

01

16-Axis Knockout Sticks

- Puzzle Goal:**
1. Use the 30 smaller multi-colored sticks to surround the metal star in a rhombic triacontahedron space.
 2. Use the 30 longer sticks to build a dodecahedral frame.
 3. Use 90 smaller sticks to build a shell around the shown figure.

Materials: Silicon bronze, wood, magnets

Classification: Put-together



02

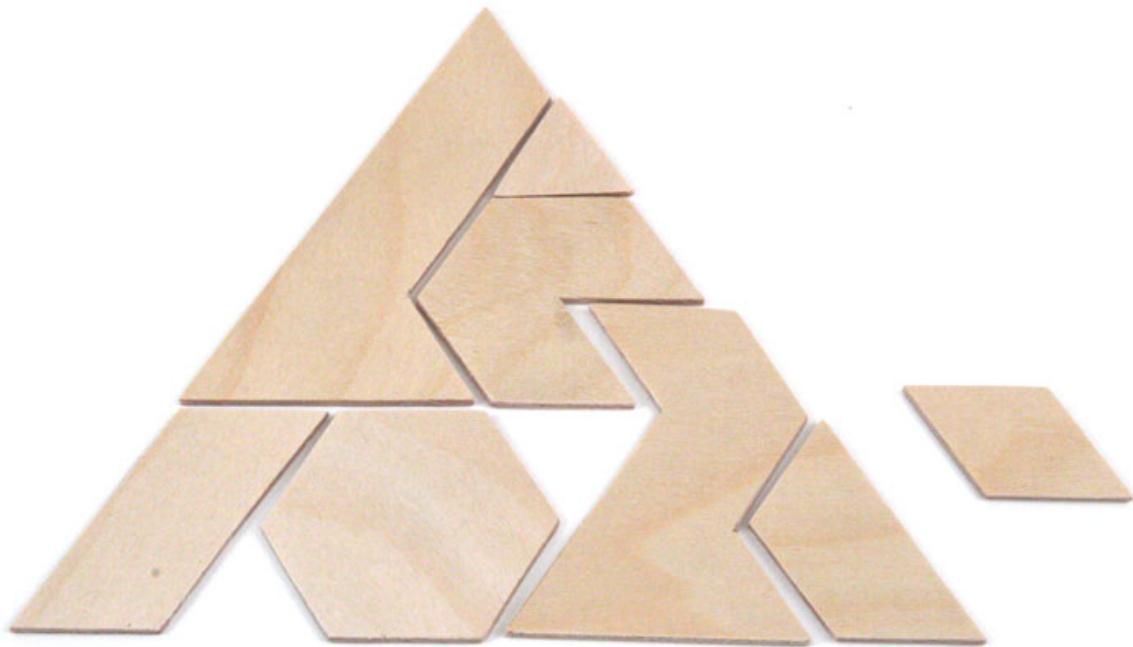
1more Puzzle - Triangle

Puzzle Goal: Make a large triangle and other figures with the eight pieces.

Materials: Wood

Classification: Put-together

Notes: Pieces sizes are sequential, from 1 to 8 units.



03

4 Piece Burr Cube

Puzzle Goal: Assemble the four identical pieces into the frame so that none of them sticks out.

Materials: Wood

Classification: Interlocking



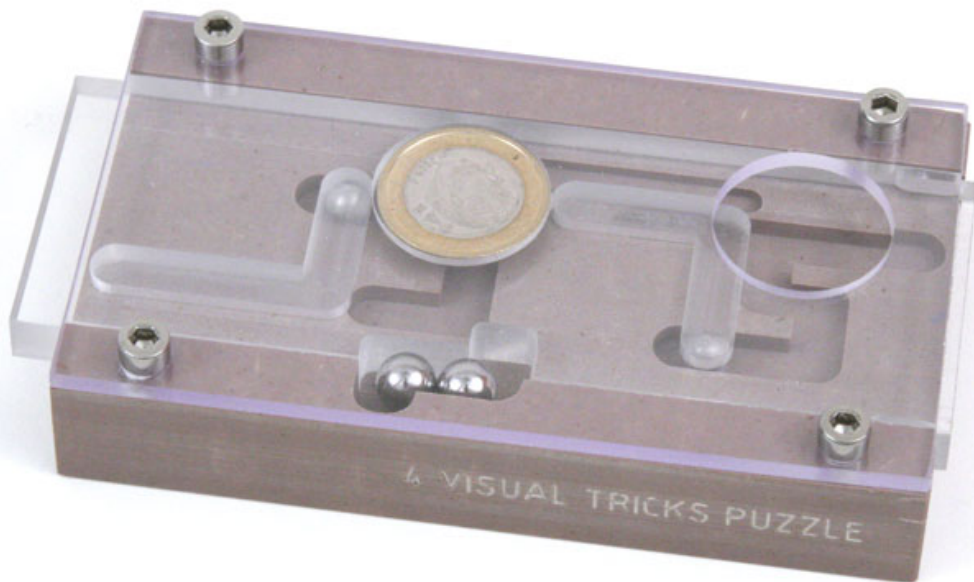
04

4 Steps Visible Lock

Puzzle Goal: Remove the coin.

