CENTRAL BUCKS
SCHOOL DISTRICT

Advanced Math 5

Course Level: Elementary

Grade: 5

Revision Date: September 2025 - August 2026

Central Bucks School District
20 Welden Drive
Doylestown, PA 18901

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Central Bucks School District
K-12 Mathematics Teaching and Learning Principles

1. Investigating, problem-solving, and communicating about mathematics (speaking, reading, writing, representing, and listening) stimulates students' curiosity, builds confidence, and leads students toward deeper conceptual understanding.

2. Lessons should address students' strengths, interests, and learning styles through differentiated instruction.

3. All students can achieve excellence in mathematics when:
    - instruction is appropriately paced
    - teachers set high expectations
    - students feel supported by their teachers, parents and administrators

4. Students must be actively engaged in learning experiences designed to connect to their prior knowledge.

5. For students to transfer and use knowledge meaningfully teachers need to:
    - present new ideas within rich and meaningful contexts
    - help students to make connections to their lives both within and outside of school

6. Mathematics instruction is more effective when teachers incorporate:
    - manipulatives
    - calculators
    - technology
    - real-time data collection devices (motion detectors, temperature probes,…)

7. Assessment should be ongoing, diagnostic, and aligned with instruction.

Documents Considered:

(2000). Principles and Standards for School Mathematics. Reston, VA: National Council of Teachers of Mathematics.

Kilpatrick, J., Swafford, J., & Findell, B. (2001). *Adding It Up: Helping Children Learn Mathematics.* Washington, DC: National Academy Press.

Marzano, R., & Pickering, D. (1997). *Dimensions of Learning.* Alexandria,VA: Association for Supervision and Curriculum Development; Aurora, CO: Mid-continent Regional Educational Laboratory.

Tomlinson, Carol Ann. (1999). *The Differentiated Classroom: Responding to the Needs of All Learners.* Alexandria, VA: Association for Supervision and Curriculum Development.

Zemelman, S., Daniels, H., & Hyde, A. (1998). *Best practice: New standards for teaching and learning in America's schools*. Portsmouth, NH: Heinemann.

Central Bucks School District
K – 12 Mathematics Program Enduring Understandings

Students will understand that:

The Nature of Mathematics

- Mathematics is a language of carefully defined terms and symbols.
- Mathematics is used to make informed decisions about problems in everyday life.

Numbers and Operations

- There are multiple representations for any number.
- Numbers are classified and compared within our number system.
- Depending on the situation, calculations may be done using mental math or paper-and-pencil using a variety of mathematically sound algorithms.
- Estimates help determine the reasonableness of an answer.
- Expressions are simplified using a predetermined order of operations.

Measurement

- Measurements collected using any tools (except for counting) are estimates with an accepted level of error.
- All measurements consist of exactly three parts: number, unit, and precision.
- Changing one linear dimension in a figure with two or three dimensions will have a different impact on the figure's perimeter, circumference, area, or volume.

Geometry

- Points, lines, and planes are the building blocks of geometry.
- Each geometric figure has a specific naming convention.
- Postulates, theorems, definitions, and properties are used to:
    - justify reasoning in a direct proof
    - establish relationships involving two and three-dimensional figures.
- Logical thinking and critical reasoning skills are important aspects of problem solving.
- A shape's characteristics (dimensionality, side measures, angle measures, faces, edges, area, perimeter and volume) are used for identification.
- The Pythagorean Theorem and trigonometric ratios are used to find missing quantities in right triangles.
- Concepts of congruency and similarity are used to relate and compare 2 and 3- dimensional figures.

Algebraic Concepts

- Algebraic rules and properties determine how expressions are simplified and how equations are solved.
- Problems involving a constant rate of change can be modeled using proportional reasoning.
- Algebraic expressions, equations, inequalities, and functions (linear, absolute value, quadratic, polynomial, exponential, and logarithmic) are used to model relationships between quantities in real-world situations.
- Patterns and functions can be generalized and represented using; verbal models, tables, equations, and graphs.
- Systems of equations are solved both graphically and algebraically and are used to model real-life problems.

Data Analysis and Probability

- Data is collected, organized, and displayed for analysis.
- Interpretations and predictions about data are influenced by the method that data is collected and displayed.
- Probability is used to make informed predictions and inferences.

Central Bucks School District
K – 12 Mathematics Program Essential Questions

The Nature of Mathematics

- What characteristics make mathematics a language?
- When is the correct solution not the answer to a problem?

Numbers and Operations

- How do you know that an answer is reasonable?
- Why are there different number systems?
- How do you determine when to calculate with pencil and paper, find an estimate, or use a calculator?
- What does it mean to be simplified?
- Is there more than one way to simplify an expression?

Measurement

- What does it mean to be accurate?
- How do you measure?
- How does changing a dimension affect a figures length, area and volume?

Geometry

- Why do all statements need justification?
- What is the logical progression of statements in a proof?
- How are figures classified?
- How do you name a geometric figure and why are standard naming conventions important?
- Why are points, lines, and planes so important in Euclidean geometry?
- How and when is the Pythagorean Theorem used?
- What do similarity and congruency statements tell you about polygons?

Algebraic Concepts

- What does solve mean?
- Is your solution always the appropriate answer to a problem?
- How do expressions and equations differ?
- What makes a relationship linear?
- How can a line be used to make predictions?
- When is it necessary to use a system of equations?
- Why would you represent a pattern/function in different ways?

Data Analysis and Probability

- What is the purpose of collecting data?
- How is data used or abused?
- How do we make predictions based on probability?

Central Bucks School District
Course of Study Overview – Advanced Math 5

Desired Results

Course Description:

Children come to school with a myriad of informal mathematical experiences which bear witness to their enthusiasm and curiosity in the mathematics classroom. As active learners, children continually seek to make sense of what is presented. Ultimately, they construct a personal theory about what mathematics is and what it means to do mathematics.

