

**Project 4.1 Puzzle Design Challenge**

**Procedure**

1. Study the Puzzle Cube Design Brief located below.
2. Brainstorm and sketch on isometric grid paper possible puzzle part cube combinations for your cube. Include as many ideas as you can come up with for combinations of four, five, and six cubes.
3. Create two different Puzzle Cube designs from your possible parts. Note that the design brief that follows requires that each puzzle part contain at least four and no more than six hardwood cubes.
4. Choose your best option from the two solutions.
5. For your best design, neatly sketch and color code an isometric view of each of the five component parts and show how they fit together in the isometric view of the cube on isometric grid paper. See your Miss Stein for an example.
6. Create the five parts to your cube using 3-D modeling software. Color the parts within the CAD environment using the same color combination used in the sketching phase of your project.
7. Assemble your cube using 3-D modeling software.
8. Create a presentation file (exploded view) of your cube using 3-D modeling software.



**Puzzle Design Challenge Brief**

Client Fine Office Furniture, Inc.

Target Consumer Ages: High school aged

Designer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Problem Statement

A local office furniture manufacturing company throws away tens of thousands of scrap ¾” hardwood cubes that result from its furniture construction processes. The material is expensive, and the scrap represents a sizeable loss of profit.

Design Statement

Fine Office Furniture, Inc. would like to return value to its waste product by using it as the raw material for desktop novelty items that will be sold on the showroom floor. Design, build, test, document, and present a three-dimensional puzzle system that is made from the scrap hardwood cubes. The puzzle system must provide an appropriate degree of challenge to high school students.

Criteria

1. The puzzle must be fabricated from 27 – ¾″ hardwood cubes.
2. The puzzle system must contain exactly five puzzle parts.
3. Each individual puzzle part must consist of at least four, but no more than six hardwood cubes that are permanently attached to each other.
4. No two puzzle parts can be the same.
5. The five puzzle parts must assemble to form a 2 ¼″ cube.
6. Some puzzle parts should interlock.