Materials: Trespa, Acrylic, steel balls

Classification: Secret opening box



05

7 Pieces, 4 Squares

Puzzle Goal:

There are four goals:

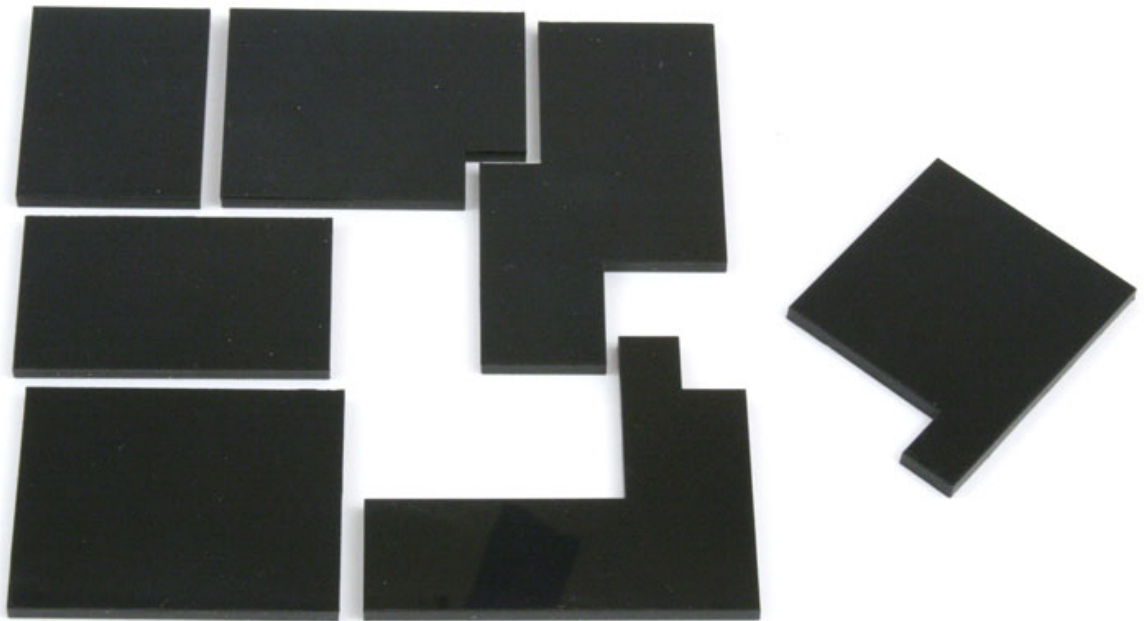
- 1. Use four pieces to make a square**
- 2. Use five pieces to make a square**
- 3. Use six pieces to make a square**
- 4. Use all of the pieces to make a square.**

Materials:

Plastics

Classification:

Put together



06

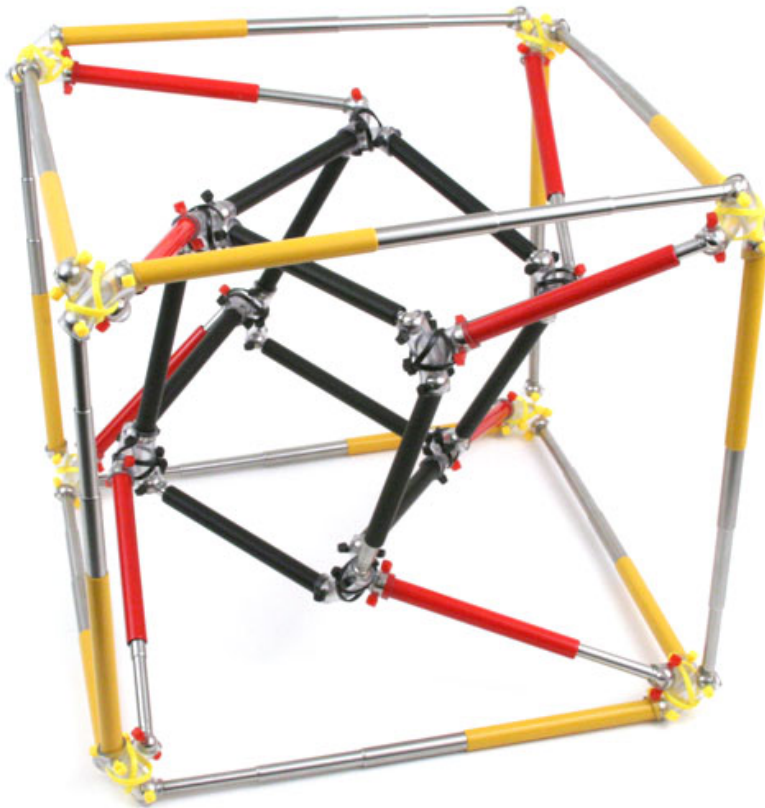
Abyss

Puzzle Goal: There are two solved configurations, (1) the external cube is black, and the internal cube is yellow, and (2) the external cube is yellow and the internal is black. The goal of the puzzle is to go from one solved configuration to the other.

Materials: Steel telescopic rods, plastic tubes, plastic colored connectors

Classification: Sequential movement

Notes: This puzzle is based on the well known 4D structure hypercube, and moves between the 3D projections of the hypercube.



