

## ATTRIBUTES OF 3-D SHAPES

Students use Geoblocks to explore the attributes of solid figures. They sort the blocks into like groups and describe them according to numbers and shapes of faces. Although sorting blocks may at first seem easy, the activity is quite challenging using these materials. Have students sketch and label different views of each figure & add the sketches to the bulletin board display.

### **Introducing the Problem**

There are many different types of Geoblocks in our classroom set. We are going to try to count, identify, and name all the types.

### **Exploring with Geoblocks**

1. Have students work together to sort the blocks they have in their set. They should put each type in a separate group so that only blocks that are exactly alike are together.
2. No group of students will have all the Geoblock types in their set.
3. Tell students they should be able to describe each block in their set to the rest of the class in a way that other groups with the same block will recognize it.
4. You may want to review the terms *faces*, *edges*, and *sides*. Compare *faces* in three-dimensional figures to *sides* in two-dimensional figures.

### **Recording the Connection**

1. Have students fill out a recording sheet for each different Geoblock in their set.
2. They should indicate the numbers and shapes of faces and any other clues they think will help classmates guess their blocks. They may decide to take measurements, but let them figure out for themselves. Don't insist on it.

[Source: Connections - Linking Manipulatives to Mathematics-Grade 7, p. 64-67, p.86, Creative Publications]

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# Reporting and Displaying

Use the Baggie Board technique (see page 3) to display students' work. Have someone volunteer to describe a block without showing it. When the description has been completed, ask if anyone thinks he or she has a block like the one being described.

When you have all agreed on the block, put it in a baggie with its description enclosed. Pin it up.

Continue in this manner until you have identified all the blocks in the set and have completed your baggie board. Then distribute a copy of the Geoblocks Classification Chart (page A.80) to each group. Use it as a guide for organizing the blocks and for checking to see that all the blocks have been found. Name and label the blocks using the letter names on the chart. This will be helpful in later work with the blocks.



## Solutions and Suggestions

# Solutions and Suggestions

There are 25 different kinds of Geoblocks. Each type can be describes by numbers and shapes of faces, by letter name, and by measurements.

[Source: Connections: Grade 7, ©1991 Creative Publications]

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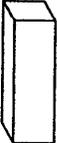
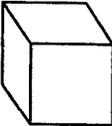
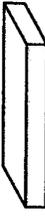
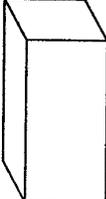
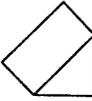
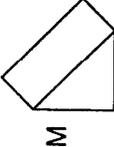
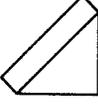
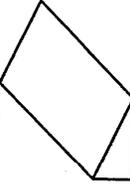
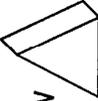
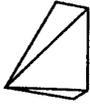
# Sorting It All Out

<p>_____ faces</p> <p>_____ faces</p> <p>_____ faces</p> <p>_____ faces</p> <p>Other clues -</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____ faces</p> <p>_____ faces</p> <p>_____ faces</p> <p>_____ faces</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>_____ faces</p> <p>_____ faces</p> <p>Other clues -</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____ faces</p> <p>_____ faces</p> <p>_____ faces</p> <p>_____ faces</p> <p>Other clues -</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

[Source: Connections: Grade 7, ©1991 Creative Publications]

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# Geoblocks Chart Classification

<p>128 Cubes</p> <p>A </p> <p>1 cm x 1 cm x 1 cm</p> <p>4 Rectangular Prisms</p> <p>F </p> <p>2 cm x 6 cm x 2 cm</p>	<p>32 Cubes</p> <p>B </p> <p>2 cm x 2 cm x 2 cm</p> <p>4 Rectangular Prisms</p> <p>G </p> <p>2 cm x 8 cm x 2 cm</p>	<p>12 Cubes</p> <p>C </p> <p>3 cm x 3 cm x 3 cm</p> <p>12 Rectangular Prisms</p> <p>H </p> <p>2 cm x 4 cm x 4 cm</p>	<p>8 Cubes</p> <p>D </p> <p>4 cm x 4 cm x 4 cm</p> <p>8 Rectangular Prisms</p> <p>I </p> <p>1 cm x 8 cm x 4 cm</p>	<p>8 Rectangular Prisms</p> <p>E </p> <p>2 cm x 4 cm x 2 cm</p>
<p>2 Rectangular Prisms</p> <p>K </p> <p>4 cm x 8 cm x 4 cm</p> <p>2 Triangular Prisms</p> <p>P </p> <p>3 cm x 3 cm x 4 cm</p>	<p>32 Triangular Prisms</p> <p>L </p> <p>2 cm x 2 cm x 2 cm</p> <p>8 Triangular Prisms</p> <p>Q </p> <p>2 cm x 4 cm x 4 cm</p>	<p>6 Triangular Prisms</p> <p>M </p> <p>4 cm x 4 cm x 4 cm</p> <p>6 Triangular Prisms</p> <p>R </p> <p>4 cm x 8 cm x 2 cm</p>	<p>2 Triangular Prisms</p> <p>N </p> <p>4 cm x 8 cm x 4 cm</p> <p>6 Triangular Prisms</p> <p>S </p> <p>2 cm x 8 cm x 4 cm</p>	<p>12 Triangular Prisms</p> <p>O </p> <p>4 cm x 4 cm x 2 cm</p> <p>6 Triangular Prisms</p> <p>T </p> <p>2 cm x 4 cm x 8 cm</p>
<p>6 Triangular Prisms</p> <p>U </p> <p>4 cm x 8 cm x 1 cm</p>	<p>4 Triangular Prisms</p> <p>V </p> <p>2 cm x 4 cm x 2 cm</p>	<p>6 Triangular Prisms</p> <p>W </p> <p>4 cm x 4 cm x 2 cm</p>	<p>6 Triangular Prisms</p> <p>X </p> <p>2 cm x 8 cm x 2 cm</p>	<p>6 Pyramids</p> <p>Y </p> <p>4 cm x 4 cm x 4 cm</p>

[Source: [Connections: Grade 7](#), ©1991 Creative Publications]