Unit 5: Domain: Geometry

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Marking Period 4**
Length: **5 Weeks**
Status: **Published**

Unit Overview

In this unit, students will identify shapes as two-dimensional or three-dimensional. They will describe objects in the environment using the names of shapes and describe the relative positions using terms such as above, below, beside, in front of and next to.

Standards

MA.K.G.A	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
MA.K.G.A.1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
MA.K.G.A.2	Correctly name shapes regardless of their orientations or overall size.
MA.K.G.A.3	Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).
MA.K.G.B	Analyze, compare, create, and compose shapes.
MA.K.G.B.4	Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).
MA.K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
MA.K.G.B.6	Compose simple shapes to form larger shapes.

Essential Questions

- How can objects be sorted and classified?
- How are position words useful?
- How can patterns be identified, described, and repeated?

Application of Knowledge and Skills...

Students will know that...

- mathematics contentent and practices can be applied to solve problems.
- Numbers, expressions, measures and objects can be compared and related in different ways.
- two- and three-dimensional objects with or without curved surfaces can be described, classified and analyzed by their attributes.

Students will be skilled at...

- creating shapes by combining 2 solid figures.
- creating two-dimensional shapes from various materials.
- defining the following terms from each topic: Topic 14: rectangle, corner, side, square, circle, triangle, hexagon, cone, cylinder, sphere, cube, flat surface, Topic 15: inside, outside, above, below, behind, on (top of), beside, next to, right, left, in front of, Topic 16: same size, same shape, roll, stack, slide
- describing an object using the positional words such as inside, outside, above and below.
- identifying and describing rectangles, squares,triangles, hexagons and circles.
- identifying and describing the flat surfaces of three dimensional shapes.
- identifying cubes, cones, cylinders and spheres and relate them to real-life objects.
- identifying the attributes of solid figures.
- recogizing that shapes can be combined to make other shapes.

Assessments

- benchmark test
- end of the year test- administered after completing the program.
- Placement Test- administered prior to delivering the program.
- 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 - 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 rpresents the answer.
- Quick Questions: Toss number cubes and answers questions.
- Teamwork: 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 algebraic rules to compute solutions to problems
- Toss and Talk: Students toss number cubes and explain how to solve resulting problems.

STEM - Certain sections have Going Digital integrating technology such as:

- Use Geometry Shapes p. 282

Interactive Learning - Problem-Based Interactive learning activities at the beginning of each topic such as using tools, structure,reasoning, generalizing, assessing reasonableness and modeling.

Topic Opener Projects - There is a math project for each topic (Topic 14-16). See Cross Disciplinary instruction for project and page numbers.

What's My Sorting Rule?

Provide children with an assortment of objects (buttons, attribute blocks, etc) to be sorted and classified. Ask: How are these objects the same/different? What is the sorting rule? How do you know? What other objects could be put in the group? How could you sort the same set differently?

Patterns are Fun!

Provide children with an assortment of objects (colored tiles, connecting cubes, etc) to create patterns. Ask: What is the pattern? How do you know it is a pattern? How do you know what will come next in each pattern? What comes first? Between? Next?

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 14**
  - **Below level students:**
    - Review with children the shapes circle, rectangle, square, and triangle. Make a bulletin board of the shapes.
    - Help the children observe shapes in the classroom. Point out plane shapes in the environment during the day; for example, the clock is a circle; the desk is a rectangle; the floor tile is square.
    - Have children draw the shapes the observe and post them in the correct category on the bulletin board. Help children label their drawings as needed.
    - As children observe the shapes around them, they can add to the bulletin board on a daily basis.
  - **Students with special needs:**
    - Review with special needs children the words square, rectangle, circle, and triangle and the shapes represented by the words.
    - Hold up a paper cut out representation of each shape and have children identify it.
    - Draw a square, a rectangle, a circle, and a triangle in one row on the board. Make paper shapes, including several of different sizes and colors of each shape, and put them in a paper bag.
    - Call on a child to pick a shape from the grab bag and identify it. The have the child tape the shape to the board under the drawing of the same shape.
    - Repeat with other children until all the shapes are taped to the board.
  - **ELL**
    - Repeated oral language practice of the words related to shape names will help English learners remember and understand the distinctions.
    - Draw a circle, a triangle, a square, and a rectangle on the board. Ask children to name each shape. Help children pronounce the words as needed. Give children paper and a crayon. Say the name of one of the shapes and have children draw that shape.
  - **Advanced/Gifted:**
    - Children with a strong sense of shape will be able to identify figures that have the same shape and are the same size. Challenge them to identify pairs of such figures when they are not in the same relative position.

