Block Puzzle (art + math)
Create a changeable block puzzle based upon a vintage game. This is an opportunity to work in pairs or individually. The result is fun and function, a brain teaser. A variation listed at the end of the lesson plan is a fast and simple version. Critical thinking and math skills must be applied.

Grade Levels 5-8
Note: instructions and materials based on a class of 25 students. Adjust as needed.

Process
1. Cut the carving block into nine 2” cubes. Cut the 6” x 8” block to 6” x 6”. Cut the strips into 6-1/2” long pieces. Sand any rough edges.
2. Glue the strips of wood to the outside edge of the 6” x 6” wood piece keeping the 6” x 6” area open for the nine blocks. Make certain the strip is glued to the left corner evenly with 1/2” extending past the next corner. Continue gluing the balance of the strips butted up to the one before. Use a large rubber band to hold the sides until the glue is set.
3. Cut six pieces of paper to 6” x 6”. Use this paper to draw six designs (one for each side of the puzzle cubes). Number lightly 1,2,3,4,5,6 (see turning the blocks in step 4). The designs must span all nine blocks.
4. Lay out blocks in frame and begin to draw and paint designs.
   Side 1 – Draw design onto the three rows of three blocks. Paint with acrylic.
   Side 2 – Turn all blocks one turn to the right. Draw design and paint side two.
   Side 3 – Turn all blocks back to side one. Turn all blocks one turn to the top. Draw and paint side three.
   Side 4 – Turn all back to side one. Turn all one turn to the left. Draw and paint.
   Side 5 – Turn all back to side one. Turn all two times to the bottom. Draw and paint.
   Side 6 – Turn all one time to the top. Draw and paint.
   Turn blocks one more time to the top. Puzzle is now on side one and is complete.
5. Paint puzzle base.

Materials
- **Walnut Hollow® Basswood Carving Block** (33302-8502) 2” x 2” x 12”, need one block per student
- **Wood Blocks** (42902-1001) 6” x 8”, package of 12, need one block per student
- **Genuine Balsa Wood Strips** (33301-8391) 1/2” x 1/2” x 36”, 9-piece package, need one strip per student
- **3M® Production Sandpaper** (34916-1303), fine grit, 9” x 11”, 10-sheet package, share one package across classroom
- **Elmer’s® Carpenters’ Wood Glue** quart (23814-1007), share one across classroom
- **Large Rubber Bands**
- **Blick Matte Acrylic Paint** (00727-), assorted colors, share ten 2-oz bottles across classroom
- **Blick Scholastic Golden Taklon Round**, size 2/0 (05858-7020), size 1 (05858-1001), size 2 (05858-1002), share six of each size across classroom
Hints

• This project works best when regular class time is available.
• Paint directly on the wood. Blick Craft Paint dries quickly to a durable matte finish.

Options

• Find six magazine pages or photos and cut into a 6" x 6" piece. Cut into 2” squares and glue to blocks.
• Change degree of difficulty, repeat designs or color combinations.
• The purpose of this puzzle is to keep the blocks in the wood tray and turn the blocks to expose the six designs and return to the first design. Keeping time can add a competitive slant. Or, try dumping all the blocks out and then put back together. Depending on the complexity or similarity of the designs, this can be a real challenge.

National standards:

Content Standard #1 — Understanding and applying media, techniques and processes
• 5-8 Students intentionally take advantage of the qualities and characteristics of art media, techniques and processes to enhance communication of their experience and ideas.

Content Standard #2 — Using knowledge of structures and functions
• 5-8 Students employ organizational structures and analyze what makes them effective or not effective in the communication of ideas.

Content Standard #6 — Making connections between visual arts and other disciplines
• 5-8 Students compare the characteristics of works in two or more art forms that share similar subject matter, historical periods or cultural context.