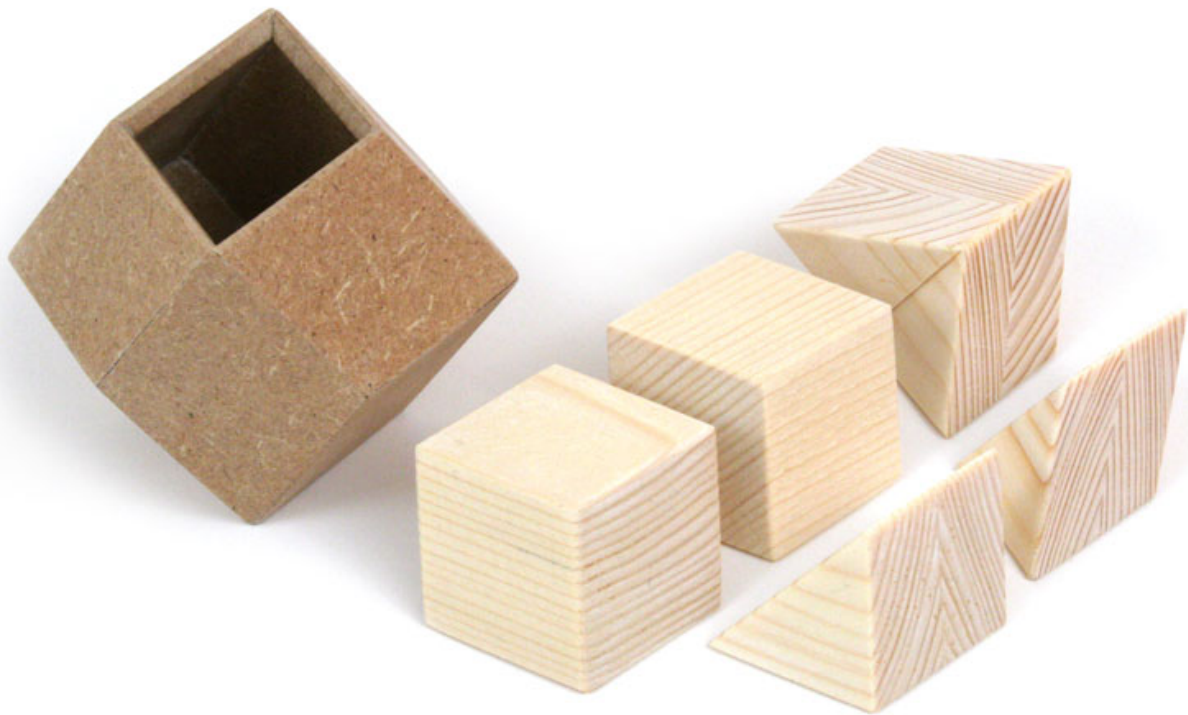
07

Albis Box

Puzzle Goal: Put the 5 pieces into the box.

Materials: Wood

Classification: ASS-POLY



08

Ambigram Burr

Puzzle Goal: Disassemble and reassemble.

Materials: Wood: wenge, padauk, robinia

Classification: INT



09

Ampelmann

Puzzle Goal:

Place the six Ampelmen in the upper part of the traffic light so you can see a red figure (red light).

Place the six Ampelmen in the lower part of the traffic light so you can see a green figure (green light).

Materials:

Acrylic

Classification:

2D put-together



10

Berlin Wall

Puzzle Goal: Assemble the 24 blocks to form a wall, 4 bricks high and 21 bricks long.

Materials: Lasercut maple blocks, solid hardwood

Classification: Put-together

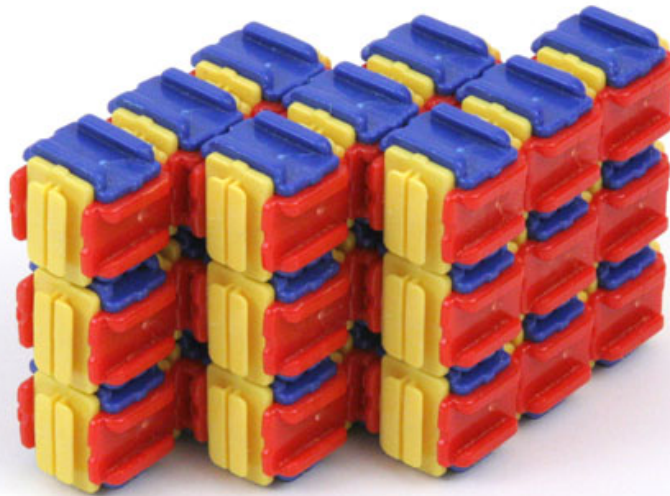


Bishop Cubes

Puzzle Goal: Transform the arrangement of the 27 cubes from one shape to any other shape, without disengaging any of the cubes from each other. Cubes must be shifted by sliding along their faces.

Materials: Plastic

Classification: Sequential movement



12

Breakfast Egg

Puzzle Goal: Take apart, and put together.

Materials: ABS plastic

Classification: 3.2. Interlocking geometric shapes



13

Carpenter's Rule

Puzzle Goal: Find the hidden clues to the code, then open the secret compartment to find the treasure inside.

Materials: Century pine, mahogany, miniature copper hammer, metal tent peg, rare earth magnets

Classification: Take Apart

Notes: Ornamental hammer is an original Cracker Jack prize from the 1930's; treasure is a wooden Stanley #36 folding ruler.



14

Cola Glass

Puzzle Goal: Remove the yellow string from the purple string (without untying knots or cutting string).

Materials: Ready-made glass, wooden bead, string

Classification: Disentanglement



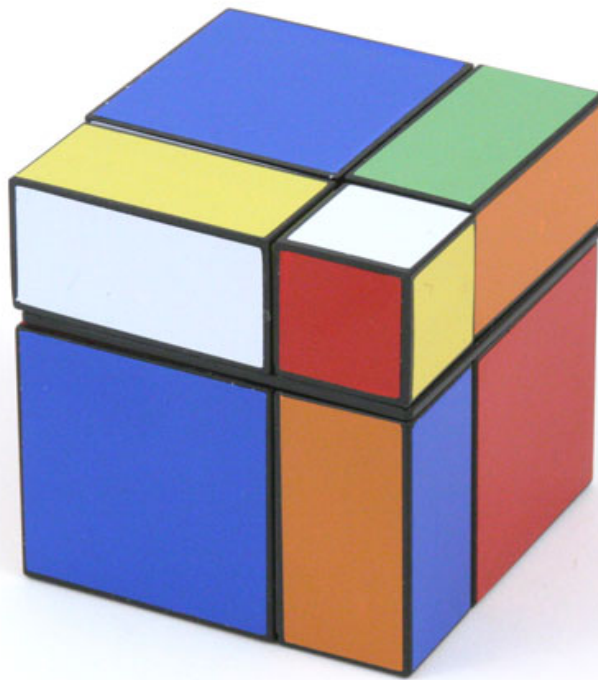
15

Cube Art

Puzzle Goal: Position the magnetic blocks on the magnetic plate and make a cube and get the same four colors on each of the six sides of the cube. There are three solutions (as hinted in the plate diagrams).

Materials: Plastic, sticker foil, magnets

Classification: Put-together



16

Cube&Cubes

Puzzle Goal: Arrange the chain links to create a single image.