The teaching and learning of mathematics begins in a math rich environment. The activities, tasks, and discourse provide a framework for the development of mathematical power in all learners. Mathematical power (NCTM, 2000) is unmistakable in learners that exhibit conceptual and procedural understandings. It is evident in learners that can communicate mathematically. Mathematical power is apparent in learners who can reason logically, problem solve, and exhibit a disposition to persevere with real-life problem solving situations.

The Advanced Math 5 course is designed to appropriately challenge students through both content and pace. Students will study all Grade 5 mathematical standards, engage with select Grade 6 standards, and participate in regular enrichment experiences that deepen understanding and reasoning. This course prepares students for the expectations and demands of the district's most advanced mathematics pathway.

Original Committee Members (August 2019):
Tricia Foster, Kathleen Bortz, Melissa Trouts, Michelle Jacobs, Michelle Decker, Jaime Lemon, Melissa Ruth, Frank Cerauli, Helene Rothman, Kathleen Ordile, Mike Lechniak, Stephanie Merson, Richard Kratz

Updates and Textbook Review (March 2026):
Sean Kelly, Amy Jeffers, Keith Maduzia, Jon Reynard, Lynn Reigner, Mike Lechniak, Brian Novick

Acceptable Evidence

Common Summative Assessments

- There is a common summative assessment for each chapter.

End-of-Year Test

- An end-of-year test that assesses understanding of the skills from the 5th grade curriculum is administered to all students.

Pacing Guide

Advanced Math 5 Pacing Guide

Course Overview	Days
Chapter 1: Whole Numbers and the Four Operations	18
Chapter 2: Fractions and Mixed Numbers	17
Chapter 3: Multiplying and Dividing Fractions and Mixed Numbers	24
Chapter 4: Decimals	8
Chapter 5: Four Operations of Decimals	21
Chapter 6: Volume	12
Chapter 7: Line Plots and Coordinate Plane	10
Chapter 8: Polygons	6
Chapter 9: Ratio	14
Chapter 10: Percent	11
Total Prior to PSSA Testing	**141**
Chapter 11: Integers and Rational Numbers	20
Beginning of Year Activities/Review/Remediation	2
Flex Days – Field Trips, Snow Days, Half Days, Assemblies, School Activities, etc.	11
PSSA Testing – 1 Day for ELA, 2 Days for Math	3
EOY Test and Review	3
Total Days	**180**

Instructional Time

Chapter Contents	Chapter-Section	80 Minute Blocks/Days
Class Building		1
Math Universal Screener		1
Chapter 1: Whole Numbers and the Four Operations		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Numbers to 10,000,000	Chapter 1 - Section 1	2 days
Multiplying by Tens, Hundreds, Thousands, and Powers of Ten	Chapter 1 - Section 2	3 days
Dividing by Tens, Hundreds, or Thousands	Chapter 1 - Section 3	2 days
Multiplying and Dividing by Two-Digit Numbers Fluently	Chapter 1 - Section 4	3 days
Order of Operations	Chapter 1 - Section 5	2 days
Real-World Problems: Four Operations of Whole Numbers	Chapter 1 - Section 6	2 days
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		18 days
Chapter 2: Fractions and Mixed Numbers		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Fractions, Mixed Numbers, and Division Expressions	Chapter 2 - Section 1	2 days
Adding Unlike Fractions and Mixed Numbers	Chapter 2 - Section 2	4 days
Subtracting Unlike Fractions and Mixed Numbers	Chapter 2 - Section 3	4 days
Real-World Problems: Fractions and Mixed Numbers	Chapter 2 - Section 4	3 days
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		17 days
Chapter 3: Multiplying and Dividing Fractions and Mixed Numbers		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Multiplying Fractions and Whole Numbers	Chapter 3 - Section 1	2 days
Multiplying Proper Fractions	Chapter 3 - Section 2	2 days
Real-World Problems: Multiplying Proper Fractions	Chapter 3 - Section 3	2 days
Multiplying Improper Fractions	Chapter 3 - Section 4	2 days
Multiplying Mixed Numbers and Whole Numbers	Chapter 3 - Section 5	3 days
Real-World Problems: Multiplying with Mixed Numbers	Chapter 3 - Section 6	2 days
Dividing Fractions and Whole Numbers	Chapter 3 - Section 7	2 days
Real-World Problems: Multiplying and Dividing with Fractions	Chapter 3 - Section 8	3 days
Math Journal, Put on Your Thinking Cap		2 days
Chapter Wrap-up, Chapter Review, Performance Task		2 days
Chapter Assessment		1 day
Total Days		24 days
Chapter 4: Decimals		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Understanding Thousandths	Chapter 4 - Section 1	2 days
Comparing, Ordering, and Rounding Decimals	Chapter 4 - Section 2	2 days
Decimals, Fractions, and Mixed Numbers	Chapter 4 - Section 3	2 days
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		8 days
Chapter 5: Four Operations of Decimals		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day

