helpful to expand the table to include more months, or they may even want to insert more columns to show how many adult men and women also visit the park in the same months.

Use Appropriate Tools Strategically

Diagrams, graphs, and tables are tools, and like all tools, they are used strategically, meaning for a specific and necessary purpose.

Imagine teaching a class of interest, what tools would help clarify or explain idea?

Allow students time to read the sidebar and answer the questions that follow. Explain that a table is a way to show information, and just like word problems, it is important to understand the given information first before solving problems based on the table.

EXTENSION**Make a Table**

Ask students to think about how many minutes they spend watching television or online during the school week and on the weekends. Record and average their answers as they observe. Then ask students to explain how you can organize the data you have collected in a table to make it easier to read and understand. Direct students to tell you exactly what to do, one step at a time.

Respond to their commands, making changes as students become aware of their necessity. Discuss the features of the final table.

Compare Operations

Have students work in small groups to create Venn diagrams. Provide them with copies of an empty diagram (see the Graphic Organizer section of the Instructor Resource Binder). Have students label one circle: Adding and Subtracting Integers. Have them label the second circle: Multiplying and Dividing Integers. Have them use the Math Links and text in the chapter to fill in as many details as possible in the diagram.

LESSON REVIEW

*INTEGERS**MATERIALS*

- CCB Mathematics pages 124 - 129

CCR STANDARDS

- MP.1: Make sense of problems and persevere in solving them.
- Apply and extend previous understandings of numbers to the system of rational numbers.

OBJECTIVES

- Plot and identify points on a coordinate grid

KEY CONCEPT

- Coordinate grids are a method of locating points in the plane by means of directions and numbers

VOCABULARY (EXAMPLES)

<i>Tier 2</i>	○ Origin
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Coordinate Grid ○ Perpendicular Lines ○ X-Axis ○ Y-Axis ○ X-Coordinate ○ Y-Coordinate
<i>Test Words</i>	○ Grid

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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4.5: The Coordinate Grid**BEFORE LESSON**

Show examples of maps. Encourage them to figure out the purpose of the lines that run (N, E, S, and W). Explain those arrangements of lines form a coordinate grid. By finding where lines intersect they can locate specific features or locations.

GUIDED PRACTICE**The Coordinate Plane****CORE SKILL****Interpret Data Displays**

We will display and interpret data on a grid, or coordinate plane.

Describe what kinds of data a map usually contains?

Allow students time to read the sidebar. Then give partners graph paper to complete the activity. If any groups are struggling, provide remediation by reviewing how to draw the axes, which axis is which, and how to locate points and write ordered pairs. Or you may wait to assign this activity until students have worked through Examples 1 through 3.

Make Sense of Problems

Many people find it helpful to draw pictures to make sense of a problem. Describe some of the strategies they use to solve problems (tables, drawing, pictures, number lines, guess and check, prior knowledge...)

Read the sidebar as a class. Ask students questions as they draw a coordinate grid to match the problem: Which axis represents east to west? Which axis represents north to south? Label the directions. In terms of the grid, how can you represent one mile in your drawing?

EXTENSION**Describe a Coordinate Grid**

Have students refer to the vocabulary words. Then invite students to select a coordinate grid from the lesson and use the vocabulary words to describe its parts.

Investigate Descartes

Have students research Descartes, inventor of the Cartesian plane. After reading about his life and work in mathematics, have students write one or two questions about Descartes' work that they would like to answer through further research. Afterward, ask students to share their research in a digital presentation.

LESSON REVIEW



*EXPRESSIONS AND EQUATIONS***5.1: Expressions****MATERIALS**

- CCB Mathematics pages 134 - 139

CCR STANDARDS

- MP.1: Make sense of problems and persevere in solving them.
- Use properties of operations to generate equivalent expressions.

OBJECTIVES

- Translate between verbal and symbolic representations of expressions
- Simplify expressions
- Evaluate expressions

KEY CONCEPT

- Mathematical and real-world situations can be represented by expressions that can be amplified and evaluated.

VOCABULARY

<i>Tier 2</i>	○ Variable
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Algebraic Expression ○ Coefficient ○ Constant Term ○ Mathematical Expression ○ Symbolic Expression ○ Verbal Expression
<i>Test Words</i>	○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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BEFORE LESSON

To simplify and evaluate expressions, students will need to know and apply the order of operations. Ask a volunteer to remind the class of the order of operations (parentheses, exponents, multiplication, division, addition, subtraction). Then practice a few two- and three-step problems.

GUIDED PRACTICE**Verbal and Symbolic Representations of Expressions****Identify Key Words****Evaluate Expressions****CORE SKILL****Evaluate Expressions**

After reading the sidebar, discuss with students how these steps for writing an expression are similar to or different from the steps they used in the Five-Step Approach. A similarity is that they need to be completed in order. They need to clearly explain how the problem is solved. Discuss the importance of each step in the examples.

Make Sense of Problems

After students read the sidebar, lead a class discussion on how they have used key words to help solve problems so far. Then have pairs use key words to write simple math problems for each other, exchange, and solve.

EXTENSION**Write Verbal Statements**

Have students work in pairs to write verbal situations for the problems in the Think about Math activity on page 137. Have volunteers read them aloud.

Interpret Variables

Have students use print and online resources to answer the question: What is a variable? Have students create a presentation to explain the concept of a variable to students who have never studied the algebraic concept. Encourage students to use free online tools to create their presentations.

LESSON REVIEW

*EXPRESSIONS AND EQUATIONS***MATERIALS**

- o CCB Mathematics pages 140 - 143

CCR STANDARDS

- o MP.1: Make sense of problems and persevere in solving them.
- o Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

OBJECTIVES

- o Understand and write equations
- o Solve one-step equations

KEY CONCEPT

- o Use equations to represent situations, and use inverse operations to solve one-step equations.

VOCABULARY

<i>Tier 2</i>	o Solution
<i>Tier 3</i>	o Equal Sign o Equation o Equivalent Equations o Inverse Operations
<i>Test Words</i>	o

INTERACTIVE STRATEGY

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WRITING TOPIC

o

WRITING PRACTICE

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5.2: Solve One-Step Equations**BEFORE LESSON**

In this lesson, students solve one-step equations. To determine their readiness, write the expressions $12x + 2x$ and $27 - 3$ on the board. Ask students to simplify the first expression and evaluate the second. Invite students to suggest more expressions that the class can simplify or evaluate.

GUIDED PRACTICE**Understand and Write Equations****Solve Equations****CORE SKILL****Make Sense of Problems**

Allow students time to read the sidebar and ask any questions. Then guide students to understand the importance of the question sentence in a problem, usually the last sentence in a word problem. It can act as an anchor or compass when working through the solution to help keep from getting off track or stopping before the final answer is reached. Some students find it helpful to use the question to write an answer sentence with a blank before starting to solve. For example: Mariska's school spent to buy the lunches.

Represent Real-World Arithmetic Problems

After students read the text, ask volunteers for examples of when they have used math operations to solve problems in their daily lives. Examples may be calculating the cost of purchases, making a budget, and calculating a tip. Then have students solve the problem at the end. Here is a possible solution: Let c = the cost of the copies. Multiply the cost of each copy by the total number of copies to get the total cost.

$$c = \$0.10 \times 150$$

$$c = \$15$$

EXTENSION**Read Aloud**

Have students work in groups. Have one person read Skill Practice question 1, 3, or 4 aloud, while the other group members identify key vocabulary that suggest the operations and values needed to write the equation. Have students define key vocabulary in their own words.

Formulate Routine Problems

Have students write real-life problems that can be solved by using one-step equations such as using an hourly rate to determine how much a person will earn per day, per week, or per month. Refer students to Example 1 on page 140 for an example. Have students write their equations and solutions on

separate pieces of paper, exchange problems with a partner, and solve.

LESSON REVIEW

*EXPRESSIONS AND EQUATIONS***MATERIALS**

- CCB Mathematics pages 144 - 149

CCR STANDARDS

- MP.1: Make sense of problems and persevere in solving them.
- Use properties of operations to generate equivalent expressions.

OBJECTIVES

- Translate verbal sentences into two-step equations
- Solve two-step equations

KEY CONCEPT

- Use two inverse operations to solve two-step equations.

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○ Affect ○ Isolate
<i>Test Words</i>	○ Two-Step Equation

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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5.3: Solve Two-Step Equations**BEFORE LESSON**

In this lesson, students learn to solve two-step equations. Have students show readiness by applying order of operations to simplify expressions with integers.