Materials: Plastic

Classification: Sequential movement



Cubes in Space

Puzzle Goal: **Problem 1: Pack 10 cubes into the box so that no piece can slide in any direction after the lid closed.**

Problem 2: Pack 8 cubes into the box so that no piece can slide in any direction after the lid closed.

Materials: Acrylic (Box), ABS (Pieces)

Classification: 1.2 3-D Assembly



18

Curly Cube

Puzzle Goal: Take the cube apart, and put it together.

Materials: Oak wood

Classification: Take-apart



19

Daedalus

Puzzle Goal: Disassemble and reassemble the cube.

Materials: Marblewood, aluminum

Classification: Interlocking

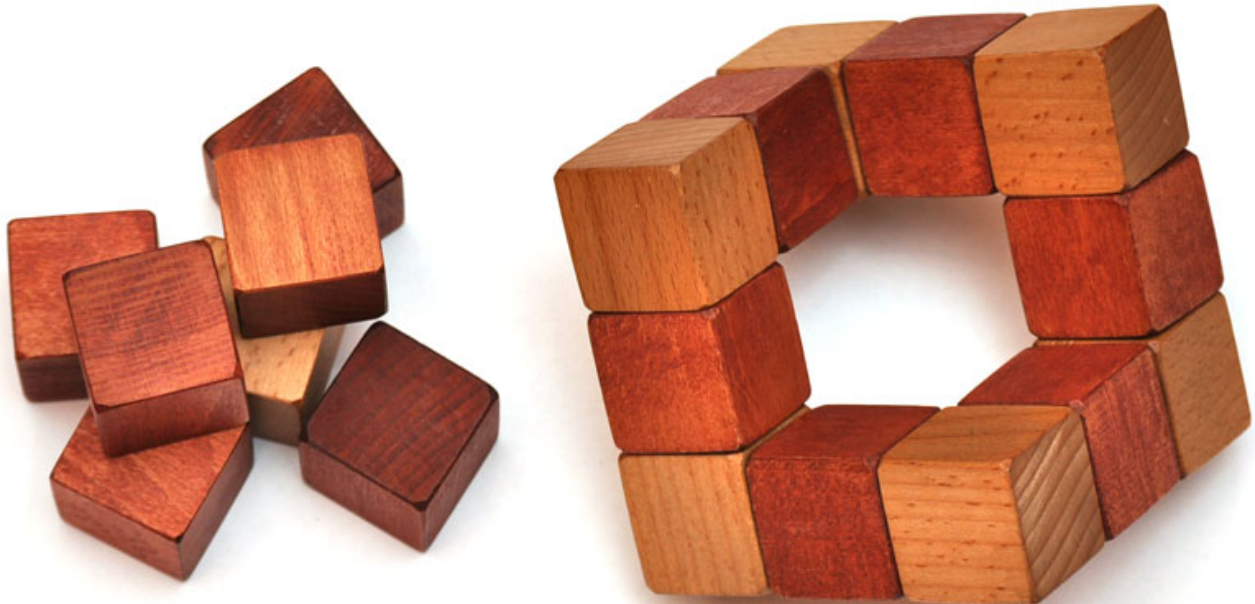


Diamond in the Frame

- Puzzle Goal:**
1. Take six cubes with magnets and one cube without magnets to create a single, interlocking, symmetric figure.
 2. Take 12 cubes with magnets and seven cubes without to create a single, interlocking, symmetric figure.

Materials: Natural wood (beech), magnets, paint

Classification: 3.6 Miscellaneous interlocking



21

Dino Cylinder Cube

Puzzle Goal: Rotate groups of pieces to restore the original shape and color pattern.

Materials: Plastic: ABS

Classification: Twisty puzzle

Notes: This has the Dino Cube movement with an improved mechanism, which will jumble due to its cylindrical shape.

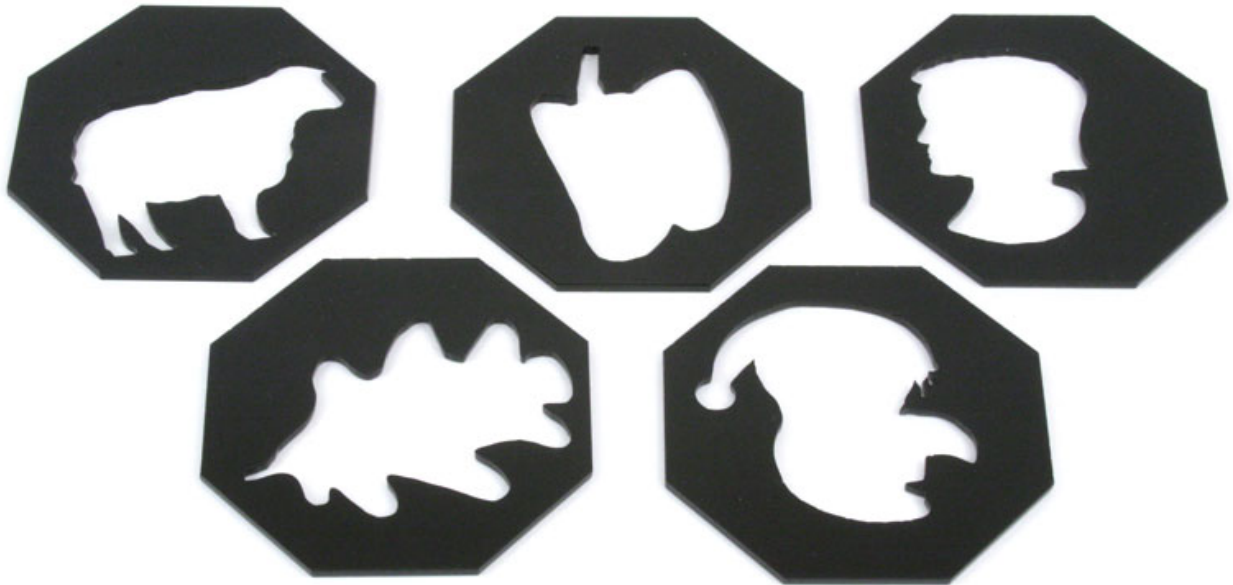


Dog Head

Puzzle Goal: Each disc shows the silhouette of an object. Stack the discs so that the silhouette of a shepherd dog's head becomes visible.