Adding Decimals	Chapter 5 - Section 1	2 days
Subtracting Decimals	Chapter 5 - Section 2	2 days
Multiplying Decimals	Chapter 5 - Section 3	2 days
Multiplying by Tens, Hundreds, and Thousands	Chapter 5 - Section 4	3 days
Dividing Decimals	Chapter 5 - Section 5	2 days
Dividing by Tens, Hundreds, and Thousands	Chapter 5 - Section 6	3 days
Estimating Decimals	Chapter 5 - Section 7	3 days
Converting Metric Units	Chapter 5- Section 8	2 days
Real-World Problems: Decimals	Chapter 5 - Section 9	2 days
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		21 days
Chapter 6: Volume		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Building Solids Using Unit Cubes	Chapter 6 - Section 1	1 day
Understanding and Measuring Volume	Chapter 6 - Section 2	3 days
Real-World Problems: Volume of Rectangular Prisms	Chapter 6 - Section 3	3 days
Real-World Problems: Volume of Composite Solids	Chapter 6 - Section 4	2 days
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		12 days
Chapter 7: Line Plots and Coordinate Plane		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Making and Interpreting Line Plots	Chapter 7 - Section 1	2 days
Graphing on a Coordinate Plane	Chapter 7 - Section 2	3 days
Number Patterns and Graphs	Chapter 7 - Section 3	2 days
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		10 days
Chapter 8: Polygons		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Classifying Triangles	Chapter 8 - Section 1	1 day
Classifying Polygons	Chapter 8 - Section 2	1 day
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		6 days
Chapter 9: Ratio		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Finding Ratio	Chapter 9 - Section 1	3 days
Equivalent Ratios	Chapter 9 - Section 2	2 days
Comparing Three Quantities	Chapter 9 - Section 3	2 days
Real-World Problems: Ratio	Chapter 9 - Section 4	3 days
Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		14 days
Chapter 10: Percent		
Chapter Opener, Recall Prior Knowledge, Quick Check		1 day
Percent	Chapter 10 - Section 1	1 day
Fractions, Decimals, and Percent	Chapter 10 - Section 2	3 days
Percent of a Quantity	Chapter 10 - Section 3	1 day
Real-World Problems: Percent	Chapter 10 - Section 4	2 days

Math Journal, Put on Your Thinking Cap		1 day
Chapter Wrap-up, Chapter Review, Performance Task		1 day
Chapter Assessment		1 day
Total Days		11 days
Chapter 11: Integers and Rational Numbers		
Words and Expressions	Chapter 1 – Section 2	1 day
Integers and Absolute Value	Chapter 2 – Section 1	1 day
Adding Integers	Chapter 2 – Section 2	2 days
Subtracting Integers	Chapter 2– Section 3	2 days
Multiplying Integers	Chapter 2– Section 4	2 days
Dividing Integers	Chapter 2– Section 5	2 days
Formative Assessment		1 day
Rational Numbers	Chapter 3– Section 2	1 day
Multiplying Rational Numbers	Chapter 3– Section 3	2 days
Dividing Rational Numbers	Chapter 3– Section 4	2 days
Adding and Subtracting Like Fractions	Chapter 3– Section 5	1 day
Adding and Subtracting Unlike Fractions	Chapter 3– Section 6	1 day
Chapter Wrap-up, Chapter Review		1 day
Chapter Assessment		1 day
Total Days		20 days
STEAM Projects	Chapter	
National Park Service	1	
School Carnival	2	
Work for Cause	4	
Op Art	6	
Cubism	8	
MPG	9	

Required and Supplementary Texts/Software

Required Texts/Software:

Kheong, F.J., Ramakrishnan, C., Choo, M., (2020) *Math in Focus: Singapore Math, Student Edition*. Singapore: Houghton Mifflin Harcourt. ISBN: 978-0-358-10306-6

Supplementary Texts/Software:

Fact Fluency ISBN: 978-0-358-10518-3

Glencoe Math Accelerated: A Pre-Algebra Program - John Carter, Gilbert Cuevas, Roger Day, Carol Malloy - Glencoe/McGraw-Hill, 2017
ISBN: 978-0-07-672118-4 (Student Edition)

Chapter 1: Whole Numbers and the Four Operations

Desired Results

Essential Questions:

- When do we use 7-digit numbers in real world situations?
- Why are the four operations of whole numbers important in everyday life?

Enduring Understandings:

Students will understand that…

- There are multiple representations for any number.
- Numbers are classified and compared within our number system.
- Estimates help determine the reasonableness of an answer.
- Numbers are classified and compared within our number system.
- Expressions are simplified using a predetermined order of operations.
- Mathematics is used to make informed decisions about problems in everyday life.

Knowledge:

Students will know the definitions for…

- Standard form
- Word form
- Expanded form

Skills:

Students will be able to…

1.1	Read and write numbers to 10,000,000 in expanded form, standard form, and word form.
1.2	Use patterns to multiply numbers by 10, 100 or 1,000. Use multiples or powers of 10 to multiply.
1.3	Use patterns to divide numbers by 10, 100 or 1,000. Use multiples of 10, 100 or 1,000 to divide.
1.4	Divide by a 2-digit number fluently. Multiply by a 2-digit number fluently.
1.5	Use order of operations to evaluate a numeric expression. Evaluate numeric expressions with parentheses.
1.6	Use different strategies to solve multi-step problems.
Math Journal, Put on Your Thinking Cap	Solving part of the problem Restate the problem Make a list Guess and check

PA Core Standards
CC.2.1.5.B.1 Apply place-value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals. **CC.2.1.5.B.2** Extend an understanding of operations with whole numbers to perform operations including decimals. **CC.2.2.5.A.1** Interpret and evaluate numerical expressions using order of operations.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

- -Quick Check
- -"Try" Practice
- -Independent Practice
- -Slate Assessments
- -Exit Slips
- -Extra Practice
- -Chapter Review
- -Calendar

Summative

- -Quizzes
- -Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Students use place value chips to show numbers in expanded form.
2	Hands on Activity: Multiplying by a 100 and 1,000
3	Hands on Activities: Dividing by 10, Dividing Numbers by 100 and 1,000
4	Students use place value chips to explore solving multi-digit multiplication.
5	Hands on Activity: Using Order of Operations
6	Students will draw bar models to solve problems.

Cross Curricular Connections

Reading/Language Arts: Have volunteers read The Great Rumble: A Story of Math in Surprising Places by Cora Lee and Gillian O'Reilly (Annick Press, © 2007), which presents a myriad of ways math affects us in our everyday lives. Have students share ways they use multiplication and division in their everyday lives.