GUIDED PRACTICE**Translate Verbal Sentences into Two-Step Equations****Solve Two-Step Equations****CORE SKILL****Make Sense of Problems**

Allow students time to read the sidebar. Then have them complete the activity at the bottom by making a deliberate mistake when solving Example 4. Tell students that dropping negative signs is an extremely common mistake. Explain that this is something to check for if they got the wrong answer, and if they find they make it repeatedly, it can help to circle the number and the negative sign throughout the solution process to make sure it is not dropped.

Evaluate Expressions

Remind students that they can use inverse operations in the opposite order of operations to solve an equation. The first inverse operation would be to subtract 4 to get the equation $Sx = 20$. Then divide by 5 to determine that $x = 4$.

EXTENSION**Fill in the Blanks**

Write the following Cloze passage and word choices on the board. Have students fill in the blanks. Tell them that a word can be used more than once. (answer, inverse, isolate, operation, two-step) In order to solve equations, I must ___ the variable. This involves using operations to undo the on one side. I must perform the correct , otherwise I will get the wrong_____

Use Concepts to Solve Challenging Problems

Give students equations with three or more steps, such as $4 ; x \cdot 2 = 2$. Have them solve the problems and describe how the order of operations helped them know which operations to do in which order.

LESSON REVIEW

*EXPRESSIONS AND EQUATIONS***MATERIALS**

- CCB Mathematics pages 150 - 155

CCR STANDARDS

- MP.8: Look for and express regularity in repeated reasoning.
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

OBJECTIVES

- Translate verbal statements into inequalities
- Solve one-step inequalities
- Solve two-step inequalities

KEY CONCEPT

- Use inverse operations to solve one- and two-step inequalities.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ Infinite ○ Reverse
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Inequality
<i>Test Words</i>	<ul style="list-style-type: none"> ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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5.4: Solve One- and Two-Step Equations**BEFORE LESSON**

To determine student readiness for this lesson, have them demonstrate their ability to solve 1- and 2-step equations.

GUIDED PRACTICE**Translate Verbal Statements into Inequalities****Solve One-Step inequalities****Solve Two-Step Inequalities****CORE SKILL****Solve Inequalities**

Allow students time to read the text. Have students write the rule for multiplying and dividing in their notebook. Explain that it is usually simplest to just memorize the rule. Have students solve the problems at the bottom of the sidebar and compare the solution sets.

Evaluate Reasoning

Have students read the sidebar. Explain to students that if they forget to flip the inequality symbol when they check their answer, the inequality will not be true. Explain that like in the story, this is something to look for when looking for a mistake. Emphasize how important it is to check the solution set, as this is one type of error that can be caught.

EXTENSION**Restate Examples**

Invite students to select any example from the lesson to explain in their own words. Invite them to have other students ask questions. Assist them, if necessary, in answering those questions. Encourage discussion of concepts or processes that seem to cause confusion.

Assess Costs with Inequalities

Have students imagine they are taking a vacation. Their vacation budget is \$7,000. Have them write an inequality that includes the price of a hotel per night, cost of a rental car per day, and an estimate of food expenses per day. Have them use the inequality to decide how many days long their vacation can be. Encourage students to choose a variety of destinations, organizing all of the information and results.

LESSON REVIEW

*EXPRESSIONS AND EQUATIONS***MATERIALS**

- o CCB Mathematics pages 156 - 161

CCR STANDARDS

- o Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
- o Use functions to model relationships between quantities.

OBJECTIVES

- o Write expressions to represent patterns
- o Write equations to represent patterns

KEY CONCEPT

- o Identify, represent, and generalize patterns using expressions and equations.

VOCABULARY

<i>Tier 2</i>	o Generalize
<i>Tier 3</i>	o Common difference o Input Variable o Numerical Pattern o Output Variable
<i>Test Words</i>	o Sequence

INTERACTIVE STRATEGY

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WRITING TOPIC

- o

WRITING PRACTICE

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5.5: Identify Patterns**BEFORE LESSON**

In this lesson, students learn to identify patterns in sets of data. To determine their readiness, have students use a multiplication chart or mental math to share simple patterns of multiples, such as 2, 4, 6, 8, 10, ... and 5, 10, 15, 20, 25, ...

GUIDED PRACTICE**Write Expressions to Represent Patterns****Make a Table****CORE SKILL****Solve Real-World Arithmetic Problems**

Have students read the text and complete the table. After they have confirmed that there is a common difference of 15 degrees, ask students why this is likely. (It was chance, dependent entirely on the weather.) Ask them if they can use the data in the table to predict temperatures the following week. Explain that weather can change from day to day, making it difficult, even for scientists with the most advanced tools, to predict weather accurately.

Build Lines of Reasoning

Have students read the first paragraph and discuss why it's important to understand what makes each step in a solution process important. Help students understand that memorizing a series of steps may be useful in some cases, but the same steps can't apply to all problems. Next, have students work with partners to complete the activity. This is the square number sequence. While students may not be familiar with squares, they may solve it by seeing that the value of the term is the location of the term times itself: 1 x 1, 2 x 2, 3 x 3, etc.

EXTENSION**Make Connections**

Organize students into small groups and discuss real-world patterns. Offer an example of hourly wages as an example to start the conversation: For every delivery Joe makes, he earns \$2.00. After his first delivery, he has \$2.00; after his second delivery, he has \$4.00, after his third delivery he has \$6.00, and so on. Have students offer their own examples of real-world patterns, and challenge them to use those patterns to solve problems.

Construct Concept Maps

Challenge students to find real-world examples of input-output relationships, such as those that exist in computer science, mathematics, life science, and physical science. Ask students to construct concept maps to explain the

relationships between inputs and outputs in the real world.

LESSON REVIEW

LINEAR EQUATIONS AND FUNCTIONS

MATERIALS

- o CCB Mathematics pages 166 - 175

CCR STANDARDS

- o Understand the connections between proportional relationships, lines, and linear equations.
- o Analyze and solve linear equations and pairs of simultaneous linear equations.

OBJECTIVES

- o Plot a line that represents the linear relationship between two sets of numbers
- o Graphically determine the value of the dependent variable
- o Determine whether an independent and a dependent variable are linearly related
- o Write the equation of a line from a verbal description

KEY CONCEPT

- o A variable is something you are trying to measure. There are two kinds of variables, independent and dependent. An independent variable has a value that remains the same. That is, it is not affected by a dependent variable. A dependent variable is a value that depends on other factors.

VOCABULARY

Tier 2	o Dependent Variable
	o Independent Variable
	o Rise
	o Run
	o Slope
Tier 3	o Linear Relationship
	o Y-Intercept
Test Words	o Linear Equation

6.1: Linear Equations

BEFORE LESSON

GUIDED PRACTICE

Linear Relationships

Complete a Data Table

Linear Equations

CORE SKILL

Solve Real-World Arithmetic Problems

Before reading the text as a class, explain that mathematical concepts, including linear relationships, are applied to many real-world situations. Read this section as a class and help students understand the data in the data table. Invite a volunteer to answer the problem.

Solve Linear Equations

Explain to students that the problem in the main section of the page works hand-in-hand with the sidebar activity. Read the problem for students. Then direct attention to the Core Skill sidebar.

You may want to pair students of different abilities to work through the steps outlined in the activity to calculate the slope of the suspension springs. Otherwise, read each step and give

EXTENSION

Restate Definitions

Have students look at the graph at the top of page 171 again. Have them underline the words rise and run. Invite students to share what they know about these words and to model the words in pictures or actions. Then ask students to explain the meaning of each word in the context of the graph.

Investigate a Multi-step Problem that Involves Planning and Reasoning

Since this lesson contains examples of linear relationships whose slopes are positive, have students investigate, describe, and solve real-world linear relationships for which the slope is negative, so that students appreciate their relevance. Share the example of how the elevation

LESSON REVIEW

INTERACTIVE STRATEGY

○

WRITING TOPIC

○

WRITING PRACTICE

○

LINEAR EQUATIONS AND FUNCTIONS

MATERIALS

- o CCB Mathematics pages 176 - 183

CCR STANDARDS

- o Use functions to model relationships between quantities.

