

**Berkeley Heights Public Schools Curriculum
Berkeley Heights, New Jersey**



Mathematics

Grade 5

Date Adopted: July 2022



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ACKNOWLEDGEMENTS

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CURRICULUM WRITING TEAM

We would like to thank the 2021-2022 Elementary Math Committee for all of their hard work throughout the school year. The team members included: Nicole Abbate, Nicole Belisario, Alexis Bellardino, Melany Castellanos, Kate Corcoran, Genevieve Dagan, Kathy Finkelstein, Erin McKeon, Eli Quinonez, Joe Reel, Gina Roof, Rachel Shanagher, and Pamela Wilczynski.

We would also like to thank the Elementary Math Curriculum Writing team: Nicole Abbate, Alexis Bellardino, Kate Corcoran, Gen Dagan, Emily Goodman, Erin McKeon, Caryn Panarese, Rachel Shanagher, Pamela Wilczynski, and Marybeth Kopacz.



DOCUMENT OVERVIEW

The guidelines for developing curriculum in the Berkeley Heights Public Schools include the New Jersey State Learning Standards (NJSLS). These standards spell out specific learning expectations for each grade level and content area. We use a variation of the *Understanding by Design* (UbD) model of curriculum development and organization.

Prerequisite Knowledge and Skills: A brief description of foundational knowledge and skills that students should have mastered to equip them with the readiness skills necessary to make meaning of the objective of this lesson/unit.

Essential Questions and Enduring Understandings: These questions are used to help students conceptualize overarching ideas and to find personal meaning in their learning. Enduring Understandings are statements summarizing important ideas, key take-aways, and core processes that are central to a discipline, and have lasting value beyond the classroom.

Formative Assessment: Assessments that give ongoing diagnosis of learning as students engage in the unit. Results of formative assessment are used for reteaching or extending learning.

Summative Assessment: Assessment that indicates the level of mastery of concepts, knowledge and skills of a unit.

Instructional Strategies/Learning Activities: Describes the differentiated teaching strategies that create high-quality instruction to address the needs of all students, engage students in their own learning, and build students' capacity and interest in learning.

Demonstrations of Understanding: These Six Facets underlie students' opportunities to demonstrate their understanding of content knowledge and skills using the *Understanding by Design* model of curriculum.

1. **Explanation:** Students can explain the core meaning of learning in a way that communicates the key concepts embodied in the knowledge and skill of the standard.
2. **Interpretation:** Students can articulate why a particular standards/learning matters, relate it to other learnings, and can translate the impact of this learning on personal, societal, and scientific issues.
3. **Application:** Students can use the learning in new contexts that differ from the instructional context and can modify and flexibly use learning to suit the context.
4. **Perspective:** Students can question assumptions, conclusions and points of view and can express different viewpoints on issues and/or seek different solutions for problems.
5. **Empathy:** Students can "stand in another's shoes" and see a situation from the inside out.
6. **Self-knowledge:** Students can evaluate how they learn, examine what helps and does not help them in the learning process, and set goals to support ongoing learning. Self-knowledge asks students to identify their own barriers to learning, e.g., blind spots, misconceptions.



MATHEMATICS PRINCIPLES

The principles for school mathematics address the overarching themes of equity, curriculum, teaching, learning, assessment and technology. (NCTM, 2000)

Equity: Excellence in mathematics education requires equity – high expectations, worthwhile opportunities, accommodation for differences, resources, and strong support for all students.

Curriculum: A coherent curriculum effectively organizes standards and mathematical ideas, focuses on important mathematics, and is well articulated within and across grades.

Teaching: Effective standards-aligned mathematics instruction is a complex endeavor that requires understanding what students know and need to learn, and then challenging and supporting them to learn it well. Effective teaching requires continually seeking improvement.

Learning: Conceptual understanding is an important component of proficiency. Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge. Learning with understanding is essential to enable students to solve the new kinds of problems they will inevitably face in the future.

Assessment: Standards-aligned assessment, a routine part of ongoing classroom activity, should enhance students' learning and inform instructional decisions.

Technology: Technology, not to be used as a replacement for basic understandings and intuitions, is an essential tool in teaching and learning mathematics; it influences the mathematics that is taught, supports visualization, facilitates organizing and analyzing data, and offers efficient computation.



MATHEMATICS STANDARDS

Intent and Spirit of the Mathematics Standards

Research studies of mathematics education in high-performing countries have concluded that mathematics education in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on this promise, the mathematics standards are designed to address the problem of a curriculum that is "a mile wide and an inch deep."

The math standards provide **clarity and specificity** rather than broad general statements. The standards draw on the most important international models for **mathematical practice**, as well as research. They endeavor to follow the design envisioned by William Schmidt and Richard Houang (2002), by not only **stressing conceptual understanding** of key ideas, but also by continually returning to organizing principles (coherence) such as place value and the laws of arithmetic to structure those ideas.

In addition, the "sequence of topics and performances" that is outlined in a body of math standards must respect what is already known about how students learn. As Confrey (2007) points out, developing "sequenced obstacles and challenges for students...absent the insights about meaning that derive from careful study of learning, would be unfortunate and unwise." Therefore, the development of the standards began with research-based learning progressions detailing what is known today about how students' mathematical knowledge, skill, and understanding develop over time. The knowledge and skills students need to be prepared for mathematics in college, career, and life are woven throughout the mathematics standards.

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

NJ Student Learning Standards K-5, can be found at this link:

<https://www.nj.gov/education/standards/math/Index.shtml>



CURRICULUM PACING GUIDE

UNIT NUMBER	UNIT TITLE	SUGGESTED PACING	MATH CENTERS
1	Place Value Concepts	11 days - September	Center 1: Place Value Plug In Center 2: Skills Trainer Center 3: Draw and Write Center 4: Spin and Tell Center 5: Roll and Round *Found on page T-50
2	Numerical Expressions	8 Days - October	Center 1: Expression boss Center 2: Skills Trainer Center 3: Number Properties Foldable Center 4: Mnemonic Order of Operations Center 5: Order of Operations Puzzle *Found on page T-80
3	Add and Subtract Decimals	12 Days - October	Center 1: Decimal Dots Center 2: Skills Trainer Center 3: Decimal Boss: Addition Center 4: Race to Subtract Decimals Center 5: Roll to Make or Spend a Dollar *Found on page T-130
4	Multiply Whole Numbers	9 Days - October / November	Center 1: Multiplication Adventure Center 2: Skills Trainer Center 3: Flip and Multiply Center 4: Domino Duo Center 5: Paint Swatch Patterns *Found on page T-172

5	Multiply Decimals	13 Days - November / December	Center 1: Race Around the World: Multiplication Center 2: Skills Trainer Center 3: Decimal Catcher Center 4: Dice Decimal Products Center 5: How to Multiply Decimals Guide *Found on page T-234
6	Divide Whole Numbers	13 Days - December	Center 1: Division Dots Center 2: Skills Trainer Center 3: The Division Picture Center 4: What's the Problem? Center 5: Remember the Remainder *Found on page T-296
7	Divide Decimals	14 Days - January	Center 1: Race Around the World: Division Center 2: Skills Trainer Center 3: Divide and Connect Center 4: Decimal Division Puzzle *Found on page T-358
8	Add and Subtract Fractions	12 Days - January / February	Center 1: Mixed Number Subtract and Add Center 2: Skills Trainer Center 3: Race to Make Equivalent Fractions Center 4: What's Your Expression? Center 5: Tic-Tac-Subtract *Found on page T-420
9	Multiply Fractions	12 Days - February	Center 1: Fraction Connection: Multiplication Center 2: Skills Trainer Center 3: Fraction Dominoes Center 4: Fraction Multiplication: Race to the Finish *Found on page T-476
10	Divide Fractions	9 Days - March	Center 1: Fraction Connection: Division Center 2: Skills Trainer

			Center 3: Domino Division Center 4: Fraction Division Tic-Tac-Toe *Found on page T-512
11	Convert and Display Units of Measure	12 Days - March	Center 1: Surround and Capture Center 2: Skills Trainer Center 3: Customary Units vs. Metric Units Center 4: Customary Units and Metric Units Flip Book Center 5: Equivalent Measurement Guess *Found on page T-562
12	Patterns in the Coordinate Plane	11 Days - April	Center 1: Treasure Hunt Center 2: Skills Trainer Center 3: Coordinate Pairs Bump Center 4: Coordinate Creation Center 5: Coordinate Line Graph *Found on page T-618
13	Understand Volume	9 Days - May	Center 1: Volume Solve and Connect Center 2: Skills Trainer Center 3: Rectangular Prism Tasks Center 4: Build the Volume *Found on page T-656
14	Classify Two-Dimensional Shapes	8 Days - May / June	Center 1: Quadrilateral Lineup Center 2: Skills Trainer Center 3: Wanted Quadrilateral Center 4: Two-Dimensional Shapes Heads Up Center 5: Quadrilateral Diagram *Found on page T-680

***Teachers may want to consider teaching Chapters 12, 13, and 14 earlier in the year so the students are introduced to these units prior to NJSLA Testing.**



UNIT TITLE			
Place Value Concepts			
CONTENT AREA:	Mathematics	GRADE LEVEL:	5
UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT			
Chapter 1 - 11 days (September)			
UNIT FOCUS - SUMMARY OF UNIT			
<p>A major strand in Grade 5 is expanding students' understanding of operations of the base ten system to decimals through thousandths. This chapter focuses on understanding place value relationships, writing multiple forms of a number, comparing decimals, and rounding decimals. These ideas will form a basis for ideas to come, supporting the development of operations of addition, subtraction, multiplication and division of decimals. In this chapter, we reinforce varied representations of numbers: modeling, expanded form, word form, and standard form. Students will use their understanding of place value to correctly round decimal numbers.</p>			
KEY UNDERSTANDINGS			
<p>MATHEMATICAL PRACTICES: https://www.nj.gov/education/standards/math/Index.shtml</p>			
<p>NEW JERSEY STUDENT LEARNING STANDARDS:</p> <ul style="list-style-type: none"> ● 5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. ● 5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10. ● 5.NBT.A.3 Read, write, and compare decimals to thousandths. <ul style="list-style-type: none"> ○ a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$. ○ b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. ● 5.NBT.A.4 Use place value understanding to round decimals to any place. 			

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Explain the relationship between the value of a digit in one place and the value of the same digit in the place to its right.
- Explain the relationship between decimals and fractions.
- Compare two decimals to the hundredths place using the symbols $>$, $=$, or $<$.
- Round multi-digit numbers to a given place.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Define the value of numbers
- Explain how to use symbols to compare two numbers.
- Compare the values of two identical digits in a number.
- Read and write multi-digit numbers in multiple forms.