Science: Elephants eat about 300 pounds of food daily. Elephants spend at least 16 hours per day eating. Have students make a table showing how much food elephants eat each day, week, month, and year. Then, have them do the same for the number of hours elephants spend eating during each time period.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
1.1	X	X	X	X
1.2	X	X	X	X
1.3	X	X	X	X
1.4	X	X	X	X
1.5	X	X	X	X
1.6	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
1.1	Use Enrichment Activity 1 – application questions incorporating place value to ten thousands place
1.2	Use Enrichment Activity 2 – students complete puzzle using answers from more complex multiplication problems including factors with exponents
1.3	Use Enrichment Activity 3 – students complete puzzle using answers from division problems
1.4	Use Enrichment Activity 4 – students solve multiplication and division problems including more complex problem involving division where students need to use a non-routine approach to answer the question
1.5	Use Enrichment Activity 5 – students solve a variety of order of operation questions
1.6	Use Enrichment Activity 6 – students solve questions using any operation

Central Bucks School District – Course of Study

Chapter 2: Fractions and Mixed Numbers

Desired Results

Essential Questions:

- How are fractions and division related?
- How is adding and subtracting unlike fractions and mixed numbers similar to adding and subtracting like fractions?

Enduring Understandings:

Students will understand that…

- There are multiple representations for any number.
- Numbers are classified and compared within our number system.
- Estimates help determine the reasonableness of an answer.
- Depending on the situation, calculations may be done using mental math or paper-and-pencil calculations.
- Mathematics is used to make informed decisions about problems in everyday life.

Knowledge:

Students will know the definitions for…

- Simplest form
- Division expression
- Numerator
- Denominator
- Mixed number
- Like fraction
- Unlike fraction

Skills:

Students will be able to…

2.1	Understand and apply the relationships among fractions, mixed numbers and division expressions.
2.2	Add two unlike fractions where one denominator may or may not be a multiple of the other. Estimate sums of fractions and mixed numbers. Add mixed numbers with or without renaming.
2.3	Subtract two unlike fractions where one denominator may or may not be a multiple of the other. Estimate differences of fractions and mixed numbers. Subtract mixed numbers with or without renaming.
2.4	Solve real-world problems involving fractions and mixed numbers.
Math Journal, Put on Your Thinking Cap	Guess and check Draw a diagram

PA Core Standards
CC.2.1.5.C.1 Use the understanding of equivalency to add and subtract fractions. **CC.2.4.5.A.4** Solve problems involving computation of fractions using information provided in a line plot.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

-Quick Check
-"Try" Practice
-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Hands-on Activities: Dividing a Whole Number by a 1-digit whole number, Using models to relate fractions to division
2	Hands on Activity: Using a common denominator to add unlike fractions
3	Using fractions bars or circles to subtract unlike fractions
4	Hands on Activity: Solving Real-World Problems

Cross Curricular Connections

Reading/Language Arts: Have students create one-step word problems on index cards involving any of the following: Division expressions that can be written as fractions or mixed numbers, and vice versa. Addition or subtraction of mixed numbers, or a whole number with a mixed number. Have students write the work and answer on the other side of their partners' index cards. Use these cards to assess students at the start of sections or for revisions.

Art: Using the index cards with one-step word problems created by students, have the same or another student draw and illustrate the problem on the same or separate index card. If the problem and the illustration are on separate cards, students can play a matching game to match the problem with the illustration card.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
2.1	X	X	X	X
2.2	X	X	X	X
2.3	X	X	X	X
2.4	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
2.1	Use Enrichment Activity 1 - Students find the sum of fractions, convert between fractions and decimals, and learn about fractions with a denominator 9.
2.2	Use Enrichment Activity 2 - Students solve more complex application problems involving addition of fractions with unlike denominators.
2.3	Use Enrichment Activity 3 - Students solve more complex problems involving subtraction of fractions with unlike denominators.
2.4	Use Enrichment Activity 4 - Students complete a series of open ended problems incorporating addition and subtraction of fractions with unlike denominators.

Central Bucks School District – Course of Study

Chapter 3: Multiplying and Dividing Fractions and Mixed Numbers

Desired Results

Essential Questions:

- How do we multiply and divide fractions, mixed numbers, and whole numbers?
- How do the factors affect the product if one of the factors is a fraction?

Enduring Understandings:

Students will understand that…

- There are multiple representations for any number.
  - Numbers are classified and compared within our number system.
  - Estimates help determine the reasonableness of an answer.
  - Depending on the situation, calculations may be done using mental math or paper-and-pencil calculations
  - Mathematics is used to make informed decisions about problems in everyday life.

Knowledge:

Students will know the definitions for…

- Reciprocal
- Simplify
- Factor
- Proper fraction
- Improper fraction
- Mixed Number

Skills:

Students will be able to…

3.1	Multiply proper fractions by whole numbers. Multiply improper fractions by whole numbers.
3.2	Multiply proper fractions.
3.3	Solve real-world problems involving multiplication of proper fractions.
3.4	Multiply improper fractions by proper fractions. Multiply improper fractions by improper fractions.
3.5	Multiply a mixed number by a whole number. Multiply two mixed numbers. Compare the size of a product to the size of its factors.
3.6	Solve real-world problems involving multiplication of whole numbers and mixed numbers.
3.7	Divide a unit fraction by a whole number. Divide a proper fraction by a whole number. Divide a whole number by a unit fraction.

3.8	Solve real-world problems involving whole numbers, fractions, and mixed numbers, and the four operations.
Math Journal, Put on Your Thinking Cap	Look for patterns Guess and check Draw a diagram

PA Core Standards
CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

-Quick Check
-"Try" Practice
-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Hands-on Activity: Relating fractions of a set to multiplication
2	Hands on Activity: Modeling the commutative law using fractions
3	Using fraction circles and bar models to help us represent and solve real-world problems
4	Using paper strips to multiply fractions
5	Hands on Activity: Multiplying fractions and comparing the product with its factors
6	Using bar models to solve problems
7	Hands-on Activities: Relating division of a unit fraction by a whole number to multiplication, Dividing a proper fraction by a whole number
8	Hand-on Activity: Creating word problems