OBJECTIVES

- o Use the point-slope form to graph the equation of a line
- o Use the slope-intercept form to graph the equation of a line
- o Use the two-point form to graph the equation of a line

KEY CONCEPT

- o There are two ways to graph a linear equation. (1) If two coordinate pairs that lie on the line are known, then the graph of the line can be constructed, or (2) if one coordinate pair that lies on the line and the slope of the line are known, then the graph of the line can be constructed.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> o Intersect o Subscript
<i>Tier 3</i>	<ul style="list-style-type: none"> o Point-Slope Form o Slope-Intercept Form o Two-Point Form
<i>Test Words</i>	<ul style="list-style-type: none"> o

INTERACTIVE STRATEGY

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WRITING TOPIC

- o

6.2: Graphing Linear Equations

BEFORE LESSON

GUIDED PRACTICE

Graphing Linear Equations

Point-Slope Form

Slope-Intercept Form

CORE SKILL

Perform Operations

Before reading the text, review the task students completed on the page. Ask them to identify the multiple operations they performed to find a second coordinate pair. Then read the Core Skill sidebar as a class. Ask students to explain the relationship between the following statements:

Slope=rise/run; $m = \frac{y_2 - y_1}{x_2 - x_1}$

Interpret Graphs and Functions

The exercise in the Core Skill sidebar gives students an opportunity to apply the point-slope formula to graph a real-world linear relationship. Guide students through the exercise step-by-step, inviting volunteers to create a checklist of important information that they can use to graph and solve the problem.

EXTENSION

Retell with Visuals

Invite students to choose one of the forms for finding the equation of a straight line-point-slope form, slope-intercept form, or two-point form. Ask students to explain the form to you in their own words and to include related visuals in their explanations. Offer support if students are struggling to understand these concepts.

Identify Patterns in Data

Have students find a stock market chart in a newspaper or online. Explain to students that the market index or price of a particular stock can change from hour to hour or day to day. Ask students to calculate the slope of line segments that indicate these changes. Remind students to include correct units when calculating the slope, for example, dollars per day.

LESSON REVIEW

WRITING PRACTICE

○

LINEAR EQUATIONS AND FUNCTIONS

MATERIALS

- o CCB Mathematics pages 184 - 189

CCR STANDARDS

- o Analyze and solve linear equations and pairs of simultaneous linear equations.

OBJECTIVES

- o Solve systems of two linear equations
- o Interpret graphs of two linear equations
- o Use linear equations to solve problems

KEY CONCEPT

- o A pair of linear equations forms a system of two simultaneous linear equations. The solution to a system of two linear equations in two variables corresponds to a point of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

VOCABULARY

<i>Tier 2</i>	o Simultaneous
<i>Tier 3</i>	o Addition Method o Substitution Method o System of Linear equations
<i>Test Words</i>	o Eliminate

INTERACTIVE STRATEGY

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WRITING TOPIC

- o

WRITING PRACTICE

- o

6.3: Pairs of linear Equations

BEFORE LESSON

Tell students that two variables have a linear relationship if their corresponding points lie on the same line in a coordinate plane. Every pair of coordinate points on a line is a solution to a linear equation that represents the line. Have students graph a line (for example, $y = 3x - 1$). Then have students find a point that is on the line ((2, 5), for example) and have them substitute the value of x and y into the equation to see that the point is a solution to that equation.

GUIDED PRACTICE

Simultaneous Linear Equations

Combining Methods to Solve Pairs of Linear Equations

CORE SKILL

Solve Pairs of Linear Equations

Complete the exercise in applying the substitution method for solving a pair of equations without graphing as a class, or have students work through the process independently or in small groups as you observe. Have students apply the substitution method to the equations at the bottom of the sidebar. Then ask them to explain how they applied the method to find the solution to the pair.

Solve Simple Equations by Inspection

Read the text with students to help them recognize two special cases in which a single solution for a pair of simultaneous equations cannot be obtained. Emphasize that inspection alone is enough to reach this conclusion. In the first example, the left-hand side of both equations is the same ($3p + 2q$), but the right-hand side is different. Plotting these equations would result in parallel lines. Because the lines do not intersect, there is no solution. In the second example, the first equation is a multiple of the second equation, thus making the equations equivalent. This results in identical equations, which have infinite solutions. Guide students through a discussion of the third case.

EXTENSION

Identify Multiple Meanings

Write the word equilibrium on the board. Ask students to use a print or online dictionary to define the word. Then explain the word's meaning as it applies to children on opposite sides of a seesaw or a circus performer on a high wire. Also explain how equilibrium applies to one's mental health or between two sides of an argument. Finally, ask students to explain the word's meaning as

it applies to mathematics.

Use Concepts to Solve Non-Routine Problems

Have students work collaboratively to generate examples of when the intersection of two graphs has practical relevance, such as the point at which the orbit of the earth and the orbit of a meteorite intersect, indicating a point at which the meteorite falls to Earth. Encourage students to research their topic and graph lines to indicate an equilibrium point.

LESSON REVIEW

LINEAR EQUATIONS AND FUNCTIONS

6.4: Scatter Plots

MATERIALS

- o CCB Mathematics pages 190 - 199

CCR STANDARDS

- o Investigate chance processes and develop, use, and evaluate probability models.

OBJECTIVES

- o Describe the information that a trend line provides about two correlated variables
- o Describe various aspects of the correlation between two variables

KEY CONCEPT

- o We can use the concept of correlation to describe the relationship between two variables that generally follow a linear pattern but cannot be described by a linear equation. Plotting data on a scatter plot and constructing a trend line can determine the strength and direction of the correlation between such variables.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> o Cluster o Correlation
<i>Tier 3</i>	<ul style="list-style-type: none"> o Outlier o Trend Lines
<i>Test Words</i>	<ul style="list-style-type: none"> o Scatter Plots

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

BEFORE LESSON

Tell students that correlation is described in terms of direction and strength. Linearly correlated data that has a trend line with a positive slope is positively correlated, whereas if the trend line has a negative slope, the data are negatively correlated. Data that are strongly correlated are located, on average, close to a trend line. Data that are weakly correlated are located farther away from a trend line.

GUIDED PRACTICE

Scatter Plots

Linear Correlations

Nonlinear Correlations

Outliers and Clusters

CORE SKILL

Represent Real-World Problems

Read this exercise together, emphasizing that data have no value unless they are analyzed to look for relationships among variables. Examine the scatter plot as a class, and ask a volunteer to describe the relationship among the data in terms of correlation strength and direction.

Interpret Data Displays

Give students time to draw trend lines in the scatter plots and use the lines they draw to explain the relationship between each pair of variables.

EXTENSION

Retell

Invite volunteers to identify the scatter plot in the lesson that they found most interesting. Have them explain the scatter plot's variables and the trend line's strength and direction. Invite them to explain why they found this scatter plot so interesting. Assist students if they are having trouble understanding what a trend line represents.

Two Sources of Information

Have students use print or online materials to find two real-world examples of scatter plots. Ask students to describe the scatter plots' common characteristics and what conclusions can be drawn from trend lines.

LESSON REVIEW

LINEAR EQUATIONS AND FUNCTIONS

6.5: Functions

MATERIALS

- o CCB Mathematics pages 200 - 205

CCR STANDARDS

- o Define, evaluate, and compare functions.
- o Use functions to model relationships between quantities.

OBJECTIVES

- o Identify a function
- o Determine whether an equation represents a function

KEY CONCEPT

- o You can look at a function as a set of instructions that tells you what to do with the input, or values you put in. The result of the instructions is called the output. Functions are equations that provide only one output for each input.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> o Function o Input o Output
<i>Tier 3</i>	<ul style="list-style-type: none"> o Linear Function o Nonlinear Function o Vertical Text
<i>Test Words</i>	<ul style="list-style-type: none"> o

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

BEFORE LESSON

A function has both an input and an output. A function can be viewed as a set of instructions in which an input value makes it possible to calculate an output value. Functions can be either linear or nonlinear. The vertical line test can be used to determine whether a graph represents a function. Have students graph capital letters of the alphabet to see if any of the letters can be thought of as functions (only V and W are, possibly M depending on how it is drawn).

GUIDED PRACTICE

What Is a Function?

Is It a Function?

Function Categories

Perimeter of a Square

Area of a Square

CORE SKILL

Build Lines of Reasoning

To reinforce the concept of a function as a set of instructions, have students read the text and think through the process of writing instructions for the function that converts temperature from Fahrenheit to Celsius. Next, have students share their instructions and explain their thinking. Discuss students' solutions as a class, ask relevant questions, and form a consensus about the best instructions. Have students test the instructions for accuracy.

Interpret Graphs and Functions

Ask students to read the text and summarize the value of examining the form of a function, that is, whether it is represented by $y = mx + b$, to determine whether a function is linear or nonlinear.

EXTENSION

Picture Dictionary

Review Ask students to show and explain the picture dictionary entries they created before the lesson. As students talk about their entries, prompt them to discuss what revisions they might want to make to better explain the words the pictures represent now that they have learned more about functions.

