

Zome System

Builds Genius!

Resources and Recommended Readings

This section lists various materials that can be used to support Zome System explorations. They are organized in the following order:

- Books Required to Teach Specific Plans
- Suggested Extension Resources
- Blueprint, or Photosensitive, Paper: How to Use With Zome System
- Polygon Shapes for Paper Models

Books Recommended for Specific Lesson Plans

Rogers, Paul, The Shapes Game. Henry Holt and Company, Inc., 1989. Suggested for the plan “Geometry Is All Around Us”.

Shapes, Ishtar Schwager Publications. Suggested for the plan “Geometric Shapes”.

Venezia, Mike, Getting to Know the World’s Greatest Artists: Picasso, Children’s Press, Chicago 1988. Suggested for the plan “Picasso and Math”.

Whitford Paul, Ann, Eight Hands Round, Harper Collins Publishers, 1991. Suggested for the plan “Trying Tessellation”.

Suggested Extension Resource

Zome System Specific:

Manual 2.0. Full-color brochure, included with all Zome System kits, that describes Zome System, including how it relates to numbers and symmetries in space, as well as building instructions for models.

Baer, Steve, Zome Primer, Zomeworks Corporation, Albuquerque, NM, 1970. Comprehensive exploration of the 31-zone structural system that forms the basis for Zome System. Included in the *Zome System Creator Kit*.

Booth, David. Zome System Manual, Parker Courtney Press, Chestnut Ridge, NY, 1996. Mathematics manual included in the *Zome System Explorer Kit* and *Zome System Creator Kit*.

Geometry and Symmetry:

Hargittai, István & Magdolna, Symmetry, Shelter Publications, 1994.

Beard, Col. R.S., Patterns in Space, Creative Publications.

Bentley, W.A. & W.J. Humphrey, Snow Crystals, Dover Publications, 1962.

Fibonacci Numbers and Numbers in Nature:

Hammel Garland, Trudi, Fascinating Fibonacci: Mystery and Magic in Numbers, Dale Seymour Publications, 1987.

Excellent posters illustrating Fibonacci patterns in nature, art and the built environment are available from Dale Seymour Publications, Delta Education, and several other educational publishers.

Golden Section:

Runion, Garth E. The Golden Section, Dale Seymour Publications, 1990

Posters illustrating the Golden Section and its mathematical and cultural relevance are available from Dale Seymour Publications, Delta Education, and other educational publishers.

Donald in Mathemagic Land, Walt Disney Productions, 1959. This easy-to-understand color film is available from many video outlets and libraries.

Blueprint or Photosensitive Paper: How to Use With Zome System

Blueprint, or photosensitive paper is fascinating to use to create permanent images of shadows cast by Zome System structures. This type of paper frequently comes in 24"x36" sheets or rolls. It can be obtained at hobby shops, book stores specializing in educational materials, and in some camera stores.

The paper should be stored in a light-safe container such as a thick black plastic bag. As the paper is "exposed" by sunlight, preparation work should take place in a work area with covered windows. Blueprint paper will be exposed by fluorescent light in less than an hour, incandescent light will take several hours. Return any paper that is not being used to the light-safe container.

The supplier of the "blueprint" paper will have specific instructions on how to manipulate and "develop" the various brands of paper. The general procedure is as follows: Fix the paper to a hard backing such as a piece of cardboard with the light-sensitive yellow side of the paper facing up. The white side is not light-sensitive and will not yield any images. When the paper is exposed to sunlight for a 3-5 seconds, uncovered areas of the paper will rapidly fade from yellow into white. Pour approximately a cup of household ammonia solution in a non-aluminum cake pan or plastic tub. "Develop" the images by placing the mounted blueprint paper face down over the pan or tub for about 3 minutes. Areas of the paper that were not exposed to light will be colored a deep purple, exposed areas will give a white or light blue background.

***CAUTION!!** ammonia solution is harmful if swallowed, irritating to the skin and the vapors are annoying. **FIRST AID:** Eyes; flush 10-15 minutes with water. Call a physician. Skin; flush thoroughly with water. Internal; immediately give large amounts of water or milk. Do not induce vomiting. Call a physician.*

Polygon Shapes for Paper Models

The following pages provides a variety of polygon shapes, most of which are equilateral. The shapes can be enlarged as appropriate using a photocopier. Transfer the polygon onto heavier paper and cut out. Plans that require these paper polygons include "Plato's Solids - I," "Plato's Solids - II," "Archimedes' Solids," and "Beehive City".