Cross Curricular Connections

Drama: Have students write a short skit in which one character is teaching another to multiply or divide fractions. Encourage students to make their skits humorous by writing them in genres such as science fiction or fantasy. Have pairs perform their skits.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
3.1	X	X	X	X
3.2	X	X	X	X
3.3	X	X	X	X
3.4	X	X	X	X
3.5	X	X	X	X
3.6	X	X	X	X
3.7	X	X	X	X
3.8	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
3.1	Use Enrichment Activity 1 - Students solve multiplication problems with fractions including application questions.
3.2	Use Enrichment Activity 2 - Students solve problems involving fractions and make connections to geometric figures.
3.3	Use Enrichment Activity 3 - Students solve more complex problems involving fractions with complex language to make students think carefully. Example: Ian gave his father 1/5 of his cash prize in a competition. He then gave 1/4 of the remainder to his mother and 1/8 of the remainder to his sister. He then had $250 left. How much money did Ian win? (focus in on the importance of the word remainder, what it means in this problem, and how it impacts what fraction is used in the calculation)
3.4	Use Enrichment Activity 4 - Students complete a series of multiplication problems involving multiple steps.
3.5	Use Enrichment Activity 5 - Students complete problem solving questions involving mixed numbers and whole numbers.

3.6	Use Enrichment Activity 6 - Students solve open ended problems with complex language to make students think carefully. Ex. A chef ordered some cooking oil for his restaurant. He uses the same amount of oil each day. He had 3/5 of the cooking oil left after 6 days. $4\frac{2}{3}$ liters of cooking oil were left after another 5 days. How many liters of cooking oil did the chef order? (emphasize words like "left" in the problem)
3.7	Use Enrichment Activity 7 - Students solve division of fraction and whole number problems.
3.8	Use Enrichment Activity 8 - Students complete a series of open ended problems incorporating multiplication and division with fractions.

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Chapter 4: Decimals

Desired Results

Essential Questions:

- What is the value of the second decimal place?
- What will be the value of the third decimal place?

Enduring Understandings:

Students will understand that…

- Mathematics is a language of carefully defined terms and symbols.
- Mathematics is used to make informed decisions about problems in everyday life.
- There are multiple representations for any number.
- Numbers are classified and compared within our number system.
- Estimates help determine the reasonableness of an answer.
- Numbers are classified and compared within our number system.

Knowledge:

Students will know the definitions for…

- Thousandths
- hundredths

Skills:

Students will be able to…

4.1	Read and write thousandths in decimal and fractional form.
4.2	Compare and order decimals to 3 decimal places. Round decimals to the nearest hundredth.
4.3	Rewrite three-place decimals as fractions or mixed numbers in their simplest form.
Math Journal, Put on Your Thinking Cap	Make a list Solve part of the problem

PA Core Standards
CC.2.1.5.B.1 Apply place-value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals. **CC.2.1.5.B.2** Extend an understanding of operations with whole numbers to perform operations including decimals.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

-Quick Check
-"Try" Practice
-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Hands-on Activity: Expressing thousandths as decimals
2	Hands on Activity: Comparing decimals using place-value chips and number lines Hands-on Activity: Use place value chips to describe, compare, and order decimals
3	Game: Decimal Snap

Cross Curricular Connections

Reading/Language Arts: Have students use a 15 × 15 grid to create word-find puzzle for the decimal terms in this chapter. To make their puzzles, students write one letter in each square, crossing words that share common letters. After all the terms are filled in, students fill in the empty squares with other random letters. Have students exchange and
solve one another's puzzles.

Science: The speed of sound is about 767.58 miles per hour. Have students research vehicles that have traveled faster than the speed of sound, such as airplanes, rockets, and even cars. Have students present their reports to the class. Encourage them to include visuals with their reports.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
4.1	X	X	X	X
4.2	X	X	X	X
4.3	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.

- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
4.1	Use Enrichment Activity 1 – This activity requires students to clearly express understanding of place value to the thousandths place through representing numbers using a variety of expanded forms for the same number. There is also practice of addition of decimals in a non-routine way.
4.2	Use Enrichment Activity 2 – Practice involving comparing and rounding numbers.
4.3	Use Enrichment Activity 3 – Students look for patterns while representing fractions as decimals.

Central Bucks School District – Course of Study

Chapter 5: Four Operations of Decimals

Desired Results

Essential Questions:

- How can decimals be added, subtracted, multiplied, and divided?

Enduring Understandings:

Students will understand that…

- There are multiple representations for any number.
- Numbers are classified and compared within our number system.
- Estimates help determine the reasonableness of an answer.
- Numbers are classified and compared within our number system.
- Mathematics is used to make informed decisions about problems in everyday life.
- Depending on the situation, calculations may be done using mental math or paper-and-pencil calculations using a variety of mathematically sound algorithms.
- Mathematics is a language of carefully defined terms and symbols.

Knowledge:

Students will know the definitions for…

- Rounding
- Conversions

Skills:

Students will be able to…

5.1	Add decimals without regrouping. Add decimals with regrouping.
5.2	Subtract decimals without regrouping. Subtract decimals with regrouping.
5.3	Multiply decimals up to 2 decimal places by 1-digit whole numbers.
5.4	Multiply decimals up to 3 decimal places by 10, 100, 1000 and their multiples. Multiply decimals up to 3 decimal places by powers of 10.
5.5	Divide decimals up to 2 decimal places by 1-digit whole numbers. Round quotients to the nearest tenth (1 decimal place) or hundredth (2 decimal places).
5.6	Divide decimals up to 2 decimal places by 10, 100, 1000 and their multiples.
5.7	Estimate decimal sums, differences, products, and quotients.
5.8	Convert from a larger metric unit to a smaller unit. Convert from a smaller metric unit to a larger unit.
5.9	Solve word problems involving decimals.
Math Journal, Put on Your Thinking Cap	Solve part of the problem Guess and check Work backwards Look for patterns

PA Core Standards
CC.2.1.5.B.1 Apply place-value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals. **CC.2.1.5.B.2** Extend an understanding of operations with whole numbers to perform operations including decimals.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