Interpret Information from a Complex Graph

Have students research and find graphical representations of exponential functions. Have students use two-column charts to calculate data points and then plot the data points on a graph.

LESSON REVIEW

*RATIOS, PROPORTIONS, AND PERCENTS***7.1: Ratios and Rates***MATERIALS*

- CCB Mathematics pages 212 - 217

CCR STANDARDS

- Understand ratio concepts and use ratio reasoning to solve problems.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

BEFORE LESSON**GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*RATIOS, PROPORTIONS, AND PERCENTS**MATERIALS*

- CCB Mathematics pages 218 - 223

CCR STANDARDS

- MP.8: Look for and express regularity in repeated reasoning.
- Understand ratio concepts and use ratio reasoning to solve problems.
- Analyze proportional relationships and use them to solve real-world and mathematical problems.
- Understand the connections between proportional relationships, lines, and linear equations.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

7.2: Unit Rates and Proportional Relationships**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*RATIOS, PROPORTIONS, AND PERCENTS**MATERIALS*

- CCB Mathematics pages 224 - 229

CCR STANDARDS

- Analyze proportional relationships and use them to solve real-world and mathematical problems.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

7.3: Solve Proportions**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*RATIOS, PROPORTIONS, AND PERCENTS**MATERIALS*

- CCB Mathematics pages 230 - 235

CCR STANDARDS

- MP.3: Construct viable arguments and critique the reasoning of others.
- Understand ratio concepts and use ratio reasoning to solve problems.

OBJECTIVES

○

KEY CONCEPT

○

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

○

WRITING TOPIC

○

WRITING PRACTICE

○

7.4: Introduction to Percents**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*RATIOS, PROPORTIONS, AND PERCENTS**MATERIALS*

- CCB Mathematics pages 236 - 241

CCR STANDARDS

- MP.8: Look for and express regularity in repeated reasoning.
- Understand ratio concepts and use ratio reasoning to solve problems.
- Analyze proportional relationships and use them to solve real-world and mathematical problems.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

7.5: Solve Percent Problems**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*RATIOS, PROPORTIONS, AND PERCENTS**MATERIALS*

- CCB Mathematics pages 242 - 245

CCR STANDARDS

- MP.1: Make sense of problems and persevere in solving them.
- Analyze proportional relationships and use them to solve real-world and mathematical problems.

OBJECTIVES

○

KEY CONCEPT

○

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

○

WRITING TOPIC

○

WRITING PRACTICE

○

7.6: Use Percent in the Real-World**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*EXPONENTS AND ROOTS**MATERIALS*

- CCB Mathematics pages 250 - 253

CCR STANDARDS

- Work with radicals and integer exponents.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

8.1: Exponents**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*EXPONENTS AND ROOTS***8.2: Roots***MATERIALS*

- CCB Mathematics pages 254 - 259

CCR STANDARDS

- MP.8: Look for and express regularity in repeated reasoning.
- Know that there are numbers that are not rational, and approximate them by rational numbers.
- Work with radicals and integer exponents.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

BEFORE LESSON**GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*EXPONENTS AND ROOTS**MATERIALS*

- CCB Mathematics pages 260 - 263

CCR STANDARDS

- MP.6: Attend to precision.
- Work with radicals and integer exponents.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

8.3: Scientific Notation**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

DATA**MATERIALS**

- CCB Mathematics pages 270 - 273

CCR STANDARDS

- MP.4: Model with mathematics.
- Summarize and describe distributions.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

9.1: Measure of Central Tendency and Range**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

DATA**MATERIALS**

- CCB Mathematics pages 274 - 281

CCR STANDARDS

- Summarize and describe distributions.
- Use random sampling to draw inferences about a population.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

9.2: Graphs and Line Plots**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

DATA**MATERIALS**

- CCB Mathematics pages 282 - 287

CCR STANDARDS

- MP.3: Construct viable arguments and critique the reasoning of others.
- Use random sampling to draw inferences about a population.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

9.3: Plots and Misleading Graphs**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

PROBABILITY**MATERIALS**

- CCB Mathematics pages 292 - 295

CCR STANDARDS

- MP.2: Reason abstractly and quantitatively.
- Use random sampling to draw inferences about a population.
- Investigate chance processes and develop, use, and evaluate probability models.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

10.1: Counting Methods**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

PROBABILITY**MATERIALS**

- CCB Mathematics pages 296 - 301

CCR STANDARDS

- MP.8: Look for and express regularity in repeated reasoning.
- Investigate chance processes and develop, use, and evaluate probability models.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

10.2: Introduction to Probability**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*PROBABILITY**MATERIALS*

- CCB Mathematics pages 301 - 306

CCR STANDARDS

- MP.2: Reason abstractly and quantitatively.
- Draw informal comparative inferences about two populations.
- Investigate chance processes and develop, use, and evaluate probability models.

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

10.3: Compound Events**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

MEASUREMENT**MATERIALS**

- CCB Mathematics pages 312 - 215

CCR STANDARDS

- Understand ratio concepts and use ratio reasoning to solve problems.

OBJECTIVES

- Change from one customary unit to another
- Change from mixed units
- Change to mixed units

KEY CONCEPT

- Understand how to use division and multiplication to change from one customary unit of length, capacity, weight, or time to another, and how to change to and from mixed units.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ capacity ○ length ○ time ○ weight
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ unit
<i>Test Words</i>	<ul style="list-style-type: none"> ○ abbreviation

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

11.1: Customary Units**BEFORE LESSON**

In this lesson, students convert units of customary measures, a task that requires the use of two mathematical operations-multiplication and division. To determine student readiness for the lesson, ask students to solve simple multiplication and division problems that you write on the board. Observe students as they work, intervening whenever necessary to correct students' solutions.

GUIDED PRACTICE**Change Units of Customary Measure****Change To and From Mixed Units****CORE SKILL****Evaluate Expressions**

Ask volunteers to point to examples of expressions on the board. For example, students might refer to the expression 480 minutes \div 60. Ask students to identify the elements in the expression, which are two numbers, a division symbol, and a unit of measurement. Have students read the expressions and work with partners to simplify and evaluate them.

Represent Real-World Problems

Organize students into pairs. Before they read the text, explain that they are going to be presented with a real world problem related to measuring the length of a fence. Invite students to share similar experiences related to measuring spaces in and around their homes. Then give students time to read the text and complete the problem. Afterward, discuss students' solutions.

EXTENSION**Fill in the Blanks**

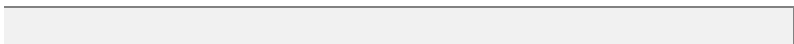
Write the following Cloze passage on the board. Ask students to help you fill in the blanks.

- I use inches to measure _____ but I use pounds to measure _____.
- _____ is measured in minutes and hours, and _____ is measured in gallons and cups.

Solve Measurement Problems

Tell students that 1 pint of water weighs about 1 pound. Have students determine the weight of 1 quart, 1 cup, and 1 gallon of water. Then have them determine how many gallons are in 1 ton of water, and how many cups are in 5 pounds of water.

LESSON REVIEW



MEASUREMENT**11.2: Metric Units****MATERIALS**

- o CCB Mathematics pages 316 - 321

CCR STANDARDS

- o Understand ratio concepts and use ratio reasoning to solve problems.

OBJECTIVES

- o Change from one metric unit to another
- o Understand the basic metric unit for length
- o Understand the basic metric unit for capacity
- o Understand the basic metric unit for mass

KEY CONCEPT

- o Understand how to change from one metric unit of length, capacity, or mass to another.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> o gram o liter o meter
<i>Tier 3</i>	<ul style="list-style-type: none"> o power of 10
<i>Test Words</i>	<ul style="list-style-type: none"> o prefix

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

BEFORE LESSON

In this lesson, students convert units of metric measures, a task that, like converting customary units of measure, requires the use of two mathematical operations - multiplication and division. To determine student readiness for the lesson, ask students to solve simple standard unit conversion problems, such as 24 inches = feet, that you write on the board. Observe students as they work, intervening whenever necessary to correct students' solutions.

GUIDED PRACTICE

The Metric System

Use Prefixes

CORE SKILL**Build Solution Pathways**

Ask students to read the text and complete the task. Afterward, ask volunteers to summarize the solution pathway they can use to convert metric units of measure from one unit to another. Challenge students to test their solution pathways by asking them to convert simple units of measurement, such as 100 meters into centimeters.