ESSENTIAL QUESTIONS:

- How can you use place value to represent numbers and solve problems?
- Why is place value an important concept to understand?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand place value.

STUDENTS WILL BE ABLE TO:

- Understand the relationship between place value positions.
- Write multi-digit numbers in different forms and compare the values of digits.
- Write numbers using exponents.
- Write thousandths as fractions and decimals.
- Write decimals in different forms and compare the values of digits.
- Compare decimals to the thousandths place.
- Use place value to round decimals.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING**FORMATIVE ASSESSMENTS**

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher's edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none">● Introduction of Vocabulary● Optional Pre-Test● Center Introduction
1.1	<ul style="list-style-type: none">● Find a number that is 10 times as much as a given number.● Find a number that is $\frac{1}{10}$ of a given number.● Describe how positions in a place value chart are related.
1.2	<ul style="list-style-type: none">● Identify the value of a digit in a multi-digit number.● Write multi-digit numbers in different forms.● Compare the values of two identical digits in a multi-digit number.
1.3	<ul style="list-style-type: none">● Use exponents to show powers of 10.● Find the values of expressions with powers of 10.
1.4	<ul style="list-style-type: none">● Write a decimal to the thousandths place as a fraction.● Write a fraction involving thousandths as a decimal.● Math Musical Link https://mathmusicals.com/#/grade/5/big-like-that/
1.5	<ul style="list-style-type: none">● Identify the value of a digit in a decimal.● Write decimals in different forms.● Compare the values of two identical digits in a decimal.
1.6	<ul style="list-style-type: none">● Choose a strategy to compare two decimals.● Use the symbols $<$, $>$, and $=$ to compare two decimals.● Compare and order decimals.
1.7	<ul style="list-style-type: none">● Explain which digit is used to round and why.● Round a decimal to any place.● Math Musical Link https://mathmusicals.com/#/grade/5/cheese-please/

Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

- <https://docs.google.com/document/d/1v5NF2k0cQoqhIKcSPRxcgvj7AUejTkr0Dnz2J92-9qe4/edit?usp=sharing>

INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Social Studies - research different careers and their salaries - page T-13
- Physical Education - write expressions on beach ball, pass around and solve - page T-19
- Art - have students create the first letter of their name and write the fractions that represent how many squares were colored and how many were left blank - page T-25
- Science - conduct a science experiment involving three plants, watered by three different types of water, and measure results - page T-37

STATE REQUIREMENTS

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS

<https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf>

The organization and content of the NJSLS-Career Readiness, Life Literacies, and Key Skills include the following areas:

- Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.
- Standard 9.2 Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.
- Standard 9.4 Life Literacies and Key Skills. This standard outlines key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy that are critical for students to develop to live and work in an interconnected global economy.

P21 FRAMEWORK (Partnership for 21st Century Learning):

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

SOCIAL AND EMOTIONAL COMPETENCIES AND SUBCOMPETENCIES (SEL):

- Self-awareness
- Self-management
- Social Awareness
- Responsible Decision-making
- Relationship Skills

SEL Learning Activities:

- <https://casel.org/fundamentals-of-sel/>
- https://static.bigideasmath.com/protected/content/sel/mrl22_sel_ele.pdf
- https://static.bigideasmath.com/protected/content/sel/mm_5thgrade_sel.pdf
- Suggested Brain Breaks (GoNoodle, etc)

COMPUTER SCIENCE AND DESIGN THINKING:

<https://www.nj.gov/education/cccs/2020/2020%20NJSLs-CSDT.pdf>

- Mission: Computer science and design thinking education prepares students to succeed in today's knowledge-based economy by providing equitable and expanded access to high-quality, standards-based computer science and technological design education.
- Standard 8.1 Computer Science - previously a strand entitled 'Computational Thinking: Programming' in standard 8.2 of the 2014 NJSL Technology, outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems.
- Standard 8.2 Design Thinking - This standard, previously standard 8.2 Technology Education of the 2014 NJSL – Technology, outlines the technological design concepts and skills essential for technological and engineering literacy. The new framework design, detailed previously, includes Engineering Design, Ethics and Culture, and the Effects of Technology on the Natural world among the disciplinary concepts.

Framework for 21st Century Learning

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

GLOBAL THINKING:

- **Amistad and Holocaust:**
N.J.S.A 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.
N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.
- **LGBTQIA+:** In accordance with the Inclusive Curriculum Bill A1335, signed into law in NJ in 2020, this document is to include instruction, and instructional materials for Grades 5-12, that accurately

portray political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people. This curricular document includes classroom materials that are in alignment with NJSL and Core Curriculum Content Standards and ensures that students receive diverse instruction in history, the social sciences, and other content areas, which cultivates respect towards minority groups, allows students to appreciate differences, and acquires the skills and knowledge needed to function effectively with people of various backgrounds.

- **Diversity, Equity, and Inclusion:** The ability to listen and grow empathy makes way for greater awareness of the importance of community, one's own culture, others' culture, the differences and similarities amongst people around the world, of the issues facing humanity, and of our shared interest in the success of all people. Having a "global perspective" means that we strive to educate students with the global understanding necessary to address the challenges and successes of our interdependent world. In the Berkeley Heights Public Schools, we are committed to overcoming challenges and to building interest and capacity amongst our students to be engaged with finding and celebrating commonalities and solutions to global problems, and we are committed to ensuring that our community is diverse, equitable, and inclusive. Our mission statement is to honor the diversity of our community and foster inclusiveness and acceptance through a three-tiered approach: celebration, communication, and education.
- **Climate Change:** Leverage the passion students have shown for this critical issue by providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs.

Each board of education shall provide instruction on climate change in the curriculum of elementary school, middle school, and high school students as part of the district's implementation of the New Jersey Student Learning Standards in Science.

- **"Learning for Justice" Frameworks:**

<https://www.learningforjustice.org/frameworks>

Lessons and resources - <https://www.learningforjustice.org/classroom-resources>

RESOURCES

CORE INSTRUCTIONAL AND MATERIAL RESOURCES

- *Big Ideas Math* version 2022
- *i-Ready* adaptive learning platform
- Online Learning Tools including Splash, Prodigy, XtraMath, BrainPop

HUMAN AND PROFESSIONAL RESOURCES

- Laurie's Notes from Big Ideas
- Math Specialists
- *Guided Math: A Framework for Mathematics Instruction* by Laney Sammons
- *About Teaching Mathematics, 4th edition* by Marilyn Burns
- *Math Fact Fluency: 60+ Games and Assessment Tools to Support Learning and Retention* by Jennifer Bay-Williams and Gina Kling

TEACHER NOTES



UNIT TITLE			
Numerical Expressions			
CONTENT AREA:			
Mathematics	GRADE LEVEL:		5
UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT			
Chapter 2 - 8 Days (October)			
UNIT FOCUS - SUMMARY OF UNIT			
<p>This chapter focuses on numerical expressions and the use of grouping symbols in evaluating expressions. Now that students have built skills with all four operations (add, subtract, multiply, divide), the expressions they work with will be more complex, involving multiple operations that call for an order in evaluating them. We begin the chapter with a review of number properties followed by lessons on the order of operations. The final lesson of the chapter introduces multiple grouping symbols.</p>			
KEY UNDERSTANDINGS			
<p>MATHEMATICAL PRACTICES: https://www.nj.gov/education/standards/math/Index.shtml</p>			
<p>NEW JERSEY STUDENT LEARNING STANDARDS:</p> <ul style="list-style-type: none"> ● 5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols ● 5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. 			
<p>PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):</p> <ul style="list-style-type: none"> ● Use all four operations to solve multi-step word problems. ● Use drawings and equations to model word problems. ● Use variables to represent unknown numbers. ● Check the reasonableness of an answer. 			

<p>ENDURING UNDERSTANDINGS (Chapter Success Criteria):</p> <ul style="list-style-type: none"> ● Identify number properties. ● Explain number properties to write equations. ● Interpret an expression. ● Evaluate a numerical expression. 	<p>ESSENTIAL QUESTIONS:</p> <ul style="list-style-type: none"> ● How can you use a numerical expression to understand and describe a situation?
<p>UNIT LEARNING TARGETS (STUDENTS WILL KNOW):</p> <ul style="list-style-type: none"> ● Understand numerical expressions. 	
<p>STUDENTS WILL BE ABLE TO:</p> <ul style="list-style-type: none"> ● Use number properties. ● Use order of operations to evaluate numerical expressions. ● Write numerical expressions. ● Use order of operations to evaluate expressions with grouping symbols. 	
<p>ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING</p>	
<p>FORMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> ● Quizzes ● Homework ● Anecdotal Notes ● Exit Tickets ● Math Notebooks ● Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life ● Chapter Test A - optional pre-assessment for Chapter 	
<p>SUMMATIVE ASSESSMENTS</p> <ul style="list-style-type: none"> ● Chapter Test B - required ● LinkIt and i-Ready (according to district assessment calendar) 	
<p>ALTERNATE ASSESSMENTS</p> <ul style="list-style-type: none"> ● Chapter Performance Task ● Chapter Alternative Assessment (last page of each chapter in the teacher's edition - Chapter Assessment Guide) ● Cumulative Practice ● STEAM Performance Task 	

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
2.1	<ul style="list-style-type: none"> ● Identify number properties in equations. ● Use number properties to write equivalent expressions.
2.2	<ul style="list-style-type: none"> ● Identify the operations in a numerical expression. ● Determine the order to perform the operations in a numerical expression. ● Evaluate a numerical expression.
2.3	<ul style="list-style-type: none"> ● Write a verbal statement as a numerical expression. ● Use parentheses in an expression appropriately. ● Interpret an expression.
2.4	<ul style="list-style-type: none"> ● Identify different types of grouping symbols. ● Evaluate an expression with multiple pairs of grouping symbols.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

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INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Language Arts - create and write a Help Wanted ad for how to perform one of the number properties discussed in this lesson - page T-57
- Social Studies - write and evaluate an expression to find the depth of circular bodies of water located in Florida - page T-75

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- Social Awareness
- Responsible Decision-making
- Relationship Skills

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<https://www.battelleforkids.org/networks/p21/frameworks-resources>

GLOBAL THINKING:

- **Amistad and Holocaust:**

N.J.S.A 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

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Each board of education shall provide instruction on climate change in the curriculum of elementary school, middle school, and high school students as part of the district's implementation of the New Jersey Student Learning Standards in Science.