-Quick Check
-"Try" Practice
-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Hands-on Activity: Adding Decimals
2	Hands on Activity: Subtracting Decimals
3	Using place value chips to explore ways to multiply decimals
4	Hands- on Activity: Multiplying decimals by 10
5	Hands- on Activity: Dividing decimals
6	Hands-on Activity: Dividing decimals by 10
7	Using place value chips to estimate adding and multiplying with decimals
8	Using connecting cubes to solve conversion problems
9	Creating real-world problems

Cross Curricular Connections

Reading/Language Arts: Encourage partners to work together to write a hands-on activity, looking to the Student Edition for examples. Encourage students to make an activity that consolidates what they are learning and applies skills to the real world. Provide starting points for students, such as: measuring items, different units of measure, and dividing decimals by a whole number. Have pairs exchange and complete each other's activity.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
5.1	X	X	X	X
5.2	X	X	X	X
5.3	X	X	X	X
5.4	X	X	X	X
5.5	X	X	X	X
5.6	X	X	X	X
5.7	X	X	X	X
5.8	X	X	X	X
5.9	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
5.1	Use Enrichment Activity 1 – Students work on complex addition of decimal problems including critical thinking questions.
5.2	Use Enrichment Activity 2 – Students work on complex subtraction of decimal problems including critical thinking questions.
5.3	Use Enrichment Activity 3 – Students work on complex multiplication of decimal problems including critical thinking questions.
5.4	Use Enrichment Activity 4 – Students work on complex multiplication of decimal problems including powers of 10.
5.5	Use Enrichment Activity 5 – Students work on complex division of decimal problems including critical thinking questions.
5.6	Use Enrichment Activity 6 – Students work on complex division of decimal problems including problems dividing by tens, hundreds, and thousands.
5.7	Use Enrichment Activity 7 – Students work on estimation problems and use estimation while solving an open ended problem.
5.8	Use Enrichment Activity 8 – Students solve a variety of conversion questions between metric units.
5.9	Use Enrichment Activity 9 – Students solve a variety of application problems that involve all operations.

Central Bucks School District – Course of Study

Chapter 6: Volume

Desired Results

Essential Questions:

- How can you measure the amount of space in a box or container?
- What units can we use?

Enduring Understandings:

Students will understand that…

- Estimates help determine the reasonableness of an answer.
- Mathematics is used to make informed decisions about problems in everyday life.
- A shape's characteristics (dimensionality, side measures, angle measures, faces, edges, area, perimeter and volume) are used for identification.
- Logical thinking and critical reasoning skills are important aspects of problem solving.

Knowledge:

Students will know the definitions for…

- Unit cube
- Congruent
- Edge
- Composite Solid

Skills:

Students will be able to…

6.1	Use unit cubes to build solids. Determine the number of unit cubes in an irregular solid. Recognize that the volume of a solid is the amount of space it occupies.
6.2	Find the volume of a solid made of unit cubes. Find the volume of cubes and rectangular prisms.
6.3	Use a formula to find the volume of a rectangular prism. Find the capacity of a rectangular container. Solve word problems of rectangular prisms and liquids.
6.4	Find the volume of a solid figure composed of two rectangular prisms. Solve real-world problems on the volume of a composite solid.
Math Journal, Put on Your Thinking Cap	Make a list Look for patterns Solve part of the problem Simplify the problem

PA Core Standards
CC.2.1.5.B.2 Extend an understanding of operations with whole numbers to perform operations including decimals.

PA Core Standards
CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions. **CC.2.4.5.A.5** Apply concepts of volume to solve problems and relate volume to multiplication and to addition.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

-Quick Check
-"Try" Practice
-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Hands-on Activity: Using unit cubes to build different solids
2	Hands on Activity: Discovering that different solids can have the same volume Hands-on Activity: Building prisms layer by layer to establish the formula for the volume of a rectangular prism
3	Connecting cubes to make rectangular prisms to find dimensions related to volume
4	Finding the volume of composite solids

Cross Curricular Connections

Science: Provide students with this formula: Density = mass / volume. Have students make a three-column chart with the labels "Mass," "Volume," and "Density." Ask student to work in pairs or small groups to calculate the volume and measure the mass of a variety of rectangular prisms, such as books, gift boxes, cereal boxes, and so on…Have them record the measurements on the chart and calculate the densities.

Reading/Language Arts: Give students these writing prompts: What are the similarities and differences between a cube and a rectangular prism? How do you find the volume of a cube or a rectangular solid? How is finding the volume of a cube and rectangular solid the same? Ask students to write a journal entry to answer a question of their choice.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
6.1	X	X	X	X
6.2	X	X	X	X
6.3	X	X	X	X
6.4	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
6.1	Use Enrichment Activity 1 - Students work on complex problems as they build solids using unit cubes.
6.2	Use Enrichment Activity 2 - Students work on complex problems while understanding and measuring volume.
6.3	Use Enrichment Activity 3 - Students solve a variety of application problems that involve volume of rectangular prisms.
6.4	Use Enrichment Activity 4 - Students solve a variety of application problems that involve volume of composite solids.

Central Bucks School District – Course of Study

Chapter 7: Line Plots and Coordinate Plane

Desired Results

Essential Questions:

- How can we represent data in line plots?
- How can you describe a point on a coordinate plane?
- How can you use the coordinate plane to show number patterns?

Enduring Understandings:

Students will understand that…

- Mathematics is used to make informed decisions about problems in everyday life.
- Data is collected, organized, and displayed for analysis.
- Interpretations and predictions about data are influenced by the method that data is collected and displayed.
- Patterns and functions can be generalized and represented using; verbal models, tables, equations, and graphs.