Use Ratio Reasoning

Read the first paragraph as a class. Write the directions "Convert 1 mile to inches" on the board. Challenge students to apply reasoning to suggest a strategy for solving the problem. Say: As we think about how we might solve this problem, let's consider how we can use ratios in the solution. For example, let's compare miles to feet. Write the ratio $\frac{1 \text{ mile}}{5,280 \text{ feet}}$ on the board. We want to know how many inches are in one mile, but our ratio compares miles to feet. So, we need to consider another ratio. Write the ratio $\frac{1 \text{ foot}}{12 \text{ inches}}$ on the board. Point out the same ratios in the Core Skill activity, and ask students why the arrangement of each ratio is important, emphasizing the need to cancel all units but those that students are being asked to find. Discuss the answer as a class.

EXTENSION**Pronounce Metric Words**

Have students practice reading units of measurement and their prefixes. Pay special attention to the word kilometer, because the pronunciation varies from the pronunciation of other metric-measurement words. Ask students to give examples of when each kind of unit is used. Write abbreviations for units of measure, and have students read the words they represent.

Relate the Conversion Process

Have students work individually or with partners to explain the process of metric conversions through the use of a chart. The chart should indicate when to multiply or divide, what power of 10 to use, and the decimal point's direction of movement. Have students compare their charts and combine the best elements across the charts to create a single chart that someone unfamiliar with metric conversions could use successfully.

LESSON REVIEW

GEOMETRY**12.1: Geometric Figures****MATERIALS**

- CCB Mathematics pages 326 - 331

CCR STANDARDS

- MP.8: Look for and express regularity in repeated reasoning.
- Draw, construct, and describe geometrical figures and describe the relationships between them.
- Understand congruence and similarity using physical models, transparencies, or geometry software.

OBJECTIVES

- Identify geometric figures
- Identify and classify angles
- Identify and classify triangles and quadrilaterals
- Identify the parts of circles

KEY CONCEPT

- Learn how to identify and classify two-dimensional shapes by their properties.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ circle ○ rectangle ○ segment ○ square
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ angle ○ parallel lines ○ perpendicular lines ○ quadrilateral
<i>Test Words</i>	<ul style="list-style-type: none"> ○ classify

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

BEFORE LESSON

Draw triangles, circles, squares, and rectangles on the board. Have students identify real-world examples of items that are in these shapes. Have volunteers identify each shape by name.

GUIDED PRACTICE**Basic Geometric Terms****Contributions of Ancient Civilizations****Angles****Triangles and Quadrilaterals****Circles****CORE SKILL****Analyze Events and Ideas**

Discuss with students what pi represents. Some students may know that it is used in formulas for calculations with circles. Pi is equal to the ratio of a circle's circumference to its diameter. It is not a whole number or even a rational number, which is why only approximations can be found. Have students search for an interactive representation of Archimedes' calculations to help them visualize it.

Evaluate Reasoning

Have students read the sidebar. Point out that sometimes in the lesson, details are given in the problem, and sometimes they are included on the diagram. Then have them flip through the lesson, identifying the given information in diagrams.

EXTENSION**Ask Questions**

Have students ask each other questions about angles, triangles, and quadrilaterals: How many triangle types are there? How can you tell if an angle is a right angle? What is the difference between a square and a rectangle?

Classify Lines

Place and label four points in a plane. No three points can lie in a single line. Ask students: How many lines can be formed? Have students sketch intersecting, perpendicular, and parallel lines to the line segments. They should label the points and use the correct symbols and vocabulary to name each figure. Then have them classify each line by type in a list.

LESSON REVIEW

WRITING PRACTICE

○

GEOMETRY**MATERIALS**

- o CCB Mathematics pages 332 - 337

CCR STANDARDS

- o MP.4: Model with mathematics.
- o Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume.

OBJECTIVES

- o Find the perimeter of polygons
- o Find the circumference of circles

KEY CONCEPT

- o Understand and apply concepts of perimeter and circumference.

VOCABULARY

<i>Tier 2</i>	o perimeter
<i>Tier 3</i>	o circumference o diameter o pi o radius
<i>Test Words</i>	o

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

12.2: Perimeter and Circumference**BEFORE LESSON**

Draw a square and a rectangle on the board. Label the square "square" and the rectangle "rectangle." Then have volunteers label the sides of the figures with tick marks to show congruency. Note that students will need to use a single tick mark on one pair of congruent sides of the rectangle, and double tick marks on the other pair of congruent sides. Single tick marks can be used on the square because all the sides are the same length. Explain to students that knowing these properties of a square and rectangle will help them find missing lengths.

GUIDED PRACTICE

Perimeter

Mathematical Practices

Circumference

CORE SKILL**Model with Mathematics**

Have students read the passage and work in pairs to complete the activity at the end. It may be tricky because it is abstract-the actual dimensions of the garden are not given. Students can choose an actual value for the length and width to help them identify the steps needed. A possible solution is: 1) Measure the length and width of the plot. 2) Use the formula to find the perimeter of the plot. This is the amount of fencing needed. 3) Divide the perimeter by the number of families, 25, to find the amount of fencing each family gets to paint.

Build Lines of Reasoning

Have the students read the text and then complete the activity in pairs. Make sure students identify the end goal (perimeter of the square) first, and then show logical steps toward the solution.

EXTENSION**Rephrase Finding Circumference**

Review the section on finding circumference, paying special attention to the relationship between the radius and the diameter. Have students explain the relationship to partners in their own words.

Revise a Formula

Tell students that there is another formula for circumference that uses radius instead of diameter. Explain that they can revise the diameter formula to find it. See if students can figure out what it is ($C = 2\pi r$) and then develop a logical argument explaining why it is true.

LESSON REVIEW

GEOMETRY**MATERIALS**

- o CCB Mathematics pages 338 - 345

CCR STANDARDS

- o MP.5: Use appropriate tools strategically.
- o Analyze proportional relationships and use them to solve real-world and mathematical problems.
- o Draw, construct, and describe geometrical figures and describe the relationships between them.

OBJECTIVES

- o Compute actual lengths from a scale drawing
- o Draw geometric shapes with given conditions
- o Reproduce a scale drawing at a different scale

KEY CONCEPT

- o You can use scale drawings to discover information about the actual objects those drawings represent.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> o proportion o scale drawing
<i>Tier 3</i>	<ul style="list-style-type: none"> o scale factor
<i>Test Words</i>	<ul style="list-style-type: none"> o

INTERACTIVE STRATEGY

- o

WRITING TOPIC

- o

WRITING PRACTICE

- o

12.3: Scale Drawings and Measurement**BEFORE LESSON**

Draw sketches of one dog and two cats on the board. Ask students to write the ratios of dogs to cats, cats to dogs, cats to animals, and dogs to animals, both with a colon and as a fraction.

GUIDED PRACTICE**Scale Factor****Scale Drawings****Draw Geometric Shapes with****Given Conditions****Reproduce a Scale Drawing of a****Different Scale****CORE SKILL****Use Appropriate Math Tools**

This section discusses various types of tools for measuring length. The type of tool used is highly dependent on the size of the object to be measured, e.g., a micrometer or calipers would be used to make very small measurements (on the order of 1/100 of an inch), whereas a yardstick could be used to make medium-sized measurements (anywhere from 1 to 36 inches.) Have students read the section. Then ask them to perform an Internet search to learn about different measurement tools for measuring length. Ask them to categorize them according to the size of measurements that need to be made, e.g., for measuring the perimeter of a room, it would be more practical to use a tape measure or a yardstick as opposed to a 12-inch ruler.

Solve Problems Involving Scale Drawings of Geometric Figures

This section covers times in which students need to use both geometry and algebra to obtain measurements of actual objects from a scale drawing. Have students read the text. Allow students to work in pairs or groups to solve the problem. Make sure students understand that the ratio they are working with is length to width.

EXTENSION**Find Multiple Meanings**

Have students look up the word "scale" and examine its various meanings and usages (it can be used as a noun and a verb). Ask students to use these meanings and usages in different sentences to develop a better understanding of the concept of scale. Support student understanding with pictures, if necessary.

Investigate Angles and Scale Drawings

Have students investigate whether angles remain the same when converting from the measurements of a real object to that of a scale drawing. Using a scale drawing of simple geometric shapes, such as triangles, trapezoids, etc., have students measure the angles associated with these shapes using a protractor. Then have them draw these shapes to a specified scale and measure the angles again. The angles should remain the same.

LESSON REVIEW

GEOMETRY**12.4: Area****MATERIALS**

- CCB Mathematics pages 346 - 351

CCR STANDARDS

- Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume.

