GEOMETRIC SOLIDS

This set contains twelve wooden *Geometric Solids* (LER 0120). These solids represent common three-dimensional shapes frequently seen by students and discussed in the mathematics curriculum in textbooks.

Geometric Solids are thought of as "junior high" or "high school" materials. While the formulas for various solids are usually taught in these grades, the solids themselves should be used by students of all ages to develop various geometric concepts and relationships.

Matching

Early experiences should include distributing the solids to the students and having them name or list objects in the room that are similar to the solids.

Characteristics

Students should separate the solids by various characteristics:

- Those with only flat surfaces.
- Those with only curved surfaces.
- Those with a specific number of "corners."
- Those that roll.
- Those that have the same shape on the bottom and the top, etc.

Vocabulary

As students progress they should develop appropriate vocabularies and separate the solids using these terms:

- Number or type of faces
- Number of vertices
- Number of edges
- Prisms
- Pyramids
- Type of base

As students gain experiences with this set, relationships of various solids should be explored. Students can be given two solids to compare and be asked to write down the similarities and differences.

Measuring

When students are able to identify faces, edges, and vertices, they can begin measuring various dimensions of the solids. Use of the solids will help reinforce the concept of height (altitude) by providing a physical model showing that height is not always one of the edges. It must be measured perpendicular to the base of the solids.

After these measurements have been completed, students should be encouraged to use appropriate symbolic representation for each dimension in the preparation for formula work.

l	stands for length	Prism	V = B h
h	stands for height	Pyramid	V = (B h)/3
c	stands for circumference	Sphere	V = 4/3 π r³
B	stands for base area	Hemisphere	V = 2/3 π r³
w	stands for width	Cylinder	V = π r² h
r	stands for radius	Cone	V = (π r h)/3
d	stands for diameter		
v	stands for volume		

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Formulas

Formula work should begin after students have completed activities like those described above.

Cube formula $V = l^3$

Box formula $V = l\ w\ h$

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LER 0120

BASIC

Geometric Solids

Set of 12 Wooden Solids

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