        - Give children opportunities to connect geometry to concepts of comparison. Hold up a shape and have children find all the pattern blocks with more sides, fwer sides, or the same number of sides.

- **Topic 15**
    - **Below level students:**
        - While children are probably familiar with the terms in front of and behind in an everyday sense, they might not be able to apply this knowledge to tw-dimensional pictures.
        - It is important to act out the meaning of the words as they are introduced and to give children physical experiences placing objects in front of and behind each other. These experiences can help children transfer their knowledge to two-dimensional pictures.
    - **Students with special needs:**
        - Review with special needs children the positional vocabulary using classroom objects to demonstrate each one.
        - Allow children to use the whole classroom as they place objects above, below, on, and next to other objects according to your directions. For example, say Place the eraser below the desk. The model using positional vocabulary to describe placement of objects.

    - **ELL**
        - Repeated oral practice of positional vocabulary, such as inside, outside, left, and right will help English learners remember and understand these concepts.
        - With your back to the class, extend your left arm out to the side, point, and look that direction. This is the left. Have children mimic your actions and repeat the sentence after you. Then repeat the process with your right arm.

    - **Advanced/Gifted:**
        - Advanced children can be challenged to follow directions using positional words, and they can take turns giving directions to each other. Encourage advanced children to work with objects, directing a partner to place the object above, below, or on something, and to the left or right.

- **Topic 16**
    - **Below level students:**
        - Children may call three-dimensional shapes by two-dimensional names. For example, they might call a sphere a "circle,: a cube a "square," and a cone a "triangle." These children are observing important attributes of solid figures. Use questioning strategies with children to help them become more precise in describing solid figures.
        - Have children press solid figures into modeling clay and identify the flat surfaces made by the imprints. First, have them predict what flat surface they will see. Then, have them press the shape into the clay to confirm.
    - **Students with special needs:**
        - Review with children the words sphere, cube, cone, and cylinder and the solid figures represented by the words.
        - Help children recognize three-dimensional shapes in their environment. Show children one solid figure at a time and name it. Use assistive technology to provide adaptive technological equipment to enhance learning access for students with physical disabilities. Have children look carefully at the shape as they handle it. Ask them if the shape of the solid figure reminds them of anything in the classroom
        - Pass around solid figures and have children handle each one. Place the figures in a box. One at a time, have children close their eyes and pick a shape from the box. Have

children guess what shape they have chosen and tell how they know.

- **ELL**
  - Repeated oral language practice related to shape names will help English learners remember and understand the distinctions.
  - Show children several different solid figures, for example, a cube, a cone, and a cylinder. Ask children to name each of the solid shapes. Then ask them to look at the surface of the solid shapes and name the plane shape on the surface of each solid. The children should repeat the names of the solids as well as the plane shapes. For example: This is a cube. It has squares on the surface.

- **Advanced/Gifted:**
  - Children with a strong developing sense of shape and dimension will be able to extend what they learned about two-dimensional and three-dimensional shapes.
  - Provide advanced children with additional opportunities to manipulate three-dimensional objects or their representations to explore their surfaces and compare them to their two-dimensional counterparts.
  - As they manipulate various three-dimensional objects, help them to observe the surface shapes of each object.

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 14: Around the Park: Art: Draw different shapes in the classroom and label them. p. 264

Topic 15: Over Under: Social Studies: Provide students with pictures of things found in their town. Students will glue pictures to construction paper and label using position words. p. 286

Topic 16: Cubes, Cones, Cylinders and Spheres: Art: Cut out pictures from different media and glue to a piece of construction paper. Then have students discuss objects that have that same shape with their classmates. p. 302

MUSIC

Music Match

Objective - identify sounds that are alike and different

Procedure - have a child make two sounds while the rest of the class closes their eyes. The class decides if the sounds are the same or different

READING

Rhyming Words

Objective - identify a pattern

Procedure - sort simple rhyming words (bat/rat/cat, bit/hit/sit) into groups and describe the pattern (-at, -it)

Resources

Topics Categories in book form:

Topic 14: Identifying and describing shapes

Topic 15: Position and Location of Shapes

Topic 16: Analyzing, comparing and composing shapes

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.