OBJECTIVES

- Find the area of squares, rectangles, and triangles
- Find the area of circles
- Find the area of complex shapes

KEY CONCEPT

- Develop and apply the concept of area to find the areas of simple and complex shapes.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ area ○ complex shape ○ height ○ length ○ width
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ base
<i>Test Words</i>	<ul style="list-style-type: none"> ○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

BEFORE LESSON

Draw the four shapes from the top of the student lesson on the board. Label the measurements. Have students identify the length and width of the square and rectangle, the base and height of the triangle, and the radius and diameter of the circle.

GUIDED PRACTICE**Area of Rectangles, Squares, and Triangles****Area of Triangles****Area of Circles****Area of Complex Shapes****CORE SKILL****Build Lines of Reasoning**

Give students time to read the sidebar. Have them discuss the activity in small groups. They should come to the conclusion that the area of a triangle is equal to half the area of a rectangle with the length and width equal to the base and height. Tell students that they can remember this if they forget the formula for the area of a triangle, and it will help them to remember to multiply by $\frac{1}{2}$.

Build Solution Pathways

Have students read the sidebar and compare the list of steps to the list they made for perimeter. Have students work in groups to solve the problem at the end. It may be tricky because they have not solved this type of problem before. If students need help, lead them to understand that the first step is to use the circumference to find the radius. Then they can use the radius to calculate the area. Because the circumference equals two times pi times radius, divide 25.12 by 2π , or set up an equation to solve for r . Since the radius is 4, the area is approximately 50.24 cm^2 .

EXTENSION**Use a Graphic Organizer**

Have students draw or complete copies of a Venn diagram (see the Graphic Organizer section of the Instructor Resource Binder for a blackline master) for circles with one section labeled "Area" and the other section "Circumference." Have students fill in as much information as they can in the diagram.

Investigate the Area of Parallelograms

Have students develop a formula for finding the area of a parallelogram. Have them research online or investigate on their own with drawings or graph paper. They can apply what they know about the area of a rectangle and the area of triangles. Have them develop a logical argument for their formula.

(The area of a parallelogram is found by multiplying the base by the height.)

LESSON REVIEW

*GEOMETRY***12.5: Pythagorean Theorem***MATERIALS*

- o CCB Mathematics pages 352 - 359

CCR STANDARDS

- o Understand and apply the Pythagorean Theorem.

OBJECTIVES

- o Explain the Pythagorean theorem
- o Apply the Pythagorean theorem to solve problems

KEY CONCEPT

- o The Pythagorean Theorem shows a special relationship between the sides of a right triangle.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> o congruent o proof
<i>Tier 3</i>	<ul style="list-style-type: none"> o Pythagorean theorem o quadratic equations o theorem
<i>Test Words</i>	<ul style="list-style-type: none"> o hypotenuse o leg

INTERACTIVE STRATEGY

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WRITING TOPIC

- o

WRITING PRACTICE

- o

BEFORE LESSON

To determine student readiness, have students classify triangles by their angles (acute, right, and obtuse) and have them practice computing squares and square roots of numbers.

GUIDED PRACTICE

Right Triangles

Pythagorean Theorem

The Proof of the Pythagorean Theorem

Identifying Right Triangles

Recognizing Pythagorean Triples

Missing Side Lengths

The Distance between Two Points
on a Coordinate Graph

CORE SKILL**Analyze Events and Ideas**

This sidebar introduces the philosopher Pythagoras and his work in mathematics. Have students read the text. Then allow them to work in groups to research the life of Pythagoras and how his theories had a profound effect on science and mathematics that has lasted into modern times. Have them summarize their findings and share them with the class.

Solve Quadratic Equations

This section guides students through the solution of a simple quadratic equation that has the form $x^2 = c$ where c is a constant. This solution method can be used to determine the length of the hypotenuse of a right triangle, given the lengths of its legs. Have students read the text. Then have a volunteer explain why the value of x is 5.

EXTENSION**Make Word Comparisons**

Provide definitions, and then have students compare the words "theorem" and "theory." While these words seem similar, they have different meanings.

Apply the Pythagorean Theorem

Have students research on the Internet the generalization of the Pythagorean theorem to the areas of squares and other similar figures that have one boundary coincident with the side of a right triangle. Students should find that the same relationship is still true of the area of the similar shapes touching the corresponding sides.

LESSON REVIEW

GEOMETRY**MATERIALS**

- CCB Mathematics pages 360 - 365

CCR STANDARDS

- Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume.

OBJECTIVES

- Identify three-dimensional figures
- Identify rectangular solids and cubes
- Find the volume of rectangular solids and cubes

KEY CONCEPT

- Extend understanding of geometric figures to include solids and the concept of volume.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ cube ○ edge ○ face ○ volume
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ rectangular prism ○ rectangular solid ○ three-dimensional ○ vertex
<i>Test Words</i>	<ul style="list-style-type: none"> ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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12.6: Geometric Solids and Volume**BEFORE LESSON**

Write several multiplication problems with three factors on the board and have students solve them. For example: $10 * 8 * 6$; $13 * 7 * 4$; $10 * 10 * 10$. Encourage students to use any strategies they have learned in the lessons.

GUIDED PRACTICE

Solids

Volume of Rectangular Solids

Volume of Cubes

CORE SKILL**Solve Real-World Problems**

Have students read the text. Then have them work in small groups to answer the question at the end. To determine whether there is enough concrete, students will need to find how many pounds one cubic foot of concrete weighs, and then divide the pounds of concrete by that number and see if it is at least the number of square feet needed for the cube.

Calculate Volume

Have students read the text. Then have them work in small groups to solve the problem. They will need to know that 3 feet equal 1 yard. Encourage them to draw pictures and provide them with small cubes to model the problem. One way to think about it is to imagine slicing the large cube into three slices that are 1 foot high. Each slice is 1 yard by 1 yard, which equals 3 feet by 3 feet. So each slice can make nine 1 ft. 3 cubes, and the entire large cube could be made into 3 times 9 or 27 cubic foot cubes.

EXTENSION**Visualize Solids**

Most students will have seen many examples of rectangular solids in their lives. Have them visualize the solids they already know as they learn the geometric terms related to them. Have them make a list of the rectangular solids they think of and verbally explain the use of the solids.

Construct Prisms

Ask students: What are the dimensions of two different rectangular prisms you could make using 24 cubes? Then ask: How many different rectangular prisms can you make using 30 cubes? Have students describe the prisms in terms of dimensions and volume.

LESSON REVIEW

GEOMETRY**MATERIALS**

- CCB Mathematics pages 366 - 371

CCR STANDARDS

- MP.4: Model with mathematics.
- MP.7: Look for and make use of structure.
- Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume.

OBJECTIVES

- Calculate the volumes of cones, cylinders, and spheres
- Calculate the volumes of complex 3-D objects

KEY CONCEPT

- The volume of a cone, cylinder, or sphere is the amount of measurable space inside the object. These objects are three-dimensional, meaning they have length, width, and height. So, their units of measurement are cubed, such as in^3 , ft^3 , and m^3 .

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ apex ○ base ○ cone ○ cylinder ○ sphere
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ frustum
<i>Test Words</i>	<ul style="list-style-type: none"> ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE**12.7: Volume of Cones, Cylinders, and Spheres****BEFORE LESSON**

Review with students the method for calculating the areas of composite and complex objects. This will set the stage for calculating the volumes of composite and complex 3-D shapes. For example, a washer is an object placed on a bolt, between the end of the bolt, and a nut. It is used to help distribute the weight of the bolt. The area of the flat side of a washer with an outer radius 1 inch and an inner radius 0.5 inches is $7\pi \times 12 - 7\pi \times 0.52 = 0.757\pi$ square inches.

GUIDED PRACTICE**Volume and 3-D Shapes****Volume of a Cylinder****Volume of a Cone****Volume of a Sphere****CORE SKILL****Model with Mathematics**

Have students read the text. Then have students work in small groups to find the volume of the frustum. Volumes of complex 3-D shapes can be calculated by subtracting volumes. In this case, cutting off the top of a cone results in a smaller cone and a frustum. Thus, the volume of a frustum is the difference in volume between the two cones.

Make Use of a Structure

This section guides students to recognize that the area of a circle, $A = \pi r^2$, is a factor that is common to the formulas for a cone, sphere, and cylinder. It then reinforces this notion geometrically by guiding students to recognize that a circle is common to each of these 3-D shapes. Have students read the text. Then have small groups see how many different ways they can relate the three formulas. Have them complete the activity independently in their notebooks.