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TEACHER NOTES



UNIT TITLE

Add and Subtract Decimals

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 3 - 12 Days (October)

UNIT FOCUS - SUMMARY OF UNIT

A major strand in Grade 5 is expanding understanding and operations of the base ten system to decimals through thousandths. This chapter focuses on understanding how place value is used to add and subtract decimals. Decimal addition and subtraction have the same meaning as whole number addition and subtraction and the operations are developed using similar strategies. The connection is that you add or subtract like place values. The chapter begins with a lesson on estimation. As students are learning to add and subtract decimals, an estimate gives them a way to judge whether their answer is reasonable. The second lesson establishes the role place value plays in addition and subtraction of decimals. Students model decimal addition and subtraction using the base ten blocks and learn to make quick sketches of the models as a transition to understanding and writing the standard algorithm. In the next three lessons, students will use place value to add and subtract decimals. The chapter ends with a lesson on applications of addition and subtraction of decimals. The problem-solving plan is used as students further develop their problem solving abilities.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/Index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.NBT.A.4 Use place value understanding to round decimals to any place.
- 5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Round multi-digit numbers to a given place.
- Fluently add and subtract multi-digit numbers.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Use rounding.
- Use place value to line up the numbers in a problem.
- Solve a problem using decimals.
- Estimate to check answer.

ESSENTIAL QUESTIONS:

- Why is it important to understand adding and subtracting decimals?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand adding and subtracting decimals.

STUDENTS WILL BE ABLE TO:

- Use rounding or compatible numbers to estimate sums and differences of decimals.
- Use models to add or subtract decimals.
- Add decimals and check whether the sum is reasonable.
- Subtract decimals and check my answer.
- Use addition and subtraction to evaluate expressions involving decimals.
- Use mental math to add or subtract decimals.
- Solve multi-step word problems involving money.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING**FORMATIVE ASSESSMENTS**

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher's edition - Chapter Assessment Guide)

- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
3.1	<ul style="list-style-type: none"> ● Use rounding to estimate a sum or difference. ● Use compatible numbers to estimate a sum or difference.
3.2	<ul style="list-style-type: none"> ● Use base ten blocks to add or subtract decimals. ● Make quick sketches to add or subtract decimals.
3.3	<ul style="list-style-type: none"> ● Add like place values to add decimals. ● Add decimals, regrouping when needed. ● Estimate a sum to check whether my answer is reasonable.
3.4	<ul style="list-style-type: none"> ● Subtract like place values to subtract decimals. ● Subtract decimals, regrouping when needed. ● Estimate a difference or use addition to check my answer. ● Math Musical Link https://mathmusicals.com/#/grade/5/cuisines-dream/
3.5	<ul style="list-style-type: none"> ● Add and subtract like place values. ● Evaluate expressions with three decimals. ● Estimate the value of an expression. ● Math Musical Link https://mathmusicals.com/#/grade/5/take-the-shot/
3.6	<ul style="list-style-type: none"> ● Use addition properties to add decimals. ● Use compensation to add or subtract decimals. ● Use place value to add or subtract decimals.
3.7	<ul style="list-style-type: none"> ● Understand a problem. ● Make a plan to solve. ● Solve a problem.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice

Connect and Grow	<ul style="list-style-type: none"> Centers
Chapter Assessment	<ul style="list-style-type: none"> Chapter Test B
Cumulative Practice (optional)	<ul style="list-style-type: none"> Cumulative Practice and STEAM Performance Task

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

- <https://docs.google.com/document/d/1v5NF2k0cQoqhlKcSPRxgvj7AUejTkr0Dnz2J92-9qe4/edit?usp=sharing>

INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Social Studies - learn about the different produce sold at grocery stores, where it might be located in the stores, and weigh them - page T-87
- Art - use modeling clay to solve an addition and subtraction equation involving decimals - page T-93
- Physical Education - time students while they run a distance of 100 meters twice and have them add their times together - page T-99
- Science - research cities' monthly average temperatures in inches and find the difference between two of them - page T-105

STATE REQUIREMENTS

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS

<https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf>

The organization and content of the NJSLS-Career Readiness, Life Literacies, and Key Skills include the following areas:

- Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.
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P21 FRAMEWORK (Partnership for 21st Century Learning):

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

SOCIAL AND EMOTIONAL COMPETENCIES AND SUBCOMPETENCIES (SEL):

- Self-awareness
- Self-management
- Social Awareness
- Responsible Decision-making
- Relationship Skills

SEL Learning Activities:

- <https://casel.org/fundamentals-of-sel/>
- https://static.bigideasmath.com/protected/content/sel/mrl22_sel_ele.pdf
- https://static.bigideasmath.com/protected/content/sel/mm_5thgrade_sel.pdf
- Suggested Brain Breaks (GoNoodle, etc)

COMPUTER SCIENCE AND DESIGN THINKING:

<https://www.nj.gov/education/cccs/2020/2020%20NJSLs-CSDT.pdf>

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TEACHER NOTES



UNIT TITLE					
Multiply Whole Numbers					
CONTENT AREA:		Mathematics	GRADE LEVEL:		5
UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT					
Chapter 4 - 9 Days (October / November)					
UNIT FOCUS - SUMMARY OF UNIT					
<p>A goal in Grade 5 is to fluently multiply multi-digit whole numbers using the standard algorithm. Students have multiplied one- and two-digit numbers by multi-digit numbers in prior grades and now their understanding is extended to multi-digit factors. The chapter begins with two lessons that review and extend support concepts for multi-digit multiplication. The first lesson focuses on multiplication by powers and multiples of 10. The second lesson builds on their rounding skills as well as introducing compatible numbers as two tools for estimation. Both are used to check calculations for reasonableness. The remaining lessons in the chapter focus on developing an understanding of multi-digit multiplication.</p>					
KEY UNDERSTANDINGS					
MATHEMATICAL PRACTICES: https://www.nj.gov/education/standards/math/index.shtml					
NEW JERSEY STUDENT LEARNING STANDARDS: <ul style="list-style-type: none">● 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.					
PREREQUISITE KNOWLEDGE AND SKILLS (Progressions): <ul style="list-style-type: none">● Fluently add and subtract multi-digit numbers.● Use properties and strategies to multiply up to a four-digit number by a one-digit number.● Multiply two-digit numbers.● Model and explain how to multiply multi-digit numbers.					

<p>ENDURING UNDERSTANDINGS (Chapter Success Criteria):</p> <ul style="list-style-type: none"> ● Identify a pattern to find a product. ● Use rounding to estimate a product. ● Represent a product. ● Model different types of products with multiplication. 	<p>ESSENTIAL QUESTIONS:</p> <ul style="list-style-type: none"> ● How can you use multiplication to represent and solve problems? ● Why is it important to know how to multiply accurately?
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UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand multiplying whole numbers.

STUDENTS WILL BE ABLE TO:

- Find products involving multiples of 10 and powers of 10.
- Use rounding and compatible numbers to estimate products.
- Multiply multi-digit numbers by one-digit numbers.
- Multiply multi-digit numbers by two-digit numbers.
- Multiply multi-digit whole numbers.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
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- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
4.1	<ul style="list-style-type: none"> ● Explain how to multiply a number by a power of 10. ● Explain how to find a product involving multiples of 10.
4.2	<ul style="list-style-type: none"> ● Use rounding to estimate a product. ● Use compatible numbers to estimate a product. ● Explain whether an estimate is an overestimate or an underestimate.
4.3	<ul style="list-style-type: none"> ● Multiply to find partial products. ● Show how to regroup when needed. ● Add partial products to find a product.
4.4	<ul style="list-style-type: none"> ● Multiply to find partial products. ● Show how to regroup when needed. ● Add partial products to find a product.
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Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

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INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Science - discuss how deep sunlight can travel through the ocean, complete problems to indicate how deep objects can travel in the ocean - page T-143

- Social Studies - discuss Yellowstone National Park and Old Faithful, have students estimate how many times Old Faithful erupts in 7 days, in 1 month, and in 1 year - page T-149
- Music - discuss frequencies and harmonics, have students calculate several harmonics of each note - page T-155

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TEACHER NOTES



UNIT TITLE

Multiply Decimals

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 5 - 13 Days (November / December)

UNIT FOCUS - SUMMARY OF UNIT

This chapter continues to extend the study of numbers and operations. Place value understanding and properties of operations were used in earlier chapters to develop fluency with addition and subtraction of decimals and multi-digit multiplication of whole numbers. Now, we want to transfer many of the same understandings about place value, decimals, and multiplication to making sense of decimal multiplication. We do not want students to memorize rules without understanding. The goal is for students to see the interconnectedness of operations and concepts with decimals to whole numbers, learning how to adapt previous models into use with decimal values. Instruction focuses on the use of models to verify and explain general rules so that students move toward understanding decimal multiplication as an extension of whole number multiplication. Students are able to reason why certain rules apply and connect to mathematics beyond procedural memorization. The chapter ends with a section on problem solving using decimal multiplication. Students use their strategies and reasoning about decimal products to solve multi-step problems.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/Index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10.
- 5.NBT.A.4 Use place value understanding to round decimals to any place.
- 5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship

between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Fluently add and subtract multi-digit numbers.
- Round multi-digit numbers to a given place.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Identify a pattern to determine the location of a decimal.
- Explain different ways to estimate a decimal.
- Solve a problem using decimals.
- Model different types of decimals.

ESSENTIAL QUESTIONS:

- How can you solve decimal multiplication problems?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand multiplying decimals.

STUDENTS WILL BE ABLE TO:

- Find products involving decimals and powers of 10.
- Use rounding and compatible numbers to estimate products of decimals and whole numbers.
- Use models to multiply decimals and whole numbers.
- Multiply decimals and whole numbers.
- Use models to multiply decimals.
- Use partial products to multiply decimals.
- Use estimation and properties to multiply decimals.
- Multiply decimals.
- Solve multi-step word problems involving money.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

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Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
5.1	<ul style="list-style-type: none"> ● Explain how to multiply a decimal by a power of 10. ● Explain patterns in the placement of the decimal point when multiplying a decimal by a power of 10.
5.2	<ul style="list-style-type: none"> ● Use rounding to estimate a product. ● Use compatible numbers to estimate a product. ● Explain different ways to estimate a product.
5.3	<ul style="list-style-type: none"> ● Use a model to represent a decimal. ● Explain the relationship between addition and multiplication. ● Use a model to find the product of a decimal and a whole number.
5.4	<ul style="list-style-type: none"> ● Use place value to multiply. ● Explain how to place the decimal point in a product. ● Math Musical Link https://mathmusicals.com/#/grade/5/pay-to-play/
5.5	<ul style="list-style-type: none"> ● Use a model to represent a decimal. ● Use a model to multiply decimals.
5.6	<ul style="list-style-type: none"> ● Write the partial products for a multiplication problem. ● Add the partial products to find a product.
5.7	<ul style="list-style-type: none"> ● Use estimation to place the decimal point in a product. ● Use properties to multiply decimals. ● Explain the strategy used to multiply.

