I.D.E.A. KIT

2-D & 3-D Shapes

What You Need

3-D solid templates
Tape
Scissors
Markers, crayons, or colored pencils (optional)

What You Do

1. Download and print the 3-D shape templates.
2. Cut out the template on the solid lines. These templates are examples of geometry nets, or flattened 3-D solids. Have your child identify the 2-D shapes that comprises each geometry net.
3. (Optional) Color the geometry nets.
4. Fold and crease on the dotted lines.
5. Bring the outside edges together to form the 3-D shape.
6. Tape the tabs to the underside of each face (side of a 3-D shape).

Questions to ask

- *What 2-D shapes make up the faces of your 3-D solid?*
- *How many faces/edges/vertices does your 3-D solid have?*
- *What real world objects have the same shape as your 3-D solid?*

What's The Math?

Two-dimensional (2-D) shapes are flat shapes that have two dimensions—length and height. You can measure the area of a shape to figure out how much space it takes up. This is really useful information if you are going to do something like get new carpet or paint a wall. Three-dimensional (3-D) solids add a third dimension, depth or width, to length and height. 3-D solids have faces that are made up of 2-D shapes. For example, a cube is created with six square faces, while a pyramid might have a square base and four triangular faces. The places where two of the faces connect to create a line is called an edge. The corner where three or more faces connect is called a vertex (plural: vertices). You can measure 3-D shapes in two ways—surface area and volume. The surface area is calculated by finding the area of all the faces and adding them together. This is useful for activities such as wrapping gifts. Volume is calculated by multiplying the length, height, and depth of the solid, which will tell you how much space it can hold. This is useful information when trying to pack everything you need for a vacation into a suitcase!

Try This

Use vocabulary: Use related science and math words such as geometry, geometry nets, area, surface area, volume, vertex/vertices, faces, edges, two-dimensional, and three-dimensional. as you talk and play together.

Extend the Activity:

1. The templates provided have only one net on them, however many 3-D solids can be created out of multiple nets. Challenge your child to figure out all of the nets that a cube could have. (Hint: There are 11 possibilities!)
2. Go on a shape hunt! Find as many 2-D shapes and 3-D solids as you can in your house or neighborhood.

Keep In Mind

Children are natural scientists; let them lead the way in their experimentation!

Additional Resources

The Greedy Triangle by Marilyn Burns
http://studyjams.scholastic.com/studyjams/jams/math/geometry/edges-faces-vertices.htm

imagination STATION
pure science. pure fun.