EXTENSION**Find Multiple Meanings**

Have students look up the various definitions of the word volume and ask them to use the word in separate sentences illustrating the different meanings. Provide support if they have trouble understanding any of the definitions. Ask them where they see similarities in meanings among the various definitions, particularly those that directly pertain to mathematics.

Compare Formulas

Have students compare the similarities and differences among the volume formulas covered in this lesson with those of 3-D objects that have straight

o

edges, such as a cube, a pyramid, and a triangular prism. Have them create a Venn diagram comparing these two types of solids (see the Graphic Organizer section of the Instructor Resource Binder for a blackline master).

LESSON REVIEW

NUMBER SENSE AND OPERATIONS**MATERIALS**

- CCA Mathematics pages 12 - 19

OBJECTIVES

- Identify rational numbers
- Order fractions and decimals on a number line
- Calculate absolute value

KEY CONCEPT

- Rational numbers include whole numbers, fractions, decimals and their opposites. A number line is a useful math tool for comparing and ordering rational numbers

VOCABULARY*Tier 2*

- Absolute Value
- Integers
- Rational Numbers
- Denominator
- Numerator
- Order

Tier 3

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Test Words

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INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

1.1: Order Rational Numbers**BEFORE LESSON****GUIDED PRACTICE****Rational Numbers****Working with Fractions and Decimals****Absolute Value****CORE SKILL****Use Math Tools Appropriately****Apply Number Sense****EXTENSION****LESSON REVIEW**

NUMBER SENSE AND OPERATIONS**MATERIALS**

- o CCA Mathematics pages 20 - 27

OBJECTIVES

- o Determine LCM and GCF of two positive numbers (not necessarily different)
- o Apply number properties (distributive, and Associative Properties) to rewrite numerical expressions
- o Determine when a numerical expression is undefined

KEY CONCEPT

- o The least common multiple and greatest common factor of a pair can be used to solve problems. Awareness of number properties can be helpful in evaluating numerical expressions, although some expressions are undefined.

VOCABULARY

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|---------------|--|
| <i>Tier 2</i> | <ul style="list-style-type: none"> o Greatest Common Factor o Least Common Multiple o Order of Operations |
|---------------|--|

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|---------------|---|
| <i>Tier 3</i> | <ul style="list-style-type: none"> o Addend o Factor o Undefined |
|---------------|---|

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|-------------------|---|
| <i>Test Words</i> | <ul style="list-style-type: none"> o |
|-------------------|---|

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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1.2: Apply Number Properties**BEFORE LESSON****GUIDED PRACTICE****Factors and Multiples****Properties of Numbers****Order of Operations****CORE SKILL****Apply Number Sense Concepts****Perform Operations****EXTENSION****LESSON REVIEW**

NUMBER SENSE AND OPERATIONS**MATERIALS**

- CCA Mathematics pages 28 - 35

OBJECTIVES

- Apply rules of exponents to expressions
- Perform operations on numbers written in scientific notation
- Solve real-world problems involving squares and cubes

KEY CONCEPT

- Exponents can be used to represent and solve problems, such as those involving squares and cubes or scientific notation. You can rewrite and simplify expressions involving exponents.

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VOCABULARY*Tier 2*

- Cube
- Scientific Notation
- Square

Tier 3

- Order of Operations
- Reciprocals
- Standard Notation

Test Words

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INTERACTIVE STRATEGY

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WRITING TOPIC

○

WRITING PRACTICE

○

1.3: Compute with Exponents**BEFORE LESSON****GUIDED PRACTICE****Exponential Notation****Rules of Exponents****Scientific Notation****CORE SKILL****Represent Real-World Problems****Make Use of Structure****EXTENSION****LESSON REVIEW**

NUMBER SENSE AND OPERATIONS**MATERIALS**

- CCA Mathematics pages 36 - 43

OBJECTIVES

- Perform computations with square and cube roots
- Solve Real-World problems involving square and cube roots
- Simplify expressions involving roots using the properties of rational exponents

KEY CONCEPT

- Numerical expressions involving roots (often called radicals) can be written using rational exponents and then simplified using the rules of exponents.

VOCABULARY

<i>Tier 2</i>	<ul style="list-style-type: none"> ○ Cube Root ○ Rational Exponent ○ Square Root
<i>Tier 3</i>	<ul style="list-style-type: none"> ○ Index ○ Irrational Numbers ○ Prime Factorization
<i>Test Words</i>	<ul style="list-style-type: none"> ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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1.4: Compute with Roots**BEFORE LESSON****GUIDED PRACTICE****Square Roots and Cube Roots****Approximating Square and Cube Roots****Radicals and Rational Exponents****CORE SKILL****Represent Real-World Arithmetic Problems****Attend to Precision****EXTENSION****LESSON REVIEW**

*RATIO, PROPORTION, AND
PROBABILITY***MATERIALS**

- CCA Mathematics pages 48 - 53

OBJECTIVES

- Compute unit rates
- Use scale factors
- Apply ratios and proportions to solve real-world problems

KEY CONCEPT

- A ratio, which is often written as a fraction, is a comparison of the relative sizes of two numbers. Operations on ratios follow the same rules as operations on fractions. When two ratios are equivalent, they are called proportional.

VOCABULARY*Tier 2*

- Proportion
- Ratio
- Scale Factor
- Unit Rate

Tier 3

- Equivalent
- Similar

Test Words

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INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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2.1: Apply Ratios and Rates**BEFORE LESSON****GUIDED PRACTICE****Ratios****Proportions****CORE SKILL****Compare Unit Rates****Use Ratio Reasoning****EXTENSION****LESSON REVIEW**

**RATIO, PROPORTION, AND
PROBABILITY****MATERIALS**

- o CCA Mathematics pages 54 - 61

OBJECTIVES

- o Relate fractions, decimals, and percents
- o Compute percent change
- o Find a discount
- o Calculate simple interest
- o Use percent to solve real-world problems

KEY CONCEPT

- o A percent is a ratio of a number to 100. In fact, the word percent comes from the Latin term *per centum*, meaning “by the hundred,” and it is represented by the symbol %. Fractions and decimals are also ratios, and they are related to percents.

VOCABULARY**Tier 2**

- o Discount
- o Percent
- o Simple interest

Tier 3

- o Benchmark
- o Interest Rate
- o Principal

Test Words

- o

INTERACTIVE STRATEGY

- o

WRITING TOPIC

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WRITING PRACTICE

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2.2: Calculate real-World Percentage**BEFORE LESSON****GUIDED PRACTICE****Percent of a Number****Percent Change****Simple Interest****CORE SKILL****Use Tools Strategically****Use Percent****EXTENSION****LESSON REVIEW**

*RATIO, PROPORTION, AND
PROBABILITY**MATERIALS*

- o CCA Mathematics pages 62 - 69

OBJECTIVES

- o Apply the Fundamental Counting Principle
- o Recognize and calculate factorials
- o Determine permutations and combinations

KEY CONCEPT

- o Certain events can allow for uncertainty. When this occurs, it can be possible to determine the number of possible outcomes by using permutations and combinations.

VOCABULARY

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|---------------|--|
| <i>Tier 2</i> | <ul style="list-style-type: none"> o Combination o Experiment o Factorial o Outcome o Permutation |
|---------------|--|

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| <i>Tier 3</i> | <ul style="list-style-type: none"> o Tree Diagram |
|---------------|--|

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|-------------------|---|
| <i>Test Words</i> | <ul style="list-style-type: none"> o |
|-------------------|---|

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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2.3: Use Counting Techniques**BEFORE LESSON****GUIDED PRACTICE****Factorials****Permutations****Combinations****CORE SKILL****Use Counting Techniques****Model with Mathematics****EXTENSION****LESSON REVIEW**

*RATIO, PROPORTION, AND
PROBABILITY**MATERIALS*

- o CCA Mathematics pages 70 - 77

OBJECTIVES

- o Determine the probability of simple events
- o Determine the probability of compound events

KEY CONCEPT

- o The probability of a chance event uses a number between 0 and 1 to describe the likeliness that the event will occur. You can use the number of total and favorable outcomes of an event to determine the probabilities of simple or compound events.