Materials: Black Acrylic 3mm

Classification: Put together Puzzle 1.1



23

Double Gear & Wheels

Puzzle Goal: To remove the gear by rotating and shifting it up and down inside the frame.

Materials: Acryl, steel

Classification: Sequential movement



24

Drunken Dancing Fraulein

Puzzle Goal: Open the box and find the small top and diamond inside.

Materials: Wood, magnets

Classification: 2.1



Equal7

Puzzle Goal: Arrange the dice so that on each face the number of dots is 7.

Additional challenges:

1. Arrange the dice so that on each face the number of dots is 10 (easy), 11 (medium), 12 (medium), 8 (hard), 9 (hard), or 14 (hard).

2. Arrange the dice so that the total number of dots everywhere is 62 (easy), 34 (hard), or 88 (hard).

Materials: Transparent polycarbonate

Classification: Sequential movement



26

Fan-2n

Puzzle Goal: Remove the string from the wire.

Materials: Nickel-plated 3mm wire, rope, plastic ring, plastic beads

Classification: Topological disentanglement

Notes: Techniques for solving Fan-2 and Fan-4 are used to solve Fan-6.



27

Flemin'

Puzzle Goal: Open the shell then find the secret compartment.

Materials: Cherry, rengas, mizuki

Classification: Take-apart



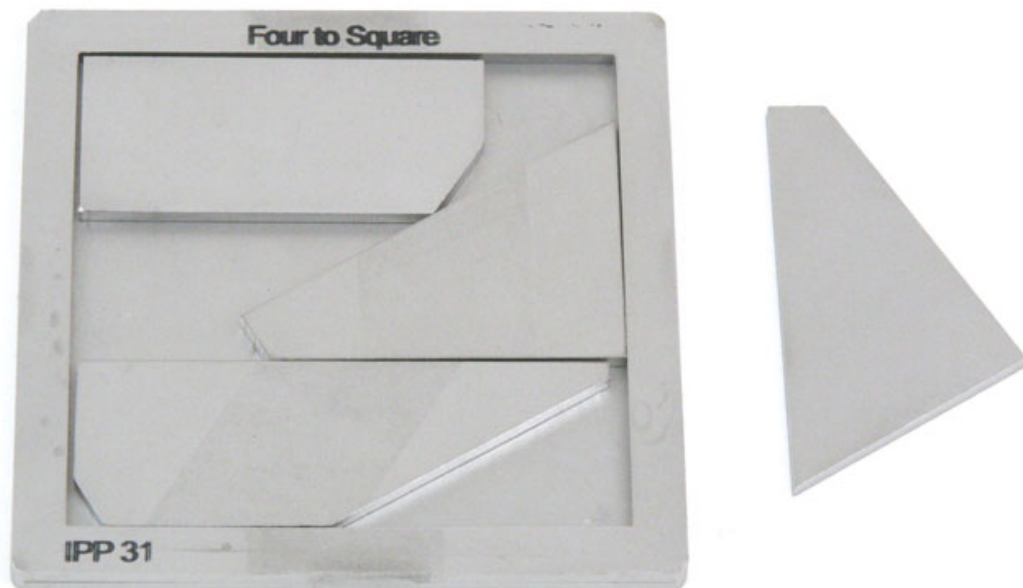
28

Four to Square

Puzzle Goal: Fit the four pieces flat within the tray.

Materials: Stainless Steel (AISI type 304)

Classification: ASS.STRA



Fracture-10

Puzzle Goal: Scramble the puzzle by making random moves of the various slices, using some 90 degree turns when possible. Restore the puzzle so that each side shows only one color.

Materials: Selective laser sintered (SLS) nylon, vinyl stickers

Classification: Sequential movement

Notes: This puzzle turns on five different axes, all located at the vertexes around its equator. Each axis can turn in increments of 90 degrees, if not blocked by bandaged pieces.



30

Granny's Tea Box ~ Granny's Hammer

Puzzle Goal: Remove the top through a sequence of seven moves.

Materials: Vintage Tea Box, walnut, poplar, maple

Classification: Take-apart

Notes: Once the lid has been removed, the internal locking parts can be taken out to view the entire inner workings of this puzzle box.



31

Grid Sticks Cube 8

Puzzle Goal: **Goal 1: build a cube. Reward goal: put the assembled cube on the stand!**
Goal 2: build a cube which has faces with letters B, E, R, L, I, N.
Goal 3: build two cubes

Materials: Beech sticks and stainless steel pins (no glue!)