Knowledge:

Students will know the definitions for…

Coordinate plane
x-axis
y-axis
coordinates
ordered pair
origin
x-coordinate
y-coordinate
term

Skills:

Students will be able to…

7.1	Make and interpret line plots with fractional data. Use fractions and their operations to solve problems using data.
7.2	Read points on a coordinate plane. Plot points on a coordinate plane. Use ordered pairs to draw line graphs.
7.3	Identify and extend number patterns. Identify the relationship between two sets of numbers.
Math Journal, Put on Your Thinking Cap	Look for patterns Act it out

PA Core Standards
CC.2.2.5.A.4 Analyze patterns and relationships using two rules. **CC.2.3.5.A.1** Graph points in the first quadrant on the coordinate plane and interpret these points when solving real world and mathematical problems. **CC.2.4.5.A.2** Represent and interpret data using appropriate scale. **CC.2.4.5.A.4** Solve problems involving computation of fractions using information provided in a line plot.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task
Acceptable evidence of learning other than Performance Tasks:

Formative

-Quick Check
-"Try" Practice
-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Collect data and display it in a meaningful way
2	Game: Battleship Wars
3	Identifying relationships between numbers and identifying and extending number patterns

Cross Curricular Connections

Science: Have students work in pairs to research the high and low temperatures in their area for one week. Have one partner create the line graph showing the data for the high temperatures, and the other create a line graph for the low temperatures. Have students discuss their graph.

Reading/Language Arts: Have students work in groups to complete this activity. Create a survey questionnaire and survey ten students. Choose one question from the survey and create a table. Then make a line plot to represent the data.

Social Studies: Relate the coordinates in a coordinate plane to latitude and longitude. Students can research online to identify the latitude and longitude of their city or town. Suggest that interested

students research how a global positioning system uses these coordinates report their findings to the class.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
7.1	X	X	X	X
7.2	X	X	X	X
7.3	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
7.1	Use Enrichment Activity 1 - Students work on complex problems involving making and interpreting line plots.
7.2	Use Enrichment Activity 2 - Students work on complex problems involving graphing on a coordinate plane.
7.3	Use Enrichment Activity 3 - Students solve a variety of application problems that involve number patterns and graphs.

Central Bucks School District – Course of Study

Chapter 8: Polygons

Desired Results

Essential Questions:

- What properties can we use to identify triangles?
- How can we classify polygons using a hierarchy?

Enduring Understandings:

Students will understand that…

- Each geometric figure has a specific naming convention.

Knowledge:

Students will know the definitions for…

Equilateral triangle
Isosceles triangle
Scalene triangle
Regular polygon
Kite
Heptagon
Octagon
Nonagon
Decagon

Skills:

Students will be able to…

8.1	Identify right, isosceles, scalene, and equilateral triangles. Classify triangles by their side lengths and angle measures.
8.2	Classify polygons using a hierarchy.
Math Journal, Put on Your Thinking Cap	Make a list Simplify the problem

PA Core Standards
CC.2.3.5.A.2 Classify two-dimensional figures into categories based on an understanding of their properties.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

-Quick Check
-"Try" Practice
-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Exploring the angles in different kinds of triangles.
2	Comparing similarities and differences between two figures.

Cross Curricular Connections

Reading/Language Arts: Have students work in pairs. Each student draws a figure (isosceles or equilateral triangle, rhombus, parallelogram, or trapezoid) on the sheet of paper, but does not show it to their partner. Each student writes directions that can be followed to draw the unseen figure. Then the partners exchange and follow each other's directions. When they have finished, students compare drawings to see how well the directions were written and followed.

Art: Challenge students to be architects and design a house using as many of the figures they have learned about in this chapter as possible. Have students make presentations of their buildings identifying the unique and interesting ways they used each figure, and the properties that helped them decide to use it.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
8.1	X	X	X	X
8.2	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.

- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
8.1	Use Enrichment Activity 1 - Students work on complex problems as they classify triangles.
8.2	Use Enrichment Activity 2 - Students solve a variety of application problems as they classify polygons.

Central Bucks School District – Course of Study

Chapter 9: Ratio

Desired Results

Essential Questions:

- How can you relate and compare two or three quantities?

Enduring Understandings:

Students will understand that…

- There are multiple representations for any number.
- Numbers are classified and compared within our number system.
- Logical thinking and critical reasoning skills are important aspects of problem solving.
- Mathematics is used to make informed decisions about problems in everyday life.

Knowledge:

Students will know the definitions for…

Ratio
Equivalent ratios
Simplest form

Skills:

Students will be able to…

9.1	Read and write ratios.
9.2	Find equivalent ratios using multiplication or division. Solve ratio problems using multiplication or division.
9.3	Read and write ratios of three quantities.
9.4	Solve real-world problems involving ratios.
Math Journal, Put on Your Thinking Cap	Draw a diagram Make a list

PA Core Standards
CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

<u>Formative</u>

-Quick Check
-"Try" Practice

-Independent Practice
-Slate Assessments
-Exit Slips
-Extra Practice
-Chapter Review

Summative

-Quizzes
-Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Hands-on Activity: Writing ratio statements to compare to quantities Hands-on Activity: Drawing bar models to represent ratios Hands-on Activity: Drawing part-whole models to represent ratios
2	Game: Simplify it Fast!
3	Using connecting cubes to demonstrate ratios
4	Using connecting cubes to solve real-world ratio problems

Cross Curricular Connections

Reading/Language Arts: Have students write a brief biography using ratios to tell about their family, pets, activity time, and so on. Encourage students to illustrate their biography. Invite students to share their biography and illustrations to the class.

Social Studies: Display a large map of the United States. Have students stick a push-pin or sticky note on each state they have visited. Using the map, have students find each of these ratios and an equivalent ratio.

- Number of states visited by member of the class: total number of states
- Number of states visited: number of states not visited by member of class

Art: Have students make scale figures, such as squares and rectangles, using a ratio of 1:2.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
9.1	X	X	X	X
9.2	X	X	X	X
9.3	X	X	X	X
9.4	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
9.1	Use Enrichment Activity 1 - Students work on real-world complex problems as they find ratios.
9.2	Use Enrichment Activity 2 - Students solve a variety of equivalent ratio computation and real-world problems.
9.3	Use Enrichment Activity 3 - Students work on complex problems as they classify triangles.
9.4	Use Enrichment Activity 4 - Students solve a variety of multi-step ratio application problems.

