MAGNA-TILES® LESSON PLAN #3:
Learning 3D Shapes with Magna-Qubix™

Common Core Objectives: Analyze and compare two- and three-dimensional shapes in different sizes and orientations, using informal language to describe similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). K.G.B.4

Understand the relationship between numbers and quantities, connect counting to cardinality. K.CC.B.4

Objectives:

Students will:

- Name the following three-dimensional shapes: cube, square pyramid, and rectangular prism.
- Count and say the number of sides and vertices each shape has.
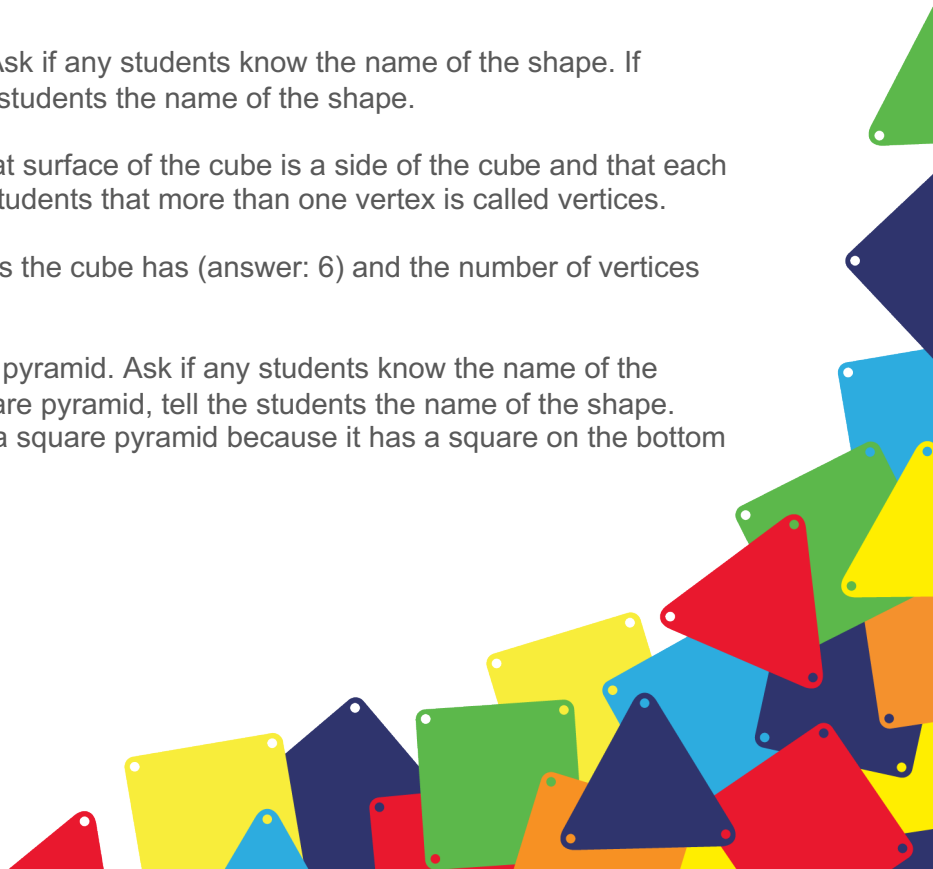
Materials:

- 1 set of Magna-Qubix™

Directions:

#1. Hold up the Magna-Qubix™ cube. Ask if any students know the name of the shape. If nobody knows that it is a cube, tell the students the name of the shape.

#2. Explain to the students that each flat surface of the cube is a side of the cube and that each corner is a vertex. Also explain to the students that more than one vertex is called vertices.

#3. Together, count the number of sides the cube has (answer: 6) and the number of vertices (answer: 8).

#4. Hold up the Magna-Qubix™ square pyramid. Ask if any students know the name of the shape. If nobody knows that it is a square pyramid, tell the students the name of the shape. Explain to the students that it is called a square pyramid because it has a square on the bottom of it which is called the base.

#5. Together, count the number of sides the square pyramid has (answer: 5) and the number of vertices (answer: 5).

#6. Hold up the Magna-Qubix™ rectangular prism. Ask if any students know the name of the shape. If nobody knows that it is a rectangular prism, tell the students the name of the shape. Explain to the students that it is called a rectangular prism because it has rectangles that make up the sides.

#7. Together, count the number of sides the rectangular prism has (answer: 6) and the number of vertices (answer: 8).

(Note: If you have enough Magna-Qubix™, you can have small groups of students count the number of sides and vertices and then one person from each small group can give the answer.)

Extension:

Allow small groups of students to explore the Magna-Qubix™. Ask them questions about how the shapes are the same and how they are different.

Example Questions:

- What shapes are the sides of the cube? (answer: squares) Is there another shape that has a side that is a square? (answer: square pyramid and rectangular prism)
- What shapes are the sides of the square pyramid? (answer: a square and triangles) Is there another shape that has a side that is a square or a triangle? (answer: cube and rectangular prism have sides that are square)
- What shapes are the sides of the rectangular prism? (answer: rectangles and squares) Is there another shape that has a side that is a square or a rectangle? (answer: cube and square prism have sides that are square)

Assessment:

- One-on-one, hold up a shape and have a student tell you the name of a shape.
- For a group assessment, hold up a shape and have the students write how many sides and how many vertices the shape has.