Classification: Interlocking 3.6 / 3.2



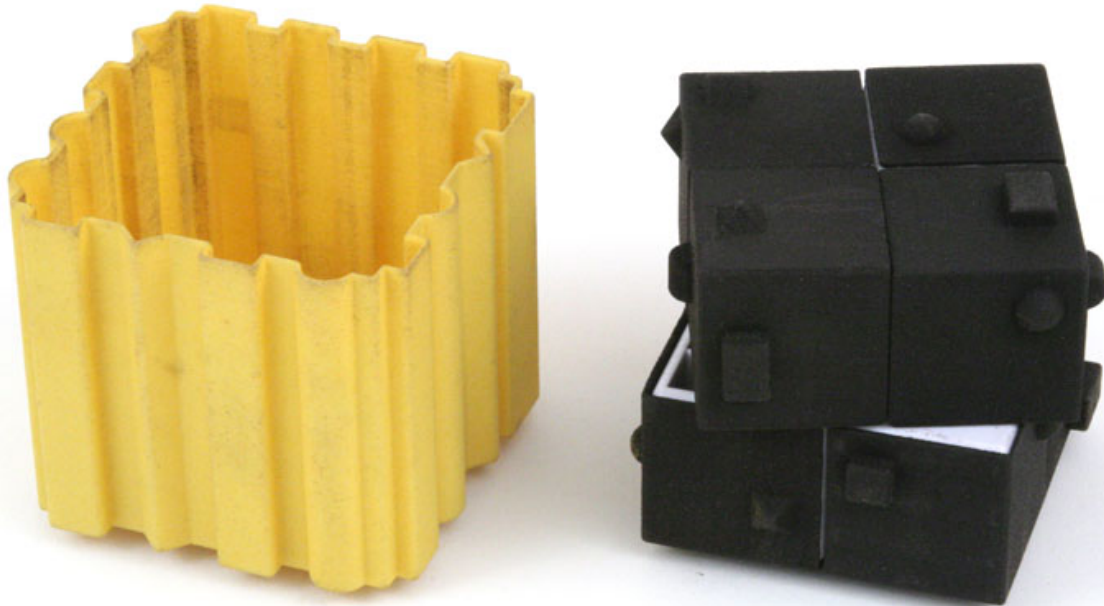
Groove Cube

Puzzle Goal: Scramble the cube and then solve it such that it fits perfectly into the colored shell.

Materials: 3D-printed nylon, Eastsheen 2x2x2

Classification: Sequential movement

Notes: Though the solution algorithms remain the same as a normal 2x2x2, the challenge lies in determining the solved state. Each type of groove can hold multiple shapes of bumps: the rectangular grooves can hold square bumps, rectangular bumps, triangular-prismatic bumps, and cylindrical bumps, as they all have the same cross-section in at least one direction. Some bumps are also placed ambiguously, so certain pieces could go in multiple places. However, there is only one solution that has all the grooves filled perfectly by bumps.



33

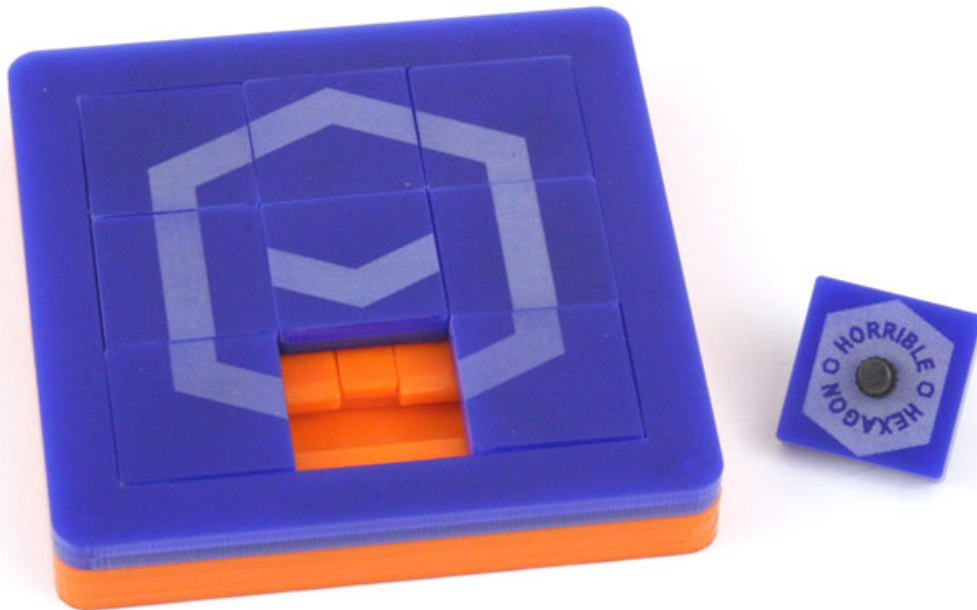
Horrible Hexagon

Puzzle Goal: Slide pieces from start position (shown) to make a complete hexagon.

Materials: Acrylic

Classification: Sequential movement, sliding pieces, restricted route

Notes: Movement along the central column is restricted by small piece that alternately blocks the top or bottom segments.



34

House with Trees

Puzzle Goal: Open the cover of the box.

Materials: False acacia, walnut, magnolia, angšana, keyaki, zebrawood, ichii, acrylic board

Classification: Trick-opening



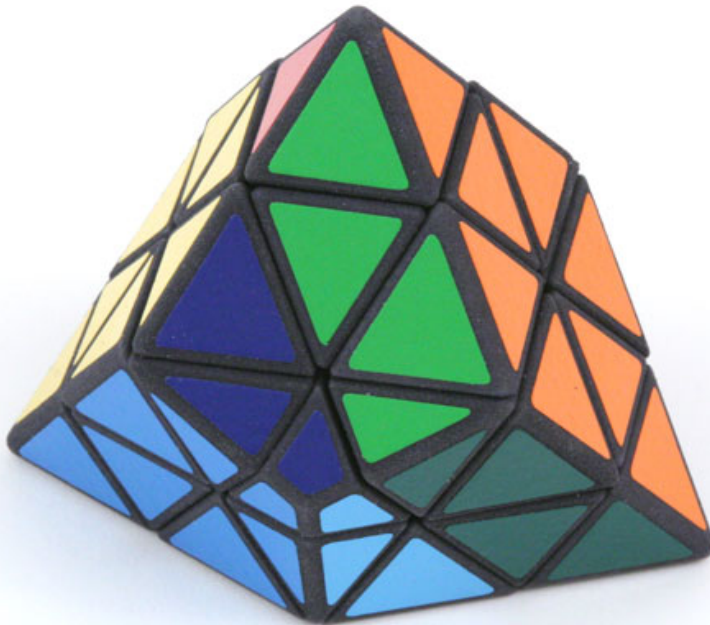
Ice-9

Puzzle Goal: Scramble the puzzle with a few random rotations. After this the goal is to restore the puzzle to the solved state, with one color on each side.

Materials: Selective laser sintered nylon and vinyl stickers

Classification: Sequential movement

Notes: This puzzle turns on six different axes. The three axes going through the four-sided vertexes can be turned in increments of 90 degrees, and the three axes going through the diamond-shaped faces can be turned 180 degrees.



