

Math 3 - Act. 11: Shapes Are Everywhere

Summary

Students will use various shapes to identify polygons and understand symmetry.

Main Core Tie

Mathematics Grade 3

[Strand: GEOMETRY \(3.G\) Standard 3.G.1](#)

Materials

For teacher:

- *Shapes, Shapes, Shapes*
by Tana Hoban

For each student:

- 3 rectangles
- 3 squares
- 3 triangles
- 3 circles
- 3 hexagons
- alphabet paper
- math journals
- construction shapes for "Who Say's I'm Square?"

For each team:

- pattern blocks
- mirra or mirrors

Additional Resources

The Silly Story of Goldie Locks and the Three Squares by Grace Maccarone

Let's Fly A Kite by Stuart J. Murphy

Three Pigs, One Wolf, and Seven Magic Shapes by Grace Maccarone

Grandfather Tang's Story by Ann Tompert

Navigation through Geometry in Grades 3-5 by Katherine Gavin, Louise P. Belkin, Ann Marie Spinelli, and July St. Maire

Background for Teachers

Definitions

square: A polygon that has four equal sides and four right angles.

rectangle: A polygon that has four sides and four right angles.

triangle: A polygon that has 3 sides.

polygon: A closed plane figure made by line segments.

rhombus: A parallelogram with all four sides equal in length.

trapezoid: A quadrilateral with one pair of parallel sides and one pair of sides that are not parallel.

quadrilateral: A polygon that has 4 sides.

hexagon: A polygon that has 6 sides.

octagon: A polygon that has eight sides.

sides: A line segment forming part of a plane figure.

corner: An intersection of two sides.

face: A plane figure that serves as one side of a solid figure.

symmetry: A line that divides a figure into two congruent halves that are mirror images of each other.

angles: Two rays with a common endpoint.

right: A triangle that measures exactly 90° .

obtuse: An angle with a measure of greater than 90° and less than 180° .

acute: An angle with a measure less than 90° .

mirra or mirrors: A semi transparent plastic device that allows students to draw reflected images to examine symmetry.

Intended Learning Outcomes

1. Demonstrate a positive learning attitude towards mathematics.
2. Become mathematical problem solvers.
3. Reason mathematically.

Instructional Procedures

Invitation To Learn

Students explore pattern blocks noticing their similarities and differences, then share with other team members.

Instructional Procedures

Brainstorm with students to see what prior knowledge they have on identifying a polygon.

Use an overhead to show illustrations of polygons and nonpolygons.

Read *Shapes, Shapes, Shapes* by Tana Hoban while pointing out the many, varied shapes in the first few pictures. Have students help identify shapes in following pages.

Explain all the pattern blocks that they explored are polygons.

Ask students to name other possible polygon shapes as you draw them on the overhead.

Ask students to copy the definitions of corners and sides in their journals.

Have students draw 3 polygons in their journals and identify their corners and sides.

Choose a few students to draw one of the polygons on the board to further show their understanding.

Using construction pieces, students can make a geo shape man ("Who Says I'm Square?").

Part 2: Who Says I'm Square?

Following the instructions on the skill sheet, students will create a geo shape person with movable body parts.

Part 3: The House That Jack Built

Retell the story from *The House that Jack Built*.

While telling the story, model making the characters in the story by using overhead tangram shapes.

Have the students follow your example making the characters by using their own tangram pieces.

Part 4: Equal is Equal

Define symmetry as students write the definition in their journals. Demonstrate by folding a large paper circle showing the lines of symmetry.

Demonstrate 1 line of symmetry using a large paper square and instruct students to explore other lines of symmetry using paper squares.

Provide students with triangles and rectangles to explore possible lines of symmetry.

After a discussion, students should draw lines of symmetry on paper triangles, circles, squares, and rectangles.

Introduce a mirra and demonstrate its use for symmetry.

Have students glue a square, rectangle, circle, and triangle in their journal showing lines of symmetry.

Demonstrate what a mirror is and how to use it for symmetry using pattern blocks.

Activity 5: Are You A-Cute Angle?

Demonstrate acute, obtuse, and right angles for the class by using your arms.

Refer to the idea that the acute angle is smaller and is therefore "cute."

Play "Simon Says" with students, showing the three angles as they are called.

Have students draw and write definitions of each angle in their journals.

Curriculum Integration

Math/Science--How many lines of symmetry does the moon have when it is full?

Extensions

Possible Extensions/Adaptations/Integration

Reading:

Cubes for literature, each face representing characters, plot, problem, solutions, beginning, middle, end, vocabulary words, etc. that relate to a story.

Art: William Harnet's painting of "My Gems" pointing out geometric shapes.

Art: Make an art project with a symmetry design using complementary colors.

Art: Have students make a still life drawing using the geometric shapes.

Art: Have students transfer their learning outcomes by making an art project using symmetry.

Homework & Family Connections

Students take home a circle, triangle, square, and rectangle and teach their family the lines of symmetry.

Students use their arms to teach their family acute, obtuse, and right angles. Students play "Simon Says" with their family.

Assessment Plan

Provide a copy of an alphabet for students. Check students understanding of symmetry as they draw the lines of symmetry on the letters of the alphabet.

Show an overhead of angles and instruct students to write down 1 to 10 on their paper and identify the different angles in writing.

Have students identify the corners and sides of various shapes.

Authors

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