5.8	<ul style="list-style-type: none"> ● Multiply whole numbers. ● Determine the number of decimal places in a product. ● Find a product.
5.9	<ul style="list-style-type: none"> ● Understand a problem. ● Make a plan to solve. ● Solve a problem.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

- <https://docs.google.com/document/d/1v5NF2k0cQoqhlKcSPRxgvj7AUejTkr0Dnz2J92-9qe4/edit?usp=sharing>

INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Social Studies - research Usain Bolt, solve equation, and compare to Bolt’s best record time for the 100-meter dash - page T-179
- Physical Education - have students work with a partner and take turns timing each other, write an equation and solve it to estimate how long it would take them to complete three rounds - page T-185
- Art - have students roll a die twice to generate the number of hundredths in a decimal, create a fun zone and label areas, write an equation to determine how many acres would be covered - page T-191
- Science - discuss the difference between mass and weight, have them calculate how much an 80-pound person would weigh on a specific planet, repeat with different weights - page T-197

STATE REQUIREMENTS

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS

<https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf>

The organization and content of the NJSLS-Career Readiness, Life Literacies, and Key Skills include the following areas:

- Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.
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- Standard 9.4 Life Literacies and Key Skills. This standard outlines key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy that are critical for students to develop to live and work in an interconnected global economy.

P21 FRAMEWORK (Partnership for 21st Century Learning):

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

SOCIAL AND EMOTIONAL COMPETENCIES AND SUBCOMPETENCIES (SEL):

- Self-awareness
- Self-management
- Social Awareness
- Responsible Decision-making
- Relationship Skills

SEL Learning Activities:

- <https://casel.org/fundamentals-of-sel/>
- https://static.bigideasmath.com/protected/content/sel/mrl22_sel_ele.pdf
- https://static.bigideasmath.com/protected/content/sel/mm_5thgrade_sel.pdf
- Suggested Brain Breaks (GoNoodle, etc)

COMPUTER SCIENCE AND DESIGN THINKING:

<https://www.nj.gov/education/cccs/2020/2020%20NJSLs-CSDT.pdf>

- Mission: Computer science and design thinking education prepares students to succeed in today's knowledge-based economy by providing equitable and expanded access to high-quality, standards-based computer science and technological design education.
- Standard 8.1 Computer Science - previously a strand entitled 'Computational Thinking: Programming' in standard 8.2 of the 2014 NJSL Technology, outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems.
- Standard 8.2 Design Thinking - This standard, previously standard 8.2 Technology Education of the 2014 NJSL – Technology, outlines the technological design concepts and skills essential for technological and engineering literacy. The new framework design, detailed previously, includes Engineering Design, Ethics and Culture, and the Effects of Technology on the Natural world among the disciplinary concepts.

Framework for 21st Century Learning

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

GLOBAL THINKING:

- **Amistad and Holocaust:**

N.J.S.A 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

- **LGBTQIA+:** In accordance with the Inclusive Curriculum Bill A1335, signed into law in NJ in 2020, this document is to include instruction, and instructional materials for Grades 5-12, that accurately portray political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people. This curricular document includes classroom materials that are in alignment with NJSL and Core Curriculum Content Standards and ensures that students receive diverse instruction in history, the social sciences, and other content areas, which cultivates respect towards minority groups, allows students to appreciate differences, and acquires the skills and knowledge needed to function effectively with people of various backgrounds.

- **Diversity, Equity, and Inclusion:** The ability to listen and grow empathy makes way for greater awareness of the importance of community, one's own culture, others' culture, the differences and similarities amongst people around the world, of the issues facing humanity, and of our shared interest in the success of all people. Having a "global perspective" means that we strive to educate students with the global understanding necessary to address the challenges and successes of our interdependent world. In the Berkeley Heights Public Schools, we are committed to overcoming challenges and to building interest and capacity amongst our students to be engaged with finding and celebrating commonalities and solutions to global problems, and we are committed to ensuring that our community is diverse, equitable, and inclusive. Our mission statement is to honor the diversity of our community and foster inclusiveness and acceptance through a three-tiered approach: celebration, communication, and education.

- **Climate Change:** Leverage the passion students have shown for this critical issue by providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs.

Each board of education shall provide instruction on climate change in the curriculum of elementary school, middle school, and high school students as part of the district's implementation of the New Jersey Student Learning Standards in Science.

- **"Learning for Justice" Frameworks:**

<https://www.learningforjustice.org/frameworks>

Lessons and resources - <https://www.learningforjustice.org/classroom-resources>

RESOURCES

CORE INSTRUCTIONAL AND MATERIAL RESOURCES

- *Big Ideas Math* version 2022
- *i-Ready* adaptive learning platform
- Online Learning Tools including Splash, Prodigy, XtraMath, BrainPop

HUMAN AND PROFESSIONAL RESOURCES

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- BHPS Math Specialists
- *Guided Math: A Framework for Mathematics Instruction* by Laney Sammons
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- *Math Fact Fluency: 60+ Games and Assessment Tools to Support Learning and Retention* by Jennifer Bay-Williams and Gina Kling

TEACHER NOTES



UNIT TITLE

Divide Whole Numbers

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 6 - 13 Days (December)

UNIT FOCUS - SUMMARY OF UNIT

The major work this year has centered on base ten operations with whole numbers and decimals. In this chapter, and the next, the focus is on division of whole numbers and decimals. The first three lessons in this chapter are the prerequisite skills students need to divide a four-digit number by a two-digit number, the proficiency standard in Grade 5. In the first lesson, students are reminded of how the dimensions and area of a rectangle help to demonstrate the relationship between multiplication and division. Next, the students need to understand how to divide by multiples of ten, and divide tens, hundreds, and thousands by a number. Another key skill in building towards the standard division algorithm is to understand how to use compatible numbers and division facts to estimate quotients. In the last few lessons of the chapter, three- and four-digit dividends are divided by two-digit divisors. Knowing where to place the first digit in the quotient is an important strategy, and involves estimation and reasoning. The standard division algorithm is stepped out with a connection made to place value.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/Index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 5.NF.B.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Fluently add and subtract multi-digit numbers.
- Use properties and strategies to divide up to a four-digit dividend by a one-digit divisor with remainders.
- Illustrate and explain how to divide multi-digit numbers by one-digit numbers.
- Use multiplication and division to solve word problems.
- Use drawings and equations to solve multiplication and division word problems.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Identify a whole number.
- Describe division patterns.
- Solve a problem using division.
- Model division of numbers.

ESSENTIAL QUESTIONS:

- How can you divide whole numbers to solve problems?
- Why is it important to divide accurately?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand dividing whole numbers.

STUDENTS WILL BE ABLE TO:

- Use multiplication to divide.
- Use place value and division facts to find quotients.
- Use division facts and compatible numbers to estimate quotients.
- Divide multi-digit numbers by one-digit numbers.
- Use an area model and partial quotients to divide.
- Use partial quotients to divide with a remainder.
- Divide three-digit numbers by two-digit numbers.
- Divide four-digit numbers by two-digit numbers.
- Solve word problems involving division of whole numbers.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING**FORMATIVE ASSESSMENTS**

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher's edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES**LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):**

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none">● Introduction of Vocabulary● Optional Pre-Test● Center Introduction
6.1	<ul style="list-style-type: none">● Explain how to use an area model to divide.● Write a related multiplication equation for a division problem.● Use multiplication to solve a division problem.
6.2	<ul style="list-style-type: none">● Divide a multiple of ten, one hundred, or one thousand by a one-digit number.● Divide a multiple of ten, one hundred, or one thousand by a multiple of ten.● Explain how to use place value and division facts to divide tens, hundreds, or thousands.
6.3	<ul style="list-style-type: none">● Use division facts and compatible numbers to estimate a quotient.● Find two estimates that a quotient is between.
6.4	<ul style="list-style-type: none">● Use place value to divide.● Show how to regroup when necessary.● Find a quotient and a remainder.
6.5	<ul style="list-style-type: none">● Explain how to use an area model to divide.● Write partial quotients for a division problem.● Add the partial quotients to find a quotient.
6.6	<ul style="list-style-type: none">● Use partial quotients to divide.● Find a remainder.
6.7	<ul style="list-style-type: none">● Use estimation to place the first digit in a quotient.● Use place value to divide.● Use estimation or multiplication to check my answer.

	<ul style="list-style-type: none"> Math Musical Link https://mathmusicals.com/#/grade/5/dotties-song/
6.8	<ul style="list-style-type: none"> Use estimation to place the first digit in a quotient. Use place value to divide. Use estimation or multiplication to check my answer.
6.9	<ul style="list-style-type: none"> Understand a problem. Make a plan to solve. Solve a problem.
Connect and Grow	<ul style="list-style-type: none"> Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> Centers
Chapter Assessment	<ul style="list-style-type: none"> Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

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INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Music - discuss writing music and how each measure in a song has the same number of beats, create problems for students to solve, repeat with different numbers, have students create their own problems - page T-241
- English Language Arts - read *Sir Cumference and All the King's Tens: A Math Adventure* by Cindy Neuschwander, have students record how many visitors are under each tent, create a model or array to represent this - page T-247
- Social Studies / Physical Education - have students estimate to find about how many steps runners climb at each floor for the "Run-Up" hosted by the Empire State Building - page T-253
- Science - discuss the history and development of the periodic table, solve problems using this information - page T-259
- Art - discuss impressionism and pointillism, have students create their own pointillism artwork - page T-277

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Lessons and resources - <https://www.learningforjustice.org/classroom-resources>

RESOURCES

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- *About Teaching Mathematics, 4th edition* by Marilyn Burns
- *Math Fact Fluency: 60+ Games and Assessment Tools to Support Learning and Retention* by Jennifer Bay-Williams and Gina Kling

TEACHER NOTES



UNIT TITLE			
Divide Decimals			
CONTENT AREA: Mathematics GRADE LEVEL: 5			
UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT			
Chapter 7 - 14 Days (January)			
UNIT FOCUS - SUMMARY OF UNIT			
<p>This chapter extends the study of numbers and operations to the division of decimals. At this point, students should be fluent with all four operations with whole numbers, and three of the operations with decimals. Place value understanding and properties of operations are essential in the development of these computational skills. Students have just finished a chapter on whole number division. The general strategies used for finding quotients when dividing whole numbers are now applied to dividing decimals, with one additional skill: knowing where to place the decimal point in the quotient. After dividing decimals by powers of 10 and estimating quotients for decimal division problems, there are three lessons on dividing a decimal by a whole number. The division problems in this chapter are written so that the quotient is not a repeating decimal. Lesson 7.8, however, gives problems where there is a need to insert zeros into the dividend. Students gain additional practice with decimal division as they insert zeros in the dividend and learn how to recognize when the division problem is complete. The chapter ends with a lesson on problem solving using decimal division. Students use their strategies and reasoning gained throughout the chapter of decimal quotients to solve multi-step problems.</p>			
KEY UNDERSTANDINGS			
MATHEMATICAL PRACTICES: https://www.nj.gov/education/standards/math/Index.shtml			
NEW JERSEY STUDENT LEARNING STANDARDS:			
<ul style="list-style-type: none">● 5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10.● 5.NBT.A.4 Use place value understanding to round decimals to any place.● 5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship			

between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Fluently add and subtract multi-digit numbers.
- Round multi-digit numbers to a given place.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Identify a decimal.
- Write a decimal equation.
- Solve a problem using decimals.
- Model different types of decimals as equations.