36

Judge's Gavel Puzzle

Puzzle Goal: Remove the ring.

Materials: Handle: lignum vitae, ebony, bocote; head: mahogany, dark oak; ring: dark oak

Classification: Take-apart



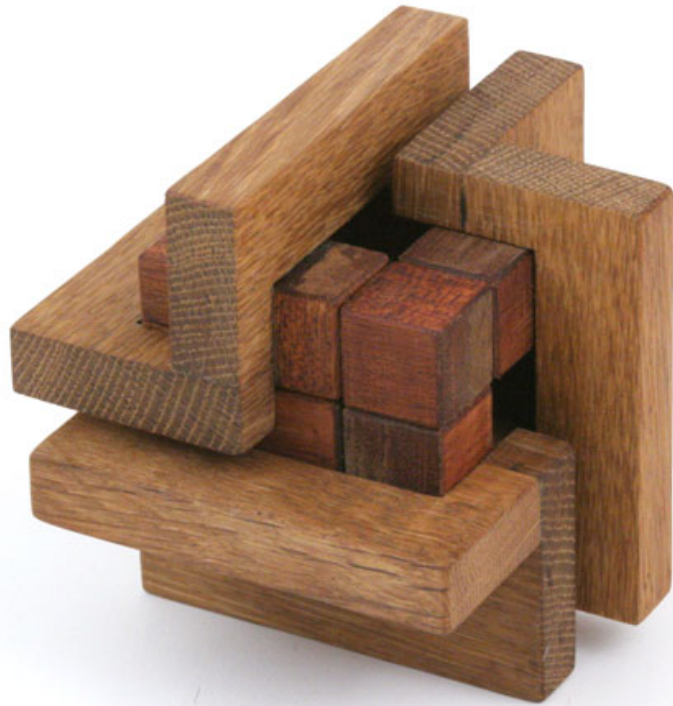
37

Kernel

Puzzle Goal: Take apart and re-assemble.

Materials: Mahogany and oak

Classification: INT-CART



38

Knot for You

Puzzle Goal: Disentangle the four parts.

Materials: Walnuts, wood beads, cotton cord, brass ring

Classification: Disentanglement



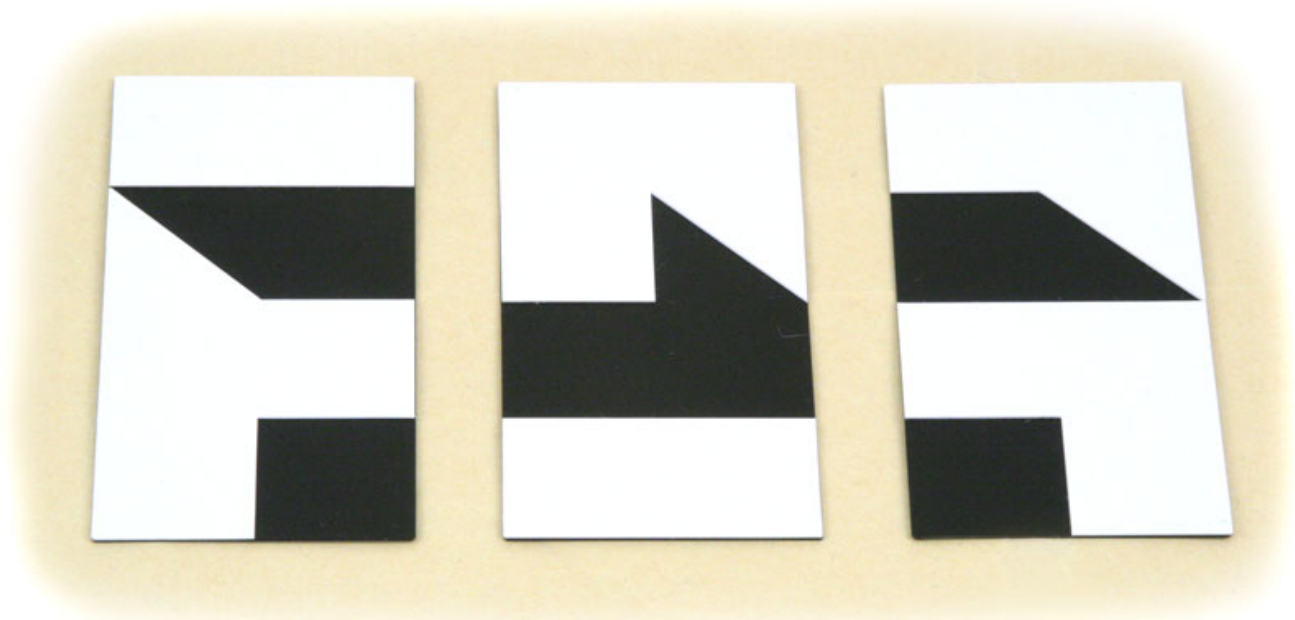
39

Lost L

Puzzle Goal: Arrange the three pieces (without overlapping) to make an L shape.

Materials: Polyvinyl chloride board

Classification: Assembly



40

Magic Domino

Puzzle Goal:

0. Start with the pieces as shown.

1. Remove the light dominos, then arrange the pieces so that the dark dominoes fill all of the dark holes.

2. Remove the "Magic Domino" spacer. Slide the 11 squares so that the all light dominoes fill the light holes, and the spacer is returned to its original position.

Materials:

Wood

Classification:

Vanishing, sequential movement



41

Moscow Ball

Puzzle Goal: Disassemble and assemble.

Materials: Wood (nut)

Classification: 3. Interlocking Solid Puzzles, 3.2 Geometric objects



42

MT5T (Make the 5 Tetrominoes)

Puzzle Goal: Make five tetromino silhouettes: arrange the four dark pieces so that five holes are completely filled by the light pieces.