*VOCABULARY**Tier 2*

- o Compound Event
- o Probability
- o Tree Diagram

Tier 3

- o Complement
- o Dependent Event
- o Independent Event

Test Words

- o

INTERACTIVE STRATEGY

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WRITING TOPIC

- o

WRITING PRACTICE

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2.4: Determine Probability**BEFORE LESSON****GUIDED PRACTICE****Probability of Simple Events****Probability of Compound Events****CORE SKILL****Determine Probabilities****EXTENSION****LESSON REVIEW**

LINEAR EQUATIONS AND INEQUALITIES

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

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VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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3.1: Evaluate Linear Expressions

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

LINEAR EQUATIONS AND INEQUALITIES

MATERIALS

- CCA Mathematics pages

OBJECTIVES

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KEY CONCEPT

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VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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3.2: Solve Linear Equations

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

LINEAR EQUATIONS AND INEQUALITIES

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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3.3: Solve Linear Inequalities

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

LINEAR EQUATIONS AND INEQUALITIES

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

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VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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3.4: Use Expressions, Equations, and inequalities to Solve Real-World Problems

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

POLYNOMIALS AND RATIONAL NUMBERS

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

-

WRITING PRACTICE

-

4.1: Evaluate Polynomials

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

*POLYNOMIALS AND RATIONAL
NUMBERS*

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

-

WRITING PRACTICE

-

4.2: Factor Polynomials

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

*POLYNOMIALS AND RATIONAL
NUMBERS*

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

4.3: Solve Quadratic Equations

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

POLYNOMIALS AND RATIONAL NUMBERS

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

-

WRITING PRACTICE

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4.4: Evaluate Rational Expressions

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

LINEAR EQUATIONS IN THE COORDINATE PLANE

MATERIALS

- CCA Mathematics pages

OBJECTIVES

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KEY CONCEPT

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VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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5.1: Interpret Slope

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

LINEAR EQUATIONS IN THE COORDINATE PLANE

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

5.2: Write the Equation of a Line

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

LINEAR EQUATIONS IN THE COORDINATE PLANE

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

-

5.3: Graph Linear Equations

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

LINEAR EQUATIONS IN THE COORDINATE PLANE

MATERIALS

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2 | ○

Tier 3 | ○

Test Words | ○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

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5.4: Solve Systems of Linear Equations

BEFORE LESSON

GUIDED PRACTICE

CORE SKILL

EXTENSION

LESSON REVIEW

<i>FUNCTIONS</i>	6.1: Identify a Function						
<p><i>MATERIALS</i></p> <ul style="list-style-type: none"> CCA Mathematics pages <p><i>OBJECTIVES</i></p> <ul style="list-style-type: none"> <p><i>KEY CONCEPT</i></p> <ul style="list-style-type: none"> <p><i>VOCABULARY</i></p> <table border="1" data-bbox="107 521 795 675"> <tr> <td><i>Tier 2</i></td><td>○</td></tr> <tr> <td><i>Tier 3</i></td><td>○</td></tr> <tr> <td><i>Test Words</i></td><td>○</td></tr> </table> <p><i>INTERACTIVE STRATEGY</i></p> <ul style="list-style-type: none"> <p><i>WRITING TOPIC</i></p> <ul style="list-style-type: none"> <p><i>WRITING PRACTICE</i></p> <ul style="list-style-type: none"> 	<i>Tier 2</i>	○	<i>Tier 3</i>	○	<i>Test Words</i>	○	<p>BEFORE LESSON</p> <hr/> <p>GUIDED PRACTICE</p> <hr/> <p>CORE SKILL</p> <hr/> <p>EXTENSION</p> <hr/> <p>LESSON REVIEW</p> <hr/>
<i>Tier 2</i>	○						
<i>Tier 3</i>	○						
<i>Test Words</i>	○						

<i>FUNCTIONS</i>	6.2: Identify Linear and Quadratic Functions						
<p><i>MATERIALS</i></p> <ul style="list-style-type: none"> CCA Mathematics pages <p><i>OBJECTIVES</i></p> <ul style="list-style-type: none"> <p><i>KEY CONCEPT</i></p> <ul style="list-style-type: none"> <p><i>VOCABULARY</i></p> <table border="1" data-bbox="107 521 795 675"> <tr> <td><i>Tier 2</i></td><td>○</td></tr> <tr> <td><i>Tier 3</i></td><td>○</td></tr> <tr> <td><i>Test Words</i></td><td>○</td></tr> </table> <p><i>INTERACTIVE STRATEGY</i></p> <ul style="list-style-type: none"> <p><i>WRITING TOPIC</i></p> <ul style="list-style-type: none"> <p><i>WRITING PRACTICE</i></p> <ul style="list-style-type: none"> 	<i>Tier 2</i>	○	<i>Tier 3</i>	○	<i>Test Words</i>	○	<p>BEFORE LESSON</p> <hr/> <p>GUIDED PRACTICE</p> <hr/> <p>CORE SKILL</p> <hr/> <p>EXTENSION</p> <hr/> <p>LESSON REVIEW</p> <hr/>
<i>Tier 2</i>	○						
<i>Tier 3</i>	○						
<i>Test Words</i>	○						

<i>FUNCTIONS</i>	6.3: Identify Key Features of a Graph						
<p><i>MATERIALS</i></p> <ul style="list-style-type: none"> CCA Mathematics pages <p><i>OBJECTIVES</i></p> <ul style="list-style-type: none"> <p><i>KEY CONCEPT</i></p> <ul style="list-style-type: none"> <p><i>VOCABULARY</i></p> <table border="1" data-bbox="107 521 795 675"> <tr> <td><i>Tier 2</i></td><td>○</td></tr> <tr> <td><i>Tier 3</i></td><td>○</td></tr> <tr> <td><i>Test Words</i></td><td>○</td></tr> </table> <p><i>INTERACTIVE STRATEGY</i></p> <ul style="list-style-type: none"> <p><i>WRITING TOPIC</i></p> <ul style="list-style-type: none"> <p><i>WRITING PRACTICE</i></p> <ul style="list-style-type: none"> 	<i>Tier 2</i>	○	<i>Tier 3</i>	○	<i>Test Words</i>	○	<p>BEFORE LESSON</p> <hr/> <p>GUIDED PRACTICE</p> <hr/> <p>CORE SKILL</p> <hr/> <p>EXTENSION</p> <hr/> <p>LESSON REVIEW</p> <hr/>
<i>Tier 2</i>	○						
<i>Tier 3</i>	○						
<i>Test Words</i>	○						

FUNCTIONS**MATERIALS**

- CCA Mathematics pages

OBJECTIVES

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KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

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WRITING PRACTICE

-

6.4: Compare Functions**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*GEOMETRY AND MEASUREMENT**MATERIALS*

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

7.1: Compute Perimeter and Area of Polygons**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*GEOMETRY AND MEASUREMENT**MATERIALS*

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

Tier 2	○
Tier 3	○
Test Words	○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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7.2: Compute Circumference and Area of Circle**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*GEOMETRY AND MEASUREMENT**MATERIALS*

- CCA Mathematics pages

OBJECTIVES

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KEY CONCEPT

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VOCABULARY

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<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

-

7.3: Compute Surface Area and Volume**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*GEOMETRY AND MEASUREMENT***7.4: Compute Perimeter, Area, Surface Area, and Volume of Composite Figures***MATERIALS*

- CCA Mathematics pages

OBJECTIVES

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KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
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<i>Tier 3</i>	○
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<i>Test Words</i>	○
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INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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BEFORE LESSON**GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*DATA ANALYSIS**MATERIALS*

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OBJECTIVES

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KEY CONCEPT

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VOCABULARY

<i>Tier 2</i>	○
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<i>Tier 3</i>	○
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<i>Test Words</i>	○
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INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

-

8.1: Calculate Measures of Central Tendency**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*DATA ANALYSIS**MATERIALS*

- CCA Mathematics pages

OBJECTIVES

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KEY CONCEPT

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VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

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WRITING TOPIC

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WRITING PRACTICE

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8.2: Display Categorical Data**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*DATA ANALYSIS**MATERIALS*

- CCA Mathematics pages

OBJECTIVES

-

KEY CONCEPT

-

VOCABULARY

<i>Tier 2</i>	○
<i>Tier 3</i>	○
<i>Test Words</i>	○

INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

8.3: Display One-Variable Data**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**

*DATA ANALYSIS**MATERIALS*

- CCA Mathematics pages

OBJECTIVES

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KEY CONCEPT

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VOCABULARY

<i>Tier 2</i>	○
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<i>Tier 3</i>	○
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<i>Test Words</i>	○
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INTERACTIVE STRATEGY

-

WRITING TOPIC

-

WRITING PRACTICE

-

8.4 Display Two-Variable Data**BEFORE LESSON****GUIDED PRACTICE****CORE SKILL****EXTENSION****LESSON REVIEW**