ESSENTIAL QUESTIONS:

- How can you solve decimal division problems?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand dividing decimals.

STUDENTS WILL BE ABLE TO:

- Find quotients involving decimals and powers of 10.
- Use compatible numbers to estimate quotients involving decimals.
- Use models to divide decimals by whole numbers.
- Divide decimals by one-digit whole numbers.
- Divide decimals by two-digit whole numbers.
- Use models to divide decimals by decimals.
- Divide decimals by decimals.
- Insert zeros in the dividend when dividing with decimals and whole numbers.
- Solve word problems involving decimals.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher's edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none">● Introduction of Vocabulary● Optional Pre-Test● Center Introduction
7.1	<ul style="list-style-type: none">● Explain how to divide a number by a power of 10.● Explain patterns in the placement of the decimal point when dividing a decimal by a power of 10.
7.2	<ul style="list-style-type: none">● Rename a dividend to estimate a quotient.● Use compatible numbers to estimate a quotient.● Explain different ways to estimate a quotient.
7.3	<ul style="list-style-type: none">● Use a model to represent a decimal.● Divide a model to show equal groups.● Use a model to divide a decimal by a whole number.
7.4	<ul style="list-style-type: none">● Use place value to divide.● Place the decimal point in the quotient.● Regroup when necessary.● Use estimation to check my answer.● Math Musical Link https://mathmusicals.com/#/grade/5/electric/
7.5	<ul style="list-style-type: none">● Use place value to divide.● Place the decimal point in the quotient.● Regroup when necessary.● Use estimation to divide.
7.6	<ul style="list-style-type: none">● Use a model to represent a decimal.● Divide a model to show equal groups.● Use a model to divide a decimal by a decimal.

7.7	<ul style="list-style-type: none"> ● Multiply a divisor and a dividend by a power of 10 to make the divisor a whole number. ● Place the decimal point in a quotient. ● Divide a decimal by a decimal.
7.8	<ul style="list-style-type: none"> ● Explain when to insert one or more zeros in the dividend to find a quotient. ● Insert one or more zeros in a dividend to find a quotient. ● Recognize when a division problem is complete.
7.9	<ul style="list-style-type: none"> ● Understand a problem. ● Make a plan to solve. ● Solve a problem.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B
Cumulative Practice (optional)	<ul style="list-style-type: none"> ● Cumulative Practice and STEAM Performance Task

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

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INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- English Language Arts - complete Solve the Riddle Instructional Resource - page T-303
- Art - design signs for foods that can be hung up in a grocery store, solve word problems with decimals - page T-309
- Physical Education - write division expressions involving decimals on a beach ball, have students pass the ball and solve the problems - page T-321
- Science - have students use a scale and metric weights to determine the mass of rectangular prisms made of different materials - page T-333
- Social Studies - discuss currency and exchange rates, create a scenario about visiting another country and buying a souvenir, solve conversion problem - page T-345

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GLOBAL THINKING:

- **Amistad and Holocaust:**
N.J.S.A 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.
N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.
- **LGBTQIA+:** In accordance with the Inclusive Curriculum Bill A1335, signed into law in NJ in 2020, this document is to include instruction, and instructional materials for Grades 5-12, that accurately portray political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people. This curricular document includes classroom materials that are in alignment with NJSLS and Core Curriculum Content Standards and ensures that students receive diverse instruction in history, the social sciences, and other content areas, which cultivates respect towards minority groups, allows students to appreciate differences, and acquires the skills and knowledge needed to function effectively with people of various backgrounds.
- **Diversity, Equity, and Inclusion:** The ability to listen and grow empathy makes way for greater awareness of the importance of community, one's own culture, others' culture, the differences and similarities amongst people around the world, of the issues facing humanity, and of our shared interest in the success of all people. Having a "global perspective" means that we strive to educate students with the global understanding necessary to address the challenges and successes of our interdependent world. In the Berkeley Heights Public Schools, we are committed to overcoming challenges and to building interest and capacity amongst our students to be engaged with finding and celebrating commonalities and solutions to global problems, and we are committed to ensuring that our community is diverse, equitable, and inclusive. Our mission statement is to honor the diversity of our community and foster inclusiveness and acceptance through a three-tiered approach: celebration, communication, and education.
- **Climate Change:** Leverage the passion students have shown for this critical issue by providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs.

Each board of education shall provide instruction on climate change in the curriculum of elementary school, middle school, and high school students as part of the district's implementation of the New Jersey Student Learning Standards in Science.

- **“Learning for Justice” Frameworks:**

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Lessons and resources - <https://www.learningforjustice.org/classroom-resources>

RESOURCES

CORE INSTRUCTIONAL AND MATERIAL RESOURCES

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TEACHER NOTES



UNIT TITLE

Add and Subtract Fractions

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 8 - 12 Days (January / February)

UNIT FOCUS - SUMMARY OF UNIT

In this chapter, the students will take their understanding of fraction equivalence, number lines, and area models of fractions with like denominators, including work with mixed numbers, and do the same work with unlike denominators. Fraction addition and subtraction has the same meaning as whole number addition and subtraction even though the algorithms are different. Although number lines can be used to model addition and subtraction of fractions, we have chosen to use area models in this chapter. A common denominator is needed when adding and subtracting fractions with unlike denominators and this can be shown effectively with an area model. Addition of mixed numbers is shown two ways: add the fractional parts and add the whole number parts or write the mixed numbers as improper fractions and add them. One of the more challenging operations for students to make a written record of is subtraction of mixed numbers when regrouping is necessary. Subtraction of mixed numbers is also shown two ways: subtract the fractional parts and subtract the whole number parts or write the mixed numbers as improper fractions and subtract them. The chapter ends with a lesson on applications of addition and subtraction of fractions and mixed numbers. The problem-solving plan is used as students further develop their problem solving abilities.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/Index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

- 5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Use models to explain equivalent fractions.
- Create equivalent fractions. ● Describe a fraction as the sum of unit fractions.
- Compare two fractions with different numerators and different denominators using the symbols $>$, $=$, and $<$.
- Use models to compare fractions.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Find the factors of a number.
- Write equivalent fractions.
- Add and subtract fractions.
- Solve a problem using fractions.

ESSENTIAL QUESTIONS:

- How can you use adding and subtracting fractions with unlike denominators to solve problems?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand adding and subtracting fractions.

STUDENTS WILL BE ABLE TO:

- Write fractions in simplest form.
- Estimate sums and differences of fractions.
- Write fractions using a common denominator.
- Add fractions with unlike denominators.
- Subtract fractions with unlike denominators.
- Add mixed numbers with unlike denominators.
- Subtract mixed numbers with unlike denominators.
- Solve multi-step word problems involving fractions and mixed numbers.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher's edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES**LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):**

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
8.1	<ul style="list-style-type: none"> ● Find the common factors of two numbers. ● Write equivalent fractions. ● Write a fraction in simplest form.
8.2	<ul style="list-style-type: none"> ● Use a number line and benchmarks to estimate a fraction. ● Use mental math and benchmarks to estimate a fraction. ● Use benchmarks to estimate sums and differences of fractions.
8.3	<ul style="list-style-type: none"> ● List multiples of numbers. ● Find a common denominator for two fractions. ● Write fractions using a common denominator.
8.4	<ul style="list-style-type: none"> ● Write fractions using a common denominator. ● Add fractions with like denominators. ● Add fractions with unlike denominators. ● Math Musical Link https://mathmusicals.com/#/grade/5/bark-like-a-dog/
8.5	<ul style="list-style-type: none"> ● Write fractions using a common denominator. ● Subtract fractions with like denominators. ● Subtract fractions with unlike denominators.

8.6	<ul style="list-style-type: none"> ● Add fractional parts and whole number parts of mixed numbers with unlike denominators. ● Use equivalent fractions to add mixed numbers with unlike denominators.
8.7	<ul style="list-style-type: none"> ● Subtract fractional parts and whole number parts of mixed numbers with unlike denominators. ● Use equivalent fractions to subtract mixed numbers with unlike denominators.
8.8	<ul style="list-style-type: none"> ● Understand a problem. ● Make a plan to solve. ● Solve a problem using an equation.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

- <https://docs.google.com/document/d/1v5NF2k0cQoqhlKcSPRxgvj7AUejTkr0Dnz2J92-9qe4/edit?usp=sharing>

INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- English Language Arts - have students draw a cartoon that involves a person eating a fraction of food and another person eating the simplest form of that fraction, write captions for each picture, compare amounts - page T-371
- Music - have students work together to create their own songs or chants about estimating sums and differences of fractions - page T-377
- Science - discuss atoms and how to read chemical formulas, use vinegar formula to solve word problems - page T-389
- Physical Education - keep track of the time spent exercising each day on a chart, have students add the times together at the end of the week - page T-413

STATE REQUIREMENTS

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS

<https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf>

The organization and content of the NJSLS-Career Readiness, Life Literacies, and Key Skills include the following areas:

- Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.
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P21 FRAMEWORK (Partnership for 21st Century Learning):

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

SOCIAL AND EMOTIONAL COMPETENCIES AND SUBCOMPETENCIES (SEL):

- Self-awareness
- Self-management
- Social Awareness
- Responsible Decision-making
- Relationship Skills

SEL Learning Activities:

- <https://casel.org/fundamentals-of-sel/>
- https://static.bigideasmath.com/protected/content/sel/mrl22_sel_ele.pdf
- https://static.bigideasmath.com/protected/content/sel/mm_5thgrade_sel.pdf
- Suggested Brain Breaks (GoNoodle, etc)

COMPUTER SCIENCE AND DESIGN THINKING:

<https://www.nj.gov/education/cccs/2020/2020%20NJSLs-CSDT.pdf>

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Framework for 21st Century Learning

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GLOBAL THINKING:

- **Amistad and Holocaust:**

N.J.S.A 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

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TEACHER NOTES



UNIT TITLE

Multiply Fractions

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 9 - 12 Days (February)

UNIT FOCUS - SUMMARY OF UNIT

In Grade 5, students focus on extending previous knowledge of multiplication to multiply fractions and mixed numbers. The goal is to help students see the interconnectedness of operations and concepts with fractions to whole numbers. Instruction focuses on the use of models to explain general rules so that as students move toward understanding a system of rational numbers, proportional relationships, and, eventually, algebraic rational expressions, they are able to reason why certain rules apply to the mathematics. While models are used to develop understanding, the general rule becomes practical for large factors where drawing the model becomes inefficient. This is formalized in Lesson 9.3, after much experience with models. New to Grade 5 is the multiplication of fractions by fractions. This requires students to redefine fractional parts in relation to the current whole. The chapter ends with a lesson on comparing products to their factors. Students use their observations and reasonings gained throughout the chapter of fraction and mixed number products to compare.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/Index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
 - a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.
 - b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

- 5.NF.B.5 Interpret multiplication as scaling (resizing), by:
 - a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
 - b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Multiply a fraction by a whole number.
- Use an understanding of a fraction as a multiple of a unit fraction to multiply a fraction by a whole number.
- Use all four operations to solve word problems involving distance, time, volume, mass, and money.
- Use diagrams to show measurement quantities.
- Explain what a multiplication equation represents.
- Use drawings and equations to solve multiplication and division word problems.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Identify a fraction as a sum of unit fractions.
- Write a fraction as a sum of unit fractions.
- Multiply fractions.
- Solve a problem using fractions.

ESSENTIAL QUESTIONS:

- How do you multiply fractions to solve problems?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand multiplying fractions.

STUDENTS WILL BE ABLE TO:

- Multiply whole numbers by fractions.
- Multiply fractions by whole numbers.
- Multiply fractions and whole numbers.
- Use models to multiply a fraction by a fraction.
- Multiply a fraction by a fraction.
- Find areas of rectangles.
- Multiply a mixed number by a mixed number.
- Compare a product to each of its factors.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes

- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher’s edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
9.1	<ul style="list-style-type: none"> ● Use a model to multiply a whole number by a fraction. ● Write a multiplication expression as a repeated addition expression. ● Write a multiple of a fraction as a multiple of a unit fraction.
9.2	<ul style="list-style-type: none"> ● Divide a whole into equal parts. ● Use a model to find part of a group. ● Use a model to multiply a fraction by a whole number.
9.3	<ul style="list-style-type: none"> ● Use a rule to multiply a whole number by a fraction. ● Use a rule to multiply a fraction by a whole number.
9.4	<ul style="list-style-type: none"> ● Divide a whole into equal parts. ● Divide a unit fraction into equal parts. ● Use a model to find the product of two fractions. ● Math Musical Link https://mathmusicals.com/#/grade/5/hit-the-stage/
9.5	<ul style="list-style-type: none"> ● Multiply the numerators of two fractions. ● Multiply the denominators of two fractions. ● Use a rule to find the product of two fractions.

9.6	<ul style="list-style-type: none"> ● Find the area of a rectangle with unit fraction side lengths. ● Find the number of rectangles with unit fraction side lengths it takes to fill a rectangle. ● Find the area of a rectangle with fractional side lengths.
9.7	<ul style="list-style-type: none"> ● Use a model to find the product of two mixed numbers. ● Rewrite mixed numbers as improper fractions to find their products. ● Find the product of two mixed numbers. ● Math Musical Link https://mathmusicals.com/#/grade/5/places-everybody/
9.8	<ul style="list-style-type: none"> ● Determine whether a number is less than, greater than, or equal to 1. ● Compare a product to each of its factors. ● Explain why a product is less than, greater than, or equal to each of its factors.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

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INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Physical Education - discuss with students the importance of getting enough sleep at night, have students solve a word problem using this information - page T-427
- Art - discuss and show *Color Study, Squares with Concentric Circles* by visual artist Wassily Kandinsky, challenge students to make up problems that involve multiplying fractions by whole numbers based on the image - page T-433
- Science - provide students with a recipe, multiply it by 6 to make enough for all the visitors for an upcoming get together - page T-439
- English Language Arts - brainstorm different occupations in which people use fractions, choose one occupation, write a scenario that describes how they use fractions daily to complete their job - page T-451

STATE REQUIREMENTS

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- Relationship Skills

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- https://static.bigideasmath.com/protected/content/sel/mr122_sel_ele.pdf
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TEACHER NOTES



UNIT TITLE

Divide Fractions

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 10 - 9 Days (March)

UNIT FOCUS - SUMMARY OF UNIT

In this chapter, students use models to explain division with fractions and whole numbers. The goal is not to provide students with quick rules to follow in specific cases, but rather see the interconnectedness of operations, learning how to adapt previous models in use with fractional values. Instruction focuses on use of models to verify and explain general rules so that as students move toward understanding the system of rational numbers, proportional relationships, and eventually algebraic rational expressions, they are able to reason why certain rules apply and connect to the mathematics beyond procedural memorization. We want students to be critical thinkers of mathematics as their number systems expand. We begin this chapter by interpreting fractions as division. Next, students are introduced to using their models to divide a whole number by a unit fraction and then a unit fraction by a whole number. The concepts are approached through writing and solving real-world problems. Students end the chapter with a problem-solving section that mixes operations of fractions and decimals.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.NF.B.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

- a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.
- b. Interpret division of a whole number by a unit fraction, and compute such quotients.
- c. Solve real world problems involving division of unit fractions by nonzero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Explain what a multiplication equation represents.
- Use multiplication and division to solve word problems.
- Use drawings and equations to solve multiplication and division word problems.
- Use all four operations to solve word problems involving distance, time, volume, mass, and money.
- Use diagrams to show measurement quantities.
- Multiply a fraction by a whole number.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Identify fractions as division.
- Explain mixed numbers as quotients.
- Divide fractions.
- Model different types of fractions as equations.

ESSENTIAL QUESTIONS:

- What strategies can you use to solve division problems involving fractions?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand dividing fractions.

STUDENTS WILL BE ABLE TO:

- Understand how fractions relate to division.
- Understand how mixed numbers relate to division.
- Divide whole numbers by unit fractions.
- Divide unit fractions by whole numbers.
- Solve multi-step word problems involving division with fractions.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life

- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher’s edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
10.1	<ul style="list-style-type: none"> ● Use a model to divide two whole numbers that have a fraction as the quotient. ● Use an equation to divide two whole numbers that have a fraction as the quotient. ● Interpret a fraction as division.
10.2	<ul style="list-style-type: none"> ● Use a model to divide two whole numbers that have a mixed number as the quotient. ● Use an equation to divide two whole numbers that have a mixed number as the quotient. ● Write and solve a real-life problem involving division of whole numbers.
10.3	<ul style="list-style-type: none"> ● Use a model to divide a whole number by a unit fraction. ● Use an equation to divide a whole number by a unit fraction. ● Write and solve a real-life problem involving division of a whole number and a unit fraction.
10.4	<ul style="list-style-type: none"> ● Use a model to divide a unit fraction by a whole number. ● Use an equation to divide a unit fraction by a whole number. ● Write and solve a real-life problem involving division of a unit fraction and a

	whole number.
10.5	<ul style="list-style-type: none"> ● Understand a problem. ● Make a plan to solve. ● Solve a problem using an equation.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

- <https://docs.google.com/document/d/1v5NF2k0cQoghIKcSPRxgvj7AUejTkr0Dnz2J92-9qe4/edit?usp=sharing>

INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Art - discuss traits of being a good friend, design a friendship puzzle with words, symbols, and drawings that represent what friendship means to them, solve word problems involving the puzzle pieces - page T-483
- Social Studies - have students plan a hike or a walk around a city by writing the location of where they would like to visit, create and solve word problems about walking - page T-489
- English Language Arts - create an advertisement for a healthy food item that can be measured in cups, have students explain how many servings are in 7 cups - page T-495
- Physical Education - create a floor number line from 0 to 1 that is divided into eighths, students will throw a bean bag onto the number line to gain points for their team, students will write and solve an equation to divide the points among themselves - page T-507

STATE REQUIREMENTS

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS

<https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf>

The organization and content of the NJSLS-Career Readiness, Life Literacies, and Key Skills include the following areas:

- Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about

personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.

- Standard 9.2 Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.
- Standard 9.4 Life Literacies and Key Skills. This standard outlines key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy that are critical for students to develop to live and work in an interconnected global economy.

P21 FRAMEWORK (Partnership for 21st Century Learning):

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

SOCIAL AND EMOTIONAL COMPETENCIES AND SUBCOMPETENCIES (SEL):

- Self-awareness
- Self-management
- Social Awareness
- Responsible Decision-making
- Relationship Skills

SEL Learning Activities:

- <https://casel.org/fundamentals-of-sel/>
- https://static.bigideasmath.com/protected/content/sel/mrl22_sel_ele.pdf
- https://static.bigideasmath.com/protected/content/sel/mm_5thgrade_sel.pdf
- Suggested Brain Breaks (GoNoodle, etc)

COMPUTER SCIENCE AND DESIGN THINKING:

<https://www.nj.gov/education/cccs/2020/2020%20NJSLs-CSDT.pdf>

- Mission: Computer science and design thinking education prepares students to succeed in today's knowledge-based economy by providing equitable and expanded access to high-quality, standards-based computer science and technological design education.
- Standard 8.1 Computer Science - previously a strand entitled 'Computational Thinking: Programming' in standard 8.2 of the 2014 NJSL Technology, outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems.
- Standard 8.2 Design Thinking - This standard, previously standard 8.2 Technology Education of the 2014 NJSL – Technology, outlines the technological design concepts and skills essential for technological and engineering literacy. The new framework design, detailed previously, includes Engineering Design, Ethics and Culture, and the Effects of Technology on the Natural world among the disciplinary concepts.
-

Framework for 21st Century Learning

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

GLOBAL THINKING:

- **Amistad and Holocaust:**

N.J.S.A 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

- **LGBTQIA+:** In accordance with the Inclusive Curriculum Bill A1335, signed into law in NJ in 2020, this document is to include instruction, and instructional materials for Grades 5-12, that accurately portray political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people. This curricular document includes classroom materials that are in alignment with NJSLs and Core Curriculum Content Standards and ensures that students receive diverse instruction in history, the social sciences, and other content areas, which cultivates respect towards minority groups, allows students to appreciate differences, and acquires the skills and knowledge needed to function effectively with people of various backgrounds.
- **Diversity, Equity, and Inclusion:** The ability to listen and grow empathy makes way for greater awareness of the importance of community, one's own culture, others' culture, the differences and similarities amongst people around the world, of the issues facing humanity, and of our shared interest in the success of all people. Having a "global perspective" means that we strive to educate students with the global understanding necessary to address the challenges and successes of our interdependent world. In the Berkeley Heights Public Schools, we are committed to overcoming challenges and to building interest and capacity amongst our students to be engaged with finding and celebrating commonalities and solutions to global problems, and we are committed to ensuring that our community is diverse, equitable, and inclusive. Our mission statement is to honor the diversity of our community and foster inclusiveness and acceptance through a three-tiered approach: celebration, communication, and education.
- **Climate Change:** Leverage the passion students have shown for this critical issue by providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs.
Each board of education shall provide instruction on climate change in the curriculum of elementary school, middle school, and high school students as part of the district's implementation of the New Jersey Student Learning Standards in Science.
- **"Learning for Justice" Frameworks:**
<https://www.learningforjustice.org/frameworks>
Lessons and resources - <https://www.learningforjustice.org/classroom-resources>

RESOURCES

CORE INSTRUCTIONAL AND MATERIAL RESOURCES

- *Big Ideas Math* version 2022
- *i-Ready* adaptive learning platform
- Online Learning Tools including Splash, Prodigy, XtraMath, BrainPop

HUMAN AND PROFESSIONAL RESOURCES

- Laurie's Notes from Big Ideas
- BHPS Math Specialists
- *Guided Math: A Framework for Mathematics Instruction* by Laney Sammons
- *About Teaching Mathematics, 4th edition* by Marilyn Burns
- *Math Fact Fluency: 60+ Games and Assessment Tools to Support Learning and Retention* by Jennifer Bay-Williams and Gina Kling

TEACHER NOTES



UNIT TITLE				
Convert and Display Units of Measure				
CONTENT AREA:		Mathematics	GRADE LEVEL:	
			5	
UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT				
Chapter 11 - 12 Days (March)				
UNIT FOCUS - SUMMARY OF UNIT				
<p>This chapter continues the study of measurement. In this chapter, students convert larger units of measurement to smaller units and smaller units of measurement to larger units. Measurement provides a rich context for students to use a variety of skills, including computation with whole numbers, fractions (including mixed numbers), and decimals. The first two sections involve conversions of metric units of length, mass, and capacity. The next two sections involve conversions of customary units of length and weight. Students are introduced to a new customary unit of capacity, fluid ounces, in Lesson 11.5. Lesson 11.6 continues students' work from earlier grades with representing data using a line plot. The chapter concludes by revisiting the problem-solving plan using the context of measurement. "Understand the problem" focuses students on what question they need to answer and on what information they have available to answer the question. "Make a plan" requires students to analyze the problem to determine the mathematical processes they will use and the steps they will go through to answer the question. "Solve" is the computing aspect of the process. The computation done in solving measurement problems primarily involves converting units, combining units, and comparing units.</p>				
KEY UNDERSTANDINGS				
<p>MATHEMATICAL PRACTICES: https://www.nj.gov/education/standards/math/Index.shtml</p>				
<p>NEW JERSEY STUDENT LEARNING STANDARDS:</p> <ul style="list-style-type: none"> 5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. 				

- 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- 5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Describe approximate sizes of units within a measurement system.
- Write a measurement in a larger unit as a smaller unit.
- Complete measurement equivalence tables.
- Use all four operations to solve word problems involving distance, time, volume, mass, and money.
- Use diagrams to show measurement quantities.
- Show a data set of measurements in fractions on a line plot.
- Use a line plot to solve fraction word problems with addition and subtraction.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Identify length in metric units.
- Describe mass and capacity in metric units.
- Solve a problem using different ways to measure items.
- Compare the values of two different forms of measurement.

ESSENTIAL QUESTIONS:

- How can you use strategies to compare and convert measurements?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand measurements.

STUDENTS WILL BE ABLE TO:

- Write lengths using equivalent metric measures.
- Write masses and capacities using equivalent metric measures.
- Write lengths using equivalent customary measures.
- Write weights using equivalent customary measures.
- Write capacities using equivalent customary measures.
- Make line plots and use them to solve problems.
- Solve multi-step word problems involving units of measure.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes

- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher’s edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
11.1	<ul style="list-style-type: none"> ● Compare the sizes of two metric units of length. ● Write a metric length using a smaller metric unit. ● Write a metric length using a larger metric unit. ● Math Musical Link https://mathmusicals.com/#/grade/5/song-of-the-walrus/
11.2	<ul style="list-style-type: none"> ● Compare the sizes of two metric units of mass and capacity. ● Write metric masses and capacities using smaller metric units. ● Write metric masses and capacities using larger metric units.
11.3	<ul style="list-style-type: none"> ● Compare the sizes of two customary units of length. ● Write a customary length using a smaller customary unit. ● Write a customary length using a larger customary unit.
11.4	<ul style="list-style-type: none"> ● Compare the sizes of two customary units of weight. ● Write a customary weight using a smaller customary unit. ● Write a customary weight using a larger customary unit.

11.5	<ul style="list-style-type: none"> ● Compare the sizes of two customary units of capacity. ● Write a customary capacity using a smaller customary unit. ● Write a customary capacity using a larger customary unit. ● Math Musical Link https://mathmusicals.com/#/grade/5/bubble-trouble/
11.6	<ul style="list-style-type: none"> ● Make a line plot. ● Interpret a line plot. ● Use a line plot to solve a real-life problem.
11.7	<ul style="list-style-type: none"> ● Understand a problem. ● Make a plan to solve. ● Solve a problem.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B
Cumulative Practice (optional)	<ul style="list-style-type: none"> ● Cumulative Practice and STEAM Performance Task

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

- <https://docs.google.com/document/d/1v5NF2k0cQoqhKcSPRxgvj7AUejTkr0Dnz2J92-9qe4/edit?usp=sharing>

INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- English Language Arts - have students use prefixes that make up the metric system to create their own mnemonic to remember the correct order, illustrate their acronym to make it their own - page T-519
- Science - research the Titanosaur, convert to find the Titanosaur's length in inches as well as in yards - page T-531
- Physical Education - discuss the running long jump, have students research to find the winning distance in the last Olympic games, create your own running long jump, create line plot using distances for the class - page T-549

STATE REQUIREMENTS

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS

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- Social Awareness
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- https://static.bigideasmath.com/protected/content/sel/mr122_sel_ele.pdf
- https://static.bigideasmath.com/protected/content/sel/mm_5thgrade_sel.pdf
- Suggested Brain Breaks (GoNoodle, etc)

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- *Math Fact Fluency: 60+ Games and Assessment Tools to Support Learning and Retention* by Jennifer Bay-Williams and Gina Kling

TEACHER NOTES



UNIT TITLE

Patterns in the Coordinate Plane

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 12 - 11 Days (April)

UNIT FOCUS - SUMMARY OF UNIT

In this chapter, much of the work involves points plotted in the coordinate plane. Although students have always seen number lines drawn with arrows at each end indicating that measurement continues in each direction, in this chapter only the first quadrant of the coordinate plane is shown. There is a great deal of new vocabulary in this chapter, most of which is introduced in the first lesson. Students identify and plot points in a coordinate plane. The second half of the chapter focuses on ordered pairs as data. Ordered pairs can represent the relationship between two quantities. Students learn to graph data presented in a data table and interpret the plotted points. Then, students explore number patterns in a table of values and begin to formalize the identification of a rule for the pattern. Students describe the features of a numerical pattern and then describe the relationship between two numerical patterns. Students learn to recognize that the relationship between the two quantities when plotted as ordered pairs is the same as the relationship when the data are listed in a table.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.
- 5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and

the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

- 5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Create a number or shape pattern that follows a given rule.
- Describe attributes of a pattern that are not part of the rule.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Identify patterns.
- Plot points on a coordinate plane.
- Analyze line graphs.
- Interpret relationships.

ESSENTIAL QUESTIONS:

- How can you use line plots, coordinate grids, and patterns to help you graph and interpret data?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand patterns and the coordinate plane.

STUDENTS WILL BE ABLE TO:

- Identify and plot points in a coordinate plane.
- Relate points and find distances in a coordinate plane.
- Draw and identify polygons in a coordinate plane.
- Graph and interpret data in a coordinate plane.
- Make and interpret line graphs.
- Create and describe numerical patterns.
- Use a graph to describe the relationship between two numerical patterns.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher’s edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES**LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):**

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none">● Introduction of Vocabulary● Optional Pre-Test● Center Introduction
12.1	<ul style="list-style-type: none">● Use an ordered pair to identify the location of a point in a coordinate plane.● Plot and label a point in a coordinate plane.● Math Musical Link https://mathmusicals.com/#/grade/5/a-coordinate-plane/
12.2	<ul style="list-style-type: none">● Explain the relationship between two points that have the same x-coordinates or y-coordinates.● Count grid lines to find the distance between two points.● Use subtraction to find the distance between two points.
12.3	<ul style="list-style-type: none">● Draw polygons in a coordinate plane.● Identify polygons in a coordinate plane.● Draw a symmetric shape in a coordinate plane given one half of the shape and a line of symmetry.
12.4	<ul style="list-style-type: none">● Use ordered pairs to represent data.● Graph data in a coordinate plane.● Interpret data shown in a coordinate plane.
12.5	<ul style="list-style-type: none">● Make a line graph.● Interpret a line graph.
12.6	<ul style="list-style-type: none">● Create a numerical pattern.● Describe features of a numerical pattern.● Describe the relationship between two numerical patterns.

