Unit 9:
Blocks and Boxes: 3-D Geometry

About This Unit

This geometry unit focuses on three-dimensional shapes (3-D) and the relationships between shapes. Students observe, describe, compare, classify, represent, and compose and decompose 3-D shapes. Students learn to use geometric language to describe and identify important features of familiar 3-D shapes. As they analyze these attributes, they use knowledge of 2-D shapes to determine geometric relationships to 3-D shapes. This helps students develop reasoning and learn to justify their thinking.

Working with Three-Dimensional Shapes

First grade students will use many informal ways of naming and describing 3-D shapes. They may call a sphere a 'ball' or a cube a 'block.' Your child's teacher will use the correct names for these shapes, but it is not mandatory for students to use this vocabulary. What is most important is that they are able to describe and compare these shapes using vocabulary to describe the defining attributes such as faces (flat sides), edges, and vertices (corners).

Geoblocks

Throughout the unit students interact with Geoblocks, which are wooden 3-D blocks in various shapes and sizes.

Vocabulary Expectations

Below are the shapes/terms students are expected to become familiar with and need to be able to identify in the real world.

Cone
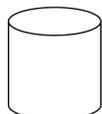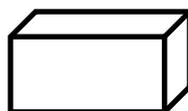
Cylinder   **Rectangular Prism**   **Sphere**   **Cube**
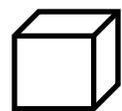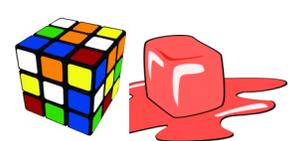
Relating 3-D and 2-D Shapes

Students use knowledge of defining attributes to match the Geoblocks to their footprints, or 2-D outlines. Students use prior knowledge about 2-D shapes to identify the shape of the faces of various 3-D shapes.
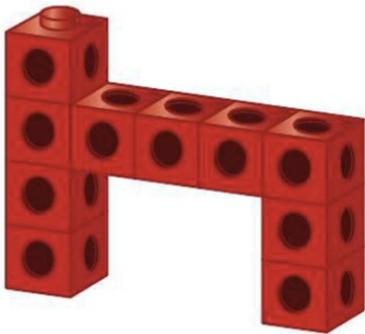
An example of a
Cube Thing

Students also re-create *Cube Things* using connecting cubes, an activity that encourages the use of visual, perceptual, and tactile problem-solving skills. Students focus on the attributes of each Cube Thing in order to copy the shape.

Drawing & Composing 3-D Shapes

Students are challenged with drawing 3-D shapes. Although this activity can be difficult for many students, the goal is to apply knowledge of defining attributes with enjoyment, perseverance, and flexibility. They learn the difference between 2-D and 3-D pictures, experiment with their own drawings, and discuss the strategies they discovered.
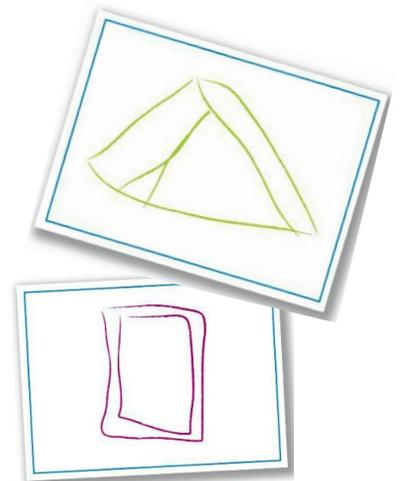
They also look at how 3-D shapes are composed (put together) to make buildings. The importance of this activity focuses on careful observation and description rather than drawing skill. Through experimentation, collaboration, and discussion, students will be exposed to various techniques with effort and flexibility being encouraged.
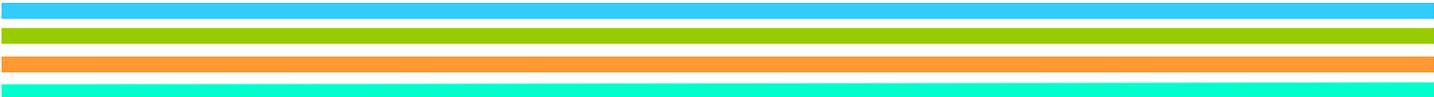
Helping Your Child at Home

- Go on a shape hunt and search for real-word objects shaped like the common 3-D shapes (cube, cone, cylinder, rectangular prism, and sphere).

- Identify the 3-D shapes used to create local buildings.

- Create, describe, and/or draw structures with blocks, Legos, Lincoln Logs, Tinker Toys, Minecraft, Play-Doh, etc.

Visit These Websites for Interactive Math Activities

- Shapes Splat (http://www.sheppardsoftware.com/mathgames/earlymath/shapes_shoot.htm)
Students click to splat the specified shape.

- Magical Shape Hunt (http://pbskids.org/peg/games/magical-shape-hunt)
Students catch gems in various 3-D shapes.

- 2-D and 3-D Matching (http://more2.starfall.com/m/math/geometry-content/play.htm?f&d=demo&n=enviro-shapes&y=1)
Match 2-D and 3-D shapes to real-world objects.

- Starrmatica 3-D Shapes (http://www.starrmatica.com/standalone/starrMatica3DEarthExploration.swf)
Students find specified 3-D shapes within an amusement park scene.

- 3-D Shape Riddles (http://www.turtlediary.com/kindergarten-games/math-games/3d-shape-riddle.html)
Students read riddles and choose the correct 3-D shape being described.