Central Bucks School District – Course of Study

Chapter 10: Percent

Desired Results

Essential Questions:

- What does percent mean?
- How can you represent a percent in different ways?
- How can a percent be used in real-world situations?

Enduring Understandings:

Students will understand that…

- There are multiple representations for any number.
- Numbers are classified and compared within our number system.
- Estimates help determine the reasonableness of an answer.
- Mathematics is used to make informed decisions about problems in everyday life.
- Depending on the situation, calculations may be done using mental math or paper-and-pencil calculations using a variety of mathematically sound algorithms.

Knowledge:

Students will know the definitions for…

Percent
Sales tax
Meals tax
Discount
Interest

Skills:

Students will be able to…

10.1	Relate a percent to parts of a whole where the whole is made up of 100 equal parts.
10.2	Relate and compare percent, decimal, and fraction. Express fractions as a percent and vice-versa. Express decimals as percent and vice-versa.
10.3	Find the value of a percent of a quantity, given the amount and the percent.
10.4	Solve real-world problems involving percent.
Math Journal, Put on Your Thinking Cap	Solving part of the problem Draw a diagram

PA Core Standards
CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Acceptable Evidence

Performance Tasks: Math Journal, Put on Your Thinking Cap, Performance Task

Acceptable evidence of learning other than Performance Tasks:

Formative

- -Quick Check
- -"Try" Practice
- -Independent Practice
- -Slate Assessments
- -Exit Slips
- -Extra Practice
- -Chapter Review

Summative

- -Quizzes
- -Chapter Assessment

Suggested learning experiences and instruction

Sections	Activities
1	Using hundred square grid to represent parts of a whole
2	Hands on Activity: Express parts of a whole as a percent Game: Pair Up
3	Using bar models to find a percent of a quantity
4	Hands on Activity: Solve percent problems

Cross Curricular Connections

Reading/Language Arts: Have students choose a book to read over five school days. Have them write the part of the book they have read by the end of each day in fraction form and then percent form. Students can record their percent in a table. By the end of day five, they should have all read 100% of the book.

Social Studies: Brainstorm a list of students' five favorite presidents. Have students pretend the five presidents are running for the office of class president. Then have a class election. Calculate the percent of votes each president received.

Differentiation Options

Sections	Reteaching	Extra Practice	Enrichment	ELL Support
10.1	X	X	X	X
10.2	X	X	X	X
10.3	X	X	X	X
10.4	X	X	X	X

For Language Development

- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Have a vocabulary bee by giving a definition and having students identify the term defined.
- Make flash cards for terms and examples, then mix and match.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners

- Enrichment practices
- Put On Your Thinking Cap! questions in Student Edition and Extra Practice and Homework

Sections	Enrichment
10.1	Use Enrichment Activity 1 - Students work on complex percent problems.
10.2	Use Enrichment Activity 2 - Students solve a variety of computation and real-world problems as they convert between fractions, decimals, and percents.
10.3	Use Enrichment Activity 3 - Students work on complex problems while finding the percent of a quantity.
10.4	Use Enrichment Activity 4 - Students solve a variety of multi-step percent application problems.

Central Bucks School District – Course of Study

Chapter 11: Integers and Rational Numbers

Desired Results

Essential Questions:

- What happens when you add, subtract, multiply, and divide integers?
- What happens when you add, subtract, multiply, and divide rational numbers?

Enduring Understandings:

Students will understand that…

- Some situations must be represented using negative values.
- Fractions are used to represent real-life situations.
- Common denominators are needed to add and subtract fractions.
- Fractions have reciprocals, and their product is 1.
- To divide fractions, use the reciprocal of the second fraction and multiply.

Knowledge:

Students will know…

- Definitions for: equation, evaluate, numerical expression, simplify, absolute value, additive inverse, inequality, integer, opposite, quadrant, bar notation, like fractions, rational number, reciprocal, unlike fractions, real number
- How to order rational numbers.
- How to find the reciprocal.
- When it is appropriate to simplify a fraction during the process of addition, subtraction, multiplication, and division.
- How rational numbers, integers, and whole numbers relate to each other.

Skills:

Students will be able to…

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

PA Core Standards
CC.2.1.7.E.1 Apply and extend previous understandings of operations with fractions to operations with rational numbers.

Acceptable Evidence

Assignments:

- Warm-Ups

- Guided Notes/Instruction
- Check for Understanding Assignments
- Hands-On Activity
- Guided Practice Problems from book
- Independent Practice Problems from book
- H.O.T. Problems (Higher-Order Thinking)
- Extra Practice Problems from book
- Exit Slips

Problem Solving Tasks:
21st Century Career
- In Astronomy p. 68
- In Fashion Design p. 113

Suggested learning experiences and instruction
- Emphasize integer rules.
- Emphasize vocabulary.
- Use of a calculator is prohibited.

Differentiation Options

- Utilize study guide and intervention for students who need more reteaching.
- Skills practice is extra practice for students who need more entry level practice to master the concept.
- Practice worksheet is a standard practice sheet.
- Word problem practice provides additional opportunities for students to engage in solving problems utilizing the skill from the lesson.
- The enrichment sheet provides a higher-level practice opportunity for students demonstrating faster understanding of the concept.

For Language Development
- Create a student-made dictionary that includes terms, definitions, and examples organized by chapter.
- Make flash cards for terms and examples, then mix and match.
- Use the study guide document with clear definitions and vocabulary development opportunities.
- Discuss the Chapter Wrap-Up, encouraging students to use the chapter vocabulary.

For Advanced Learners
- Meet in small groups with students who need enrichment to provide instruction and learning activities on the optional skills followed up by an alternative and more complex assignment.
- Excuse the students from standard practice and use appropriately challenging practice that requires students to apply the concepts in more rigorous ways to challenge their thinking and allow students to go deeper on the same skills.