12.7	<ul style="list-style-type: none"> ● Generate two numerical patterns. ● Use two numerical patterns to write and plot ordered pairs in a coordinate plane. ● Use a graph to describe the relationship between two numerical patterns.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

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INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- English Language Arts - read *The Fly on the Ceiling: A Math Reader* by Dr. Julie Glass, have students think about how the coordinate plane could be used in the real world, share ideas with the class - page T-575
- Science - discuss air traffic control, create a scenario to use the coordinate grid to determine the distance of the airplane from the airport - page T-581
- Physical Education - have students complete a table and plot the ordered pairs to represent how many times you will need to run around a football field to run 5 miles - page T-611

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P21 FRAMEWORK (Partnership for 21st Century Learning):

<https://www.battelleforkids.org/networks/p21/frameworks-resources>

SOCIAL AND EMOTIONAL COMPETENCIES AND SUBCOMPETENCIES (SEL):

- Self-awareness
- Self-management
- Social Awareness
- Responsible Decision-making
- Relationship Skills

SEL Learning Activities:

- <https://casel.org/fundamentals-of-sel/>
- https://static.bigideasmath.com/protected/content/sel/mrl22_sel_ele.pdf
- https://static.bigideasmath.com/protected/content/sel/mm_5thgrade_sel.pdf
- Suggested Brain Breaks (GoNoodle, etc)

COMPUTER SCIENCE AND DESIGN THINKING:

<https://www.nj.gov/education/cccs/2020/2020%20NJSLs-CSDT.pdf>

- Mission: Computer science and design thinking education prepares students to succeed in today's knowledge-based economy by providing equitable and expanded access to high-quality, standards-based computer science and technological design education.
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Framework for 21st Century Learning

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GLOBAL THINKING:

- Amistad and Holocaust:

N.J.S.A 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

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- **"Learning for Justice" Frameworks:**

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Lessons and resources - <https://www.learningforjustice.org/classroom-resources>

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TEACHER NOTES



UNIT TITLE

Understand Volume

CONTENT AREA:

Mathematics

GRADE LEVEL:

5

UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT

Chapter 13 - 9 Days (May)

UNIT FOCUS - SUMMARY OF UNIT

This chapter formalizes the topic of volume. Students begin by building structures using cubic units. In all the sections in this chapter, students use centimeter blocks to build figures, so they have a hands-on understanding of volume using cubic centimeters. They build and analyze various structures, counting each cube that composes the structures to determine their volumes. The next step in formalizing volume is to move beyond counting cubic units. Students can now use relationships in rectangular prisms to compute volumes on an informal basis. Once students are able to use the “base × layer” method for finding volume, they are ready to use the volume formula. The chapter concludes with a study of composite figures, figures that are a combination of two or more figures—in this case, prisms.

KEY UNDERSTANDINGS

MATHEMATICAL PRACTICES:

<https://www.nj.gov/education/standards/math/Index.shtml>

NEW JERSEY STUDENT LEARNING STANDARDS:

- 5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
 - a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.
 - b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- 5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.

- 5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
 - a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
 - b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
 - c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

PREREQUISITE KNOWLEDGE AND SKILLS (Progressions):

- Explain what a multiplication equation represents.
- Use the area and perimeter formulas to solve real-world problems.

ENDURING UNDERSTANDINGS (Chapter Success Criteria):

- Define volume.
- Describe volume.
- Compare volumes.
- Apply the volume formula.

ESSENTIAL QUESTIONS:

- How can you find the volume of a rectangular prism using unit cubes and/or the volume formula?

UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand volume.

STUDENTS WILL BE ABLE TO:

- Count to find volumes of solid figures.
- Find volumes of right rectangular prisms.
- Use a formula to find volumes of rectangular prisms.
- Find unknown dimensions of rectangular prisms.
- Find volumes of composite figures.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life

- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
- Chapter Alternative Assessment (last page of each chapter in the teacher’s edition - Chapter Assessment Guide)
- Cumulative Practice
- STEAM Performance Task

LEARNING PLAN/INSTRUCTIONAL STRATEGIES

LEARNING ACTIVITIES AND INSTRUCTIONAL STRATEGIES (INCLUDE MODELS):

Lesson Number	Success Criteria
Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
13.1	<ul style="list-style-type: none"> ● Count the number of unit cubes in a figure. ● Tell the volume of a solid figure in cubic units. ● Identify units as cubic inches, cubic feet, or cubic centimeters.
13.2	<ul style="list-style-type: none"> ● Find the number of unit cubes in each layer of a rectangular prism. ● Use the number of unit cubes in each layer to find the volume of a rectangular prism.
13.3	<ul style="list-style-type: none"> ● Write a formula for the volume of a rectangular prism. ● Explain how to use the area of the base to find the volume of a rectangular prism. ● Use a formula to find the volume of a rectangular prism. ● Math Musical Link https://mathmusicals.com/#/grade/5/over-my-head/
13.4	<ul style="list-style-type: none"> ● Find the height of a rectangular prism given the volume of the prism and the area of the base. ● Find an unknown dimension of a rectangular prism given the volume of the prism and the other two dimensions.
13.5	<ul style="list-style-type: none"> ● Break apart a composite figure into rectangular prisms.

	<ul style="list-style-type: none"> ● Find an unknown dimension of a composite figure. ● Add the volumes of rectangular prisms to find the volume of a composite figure.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B

OPPORTUNITIES FOR DIFFERENTIATION (SUPPORT AND ENRICHMENT):

- <https://docs.google.com/document/d/1v5NF2k0cQoghIKcSPRxcgvj7AUejTkr0Dnz2J92-9qe4/edit?usp=sharing>

INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Science - have students find the volume of the recommended aquarium for a goldfish - page T-625
- Social Studies - discuss international trade, have the students find the volume of a cargo container - page T-631
- English Language Arts - read *Perimeter, Area, and Volume: A Monster Book of Dimensions* by David A. Adler, have students compare the difference between perimeter, area, and volume using a three-set Venn Diagram - page T-637
- Art - discuss the painting *Starry Night* by Vincent van Gogh, discuss how paintings got from one place to another in 1889, create problems for students about this topic - page T-643
- Physical Education - show students images of awards podiums with the dimensions labeled, have them find the volume, then students can create their own podium drawing and trade with a partner to find the volume - page T-649

STATE REQUIREMENTS

CAREER READINESS, LIFE LITERACIES, AND KEY SKILLS

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TEACHER NOTES



UNIT TITLE			
Classify Two-Dimensional Shapes			
CONTENT AREA:			
Mathematics	GRADE LEVEL:		5
UNIT NUMBER and SUGGESTED PACING GUIDE FOR UNIT			
Chapter 14 - 8 Days (May / June)			
UNIT FOCUS - SUMMARY OF UNIT			
<p>This chapter formalizes some of the definitions of polygons that students have studied for several years. The definitions are used to relate the different triangles and quadrilaterals to each other. In this chapter, students learn the formal definitions of some special triangles and use the definitions regarding side lengths and angle measure to explore how these designations are related. Students move on from classifying triangles to classifying special quadrilaterals. Classifying quadrilaterals is more challenging because in addition to side lengths and angle measures, parallel sides must be considered. Students learn the definitions of these quadrilaterals as a means for classifying them. The chapter culminates with students classifying special quadrilaterals into more than one category. Ultimately students will learn to classify a quadrilateral based on its attributes and it may be that the quadrilateral falls into more than one category. This aspect of multi-categories for a single shape is new to students who are used to a single right answer to mathematical problems.</p>			
KEY UNDERSTANDINGS			
MATHEMATICAL PRACTICES: https://www.nj.gov/education/standards/math/index.shtml			
NEW JERSEY STUDENT LEARNING STANDARDS: <ul style="list-style-type: none"> ● 5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. ● 5.G.B.4 Classify two-dimensional figures in a hierarchy based on properties. 			
PREREQUISITE KNOWLEDGE AND SKILLS (Progressions): <ul style="list-style-type: none"> ● Classify shapes based on lines and angles. ● Identify right angles in two-dimensional shapes. 			

<p>ENDURING UNDERSTANDINGS (Chapter Success Criteria):</p> <ul style="list-style-type: none"> ● Define two-dimensional shapes. ● Explain different shapes and their features. ● Compare shapes. ● Draw shapes. 	<p>ESSENTIAL QUESTIONS:</p> <ul style="list-style-type: none"> ● How can you classify and compare triangles and quadrilaterals?
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UNIT LEARNING TARGETS (STUDENTS WILL KNOW):

- Understand two-dimensional shapes.

STUDENTS WILL BE ABLE TO:

- Classify triangles by their angles and their sides.
- Classify quadrilaterals by their angles and their sides.
- Understand the hierarchy of quadrilaterals.

ASSESSMENT - EVIDENCE OF LEARNING AND UNDERSTANDING

FORMATIVE ASSESSMENTS

- Quizzes
- Homework
- Anecdotal Notes
- Exit Tickets
- Math Notebooks
- Student Performance - Explore and Grow, Think and Grow, Show and Grow, Apply and Grow, Think and Grow: Modeling Real Life
- Chapter Test A - optional pre-assessment for Chapter

SUMMATIVE ASSESSMENTS

- Chapter Test B - required
- LinkIt and i-Ready (according to district assessment calendar)

ALTERNATE ASSESSMENTS

- Chapter Performance Task
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Chapter Opener	<ul style="list-style-type: none"> ● Introduction of Vocabulary ● Optional Pre-Test ● Center Introduction
14.1	<ul style="list-style-type: none"> ● Identify an angle of a triangle as right, acute, or obtuse. ● Determine whether sides of a triangle have the same length. ● Use angles and sides to classify a triangle.
14.2	<ul style="list-style-type: none"> ● Identify parallel sides and sides with the same length in a quadrilateral. ● Identify right angles in a quadrilateral. ● Use angles and sides to classify a quadrilateral. ● Math Musical Link https://mathmusicals.com/#/grade/5/by-singing-a-song/
14.3	<ul style="list-style-type: none"> ● Arrange quadrilaterals in a Venn diagram based on their properties. ● Use a Venn diagram to make statements about the relationships among quadrilaterals.
Connect and Grow	<ul style="list-style-type: none"> ● Performance Task, Activity, and Chapter Practice
Connect and Grow	<ul style="list-style-type: none"> ● Centers
Chapter Assessment	<ul style="list-style-type: none"> ● Chapter Test B
Cumulative Practice (optional)	<ul style="list-style-type: none"> ● Cumulative Practice and STEAM Performance Task

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INTERDISCIPLINARY CONNECTIONS AND CROSS-CONTENT STANDARDS:

- Art - have students draw 12 random lines across the paper, then have students color in triangles to classify them using a different color to identify each type of triangle - page T-663
- Social Studies - take students outside to identify the different quadrilaterals that are present in the school building, show students an image of the Fountain Place, have students identify the different quadrilaterals in this building, have students research a building of their own and identify the quadrilaterals - page T-669
- English Language Arts / Art - have students create their own graphic organizer or anchor chart that shows the relationship among the quadrilaterals - page T-675

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