

POLYHEDRAL PUZZLE PLAZA

Basic Description:

There are three different three-dimensional puzzles found here: a tetraxis, the soma cube and the burr puzzle. Children work on the mathematical monkey mat to assemble the puzzles.

Objectives:

Opportunities to investigate three-dimensional geometry abound at this exhibit. Students can solve large geometrical puzzles, build different solids, explore geometrical properties, and relate surface area with volume.

Links to Websites:

<http://mathmidway.org/Training/polyhedral.php>

<http://www.geom.uiuc.edu/docs/forum/ElPuz/>

<http://www.fam-bundgaard.dk/SOMA/FIGURES/FIGURES.HTM>

Vocabulary:

Cube	Polyhedron
Soma cube	Surface area
Tetraxis	Volume

Before:

(All of the following activities can be accommodated for all levels.)

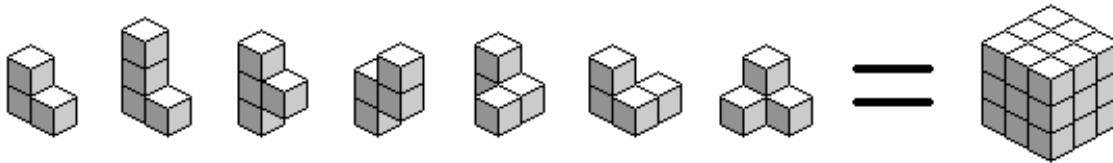
- ⊙ Familiarize the class with geometric puzzles such as Soma cubes and tetraxis.
- ⊙ Play Pentaminoes or Tetris on Smartboard. Search for web or physical versions of them. (Nearly every video game console contains a version of Tetris.)
- ⊙ Explore The Elephant Tetrahedron Puzzle at:
<http://www.geom.uiuc.edu/docs/forum/ElPuz/>)

During:

- ⊙ Play the Soma cube race:
Assign two groups to the soma cube. One group will attempt to put the soma cube together as the other group waits.
Record the times.
See if they can beat their times or build other shapes.
- ⊙ Play the Tetraxis race:
Two groups will study a tetraxis.
The groups will take them apart and attempt to put the tetraxis pieces back together.
Record times.
See if they can beat their times.

After:

- ⊙ You can purchase small soma puzzle sets from <http://thinkfun.com/> called “Block by Block.” You can also make them in the classroom by gluing together small cubes. You can use sugar cubes from the grocery store or wooden/foam cubes available from <http://www.enasco.com/>. 27 cubes will make up the 7 pieces shown below. Be careful to build each piece to match the picture, especially the two twisted ones that have different “handedness.”



- ⊙ Find puzzles to solve here: <http://www.fam-bundgaard.dk/SOMA/FIGURES/FIGURES.HTM>