Unit 4: Domain: Geometry

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Marking Period 3**
Length: **2 Weeks**
Status: **Published**

Unit Overview

In this unit, students will develop spatial sense as they learn about shapes and begin to categorize and classify the relationships among shapes. Formal geometric vocabulary will be introduced as a means of mathematically describing plane figures in terms of size and angles. They will use this vocabulary to classify and compare quadrilaterals and give examples of shapes that do not belong to a subcategory. Students will also find area by counting unit squares, tiling and using multiplication. Finally, they will learn to decompose rectilinear figures into non-overlapping rectangles in order to find area.

Standards

MA.3.MD.C.7a	Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
MA.3.MD.C.7d	Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.
MA.3.G.A.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Essential Questions

- How can spatial relationships be described by use of geometric language?
- How do geometric relationships help to solve problems?
- How can we use mathematical models to describe physical relationships?
- How do mathematical ideas interconnect and build on one another?
- How can attributes be used to classify objects?

Application of Knowledge and Skills...

Students will know that...

- a line segment that connects two vertices that are not next to each other is a diagonal.
- a polygon is a closed plane shape made of three or more line segments that intersect only at their end points.
- plane shapes have many properties that make them different from one another.
- polygons are named for the number of sides they have.
- polygons can be described and classified by their sides and angles.
- the line segments that form a polygon are called sides.
- the point at which two sides meet is a vertex.
- two sides of a polygon meet to form an angle.

Students will be skilled at...

- classifying shapes according to their attributes.
- discriminating between concave and convex polygons.
- identifying and classifying polygons.
- identifying and classifying quadrilaterals.
- identifying and naming the number of sides and angles a polygon has.
- identifying parallel sides.
- identifying right angles.

Assessments

- Benchmark Tests
- End of Year Test-administered after completing program
- Placement Test-administered prior to delivering program
- Task Cards
- Topic Math Projects
- Topic Quick Checks
- Topic Tests

Activities

Problem of the Day-Present a daily problem that serves as a review from the previous day's lesson.

Vocabulary - Have students create a chart for each new vocabulary word that includes the word's meaning and an example or use vocabulary cards as flash card game

Station activities- Each section has center activities to reinforce skill (leveled)

- Clip and Cover- Students answer questions and try to cover four spaces in a row on a gameboard to win.
- Display the Digits- Students answer the problem and display the tile that represents the answer.
- Quick Questions- Toss number cubes and answer questions.
- Team Work- Students in turn explain the steps in a multi-step process.
- Think Together- Students choose and discuss answers to problems.
- Tic Tac Toe- Students use algebra to compute solutions to problems.
- Toss and Talk- Students toss number cubes and explain how to solve resulting problems.

Interactive Learning - Problem-Based Interactive learning activities at the beginning of each topic

Topic Opener Projects - There is a math project for each topic (Topic 1-3). See Cross-Disciplinary instruction for projects and page numbers.

Practice work - Communicator practice can be done using Independent work and problem- solving practice problems in each section.

Ticket to Leave - Quick Checks on each sections

Activities to Differentiate Instruction

General strategies for modification of this curriculum for students with special needs, ELL, and gifted learners:

- **General strategies:**
  - preferential seating
  - manipulatives
  - modified workbook pages
  - practice or enrich homework pages
- **Center activities** - There are leveled center activities for each section. There is a separate activity for "Intervention", and then "On-Level" and "Advanced" are in spiral book.
- **Leveled practice pages** - There are three leveled (Reteaching, Practice, and Enrichment) sheets that can be used for practice or homework.
- **Math Concept Readers:** These readers allow the student to read the story at different levels- above level, on level, and below level. (also available on line with audio) Complete the Think and Respond and Write Math questions at the conclusion of each book.
- **Assessment**- Using Quick Check Review can determine differentiated instruction levels using sample answers and using the rubric at the Close/ Assess and Differentiate section in the teacher edition.

Content specific modification for students with special needs, ELL, and gifted learners:

- **Topic 11**
  - **Below level students:**
    - Provide students with opportunities to learn both the names of quadrilaterals and their characteristics.
      - Give students index cards with drawings of quadrilaterals on them. Write the names of the shapes on a separate set of index cards. Have students match the shapes with their names, or play a game of "Concentration."
      - Encourage students to look for the shapes of quadrilaterals in everyday objects around the classroom.
  - **Students with special needs:**
    - Students with special needs will benefit from the use of concrete models and hands-on experience with polygons.
      - Repeat and reinforce the vocabulary terms polygon, side, and vertex.
      - Point out examples of polygons in the classroom, such as the surface of a desk.
  - **ELL**
    - Many new vocabulary words are introduced in this topic. Give students repeated oral language practice to ensure that they understand.
      - Discuss the terms polygon, side, and vertex. Show students a concrete example of each.
      - Write each of the following terms on a separate index card: polygon, side, and vertex. have students draw a picture for each term.
      - Have students find examples in the classroom of each term above. Ask them to describe the example to a partner in such a way that the partner can guess which term is being described.
  - **Advanced/Gifted:**
    - Have students solve the following dissection puzzles.
      - Draw a trapezoid that can be divided into two triangles and a rectangle by drawing to line segments. Draw another trapezoid that can be divided into one triangle and a rectangle by drawing just one line segment.
      - Draw a quadrilateral other than a square that can be divided into four right triangles by drawing just two line segments.

Integrated/Cross-Disciplinary Instruction

Reading and Writing: The Worldscapes Readers present math problems to be solved within the context of nonfiction text. Think and Respond and Write Math questions can be found at the conclusion of the books.

Topic 11: Art: Perfect Patterns- Students learn about architectural design and research a home for information about the use of geometric shapes found in the building design. They will also create a room design incorporating at least one non-right angle.

Resources

Topics Categories in book form:

Topic11: Two-Dimensional Shapes and Their Attributes

Master Enrichment pages

Master Reteaching pages

Master Practice pages

Student Edition workbook

On line Resources available at www.pearsonrealize.com

- Teacher Edition (TE) Textbook
- Student Edition (SE) Textbook
- Tests on line
- Concepts videos
- Math Tools

21st Century Skills

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They

carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.