Materials: Natural wood (wenge, walnut), MDF

Classification: 2-D assembly



43

NOBOX Puzzle

Puzzle Goal: Lock the box, and then unlock it. The starting/unlocked state is with the boxes separate and no loose internal parts. The goal/locked state is with the small box inside the larger box (enclosing the internal space) and again with no loose internal parts.

Materials: Mahogany

Classification: Secret locking and unlocking puzzle



44

Pack Berlin

Puzzle Goal: Pack the 14 pieces into the box. No piece may project above the lip of the box.

Materials: Pieces: bocote; box: bloodwood

Classification: 1.2 3 Dimensional Assembly Puzzles – Non-Interlocking

Notes: This puzzle was designed with three goals in mind: all pieces of the same thickness, unique solution, and difficult or impossible to solve using puzzle-solving computer software. The puzzle incorporates the “missing area” principle into a 3-D box-packing puzzle.



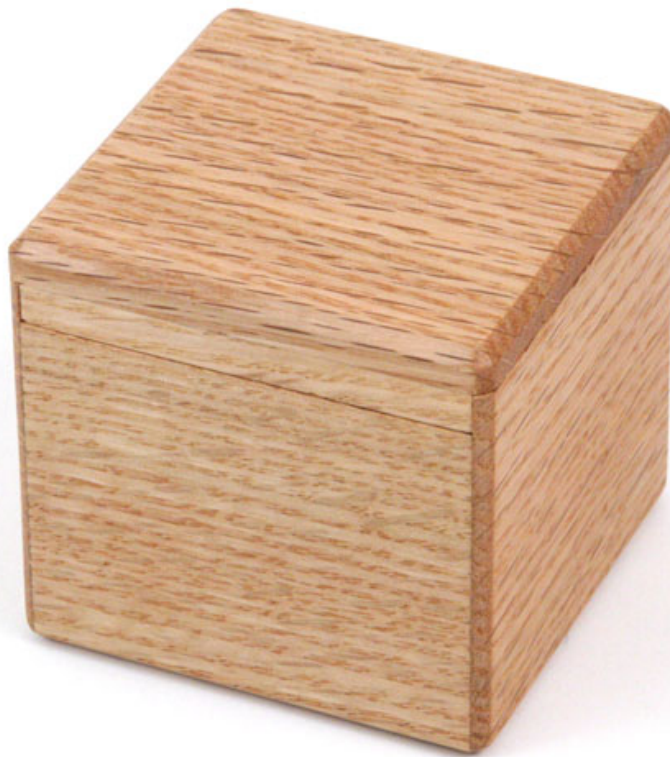
45

Puzzle Gift Box

Puzzle Goal: Open the box.

Materials: Red oak, birch, magnet and iron rod

Classification: Trick-opening



46

Quadratum Cubicum

Puzzle Goal:

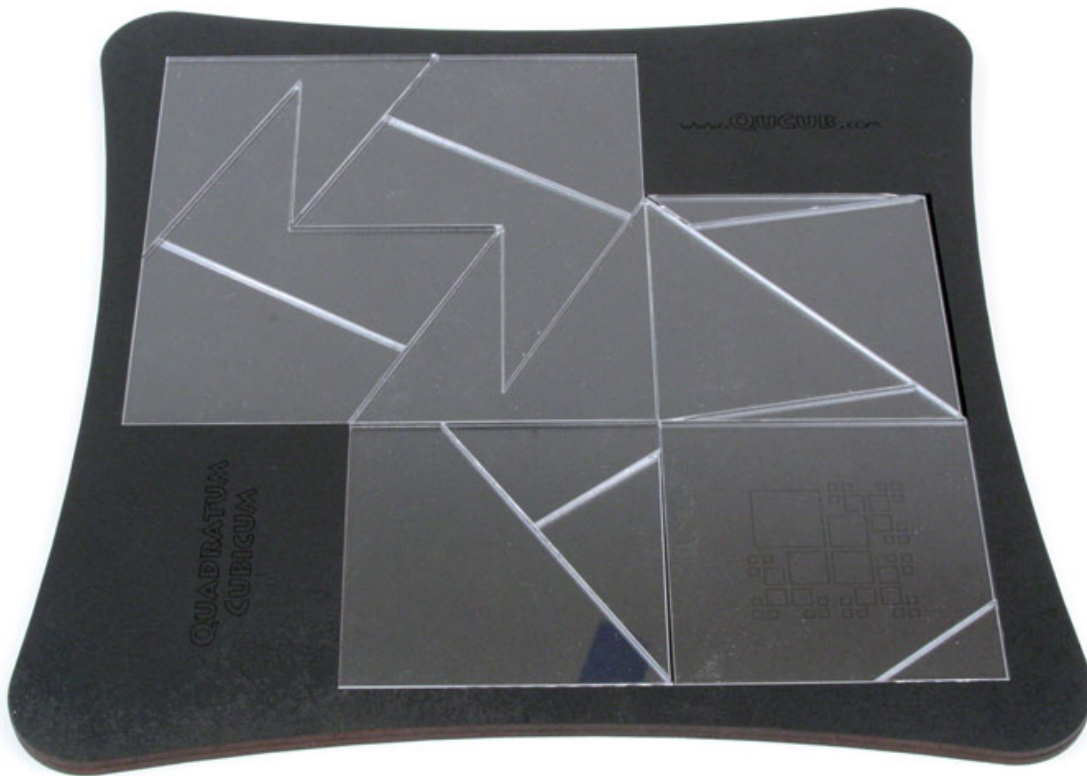
1. (easy) Assemble all 68 pieces into one cube.
2. (medium) Select a subset of pieces that can be assembled into either three small squares or one larger square. There are nine sets of pieces with this property (one shown).
3. (hard) Assemble all 68 pieces into one square.

Materials:

Puzzle: Plexiglas; tray: MDF; box: mixed MDF and Plexiglas

Classification:

ASS-STRA



47

RAT

Puzzle Goal: Construct the rat body using the letters R, A, T.

Materials: Torreya wood

Classification: Interlocking



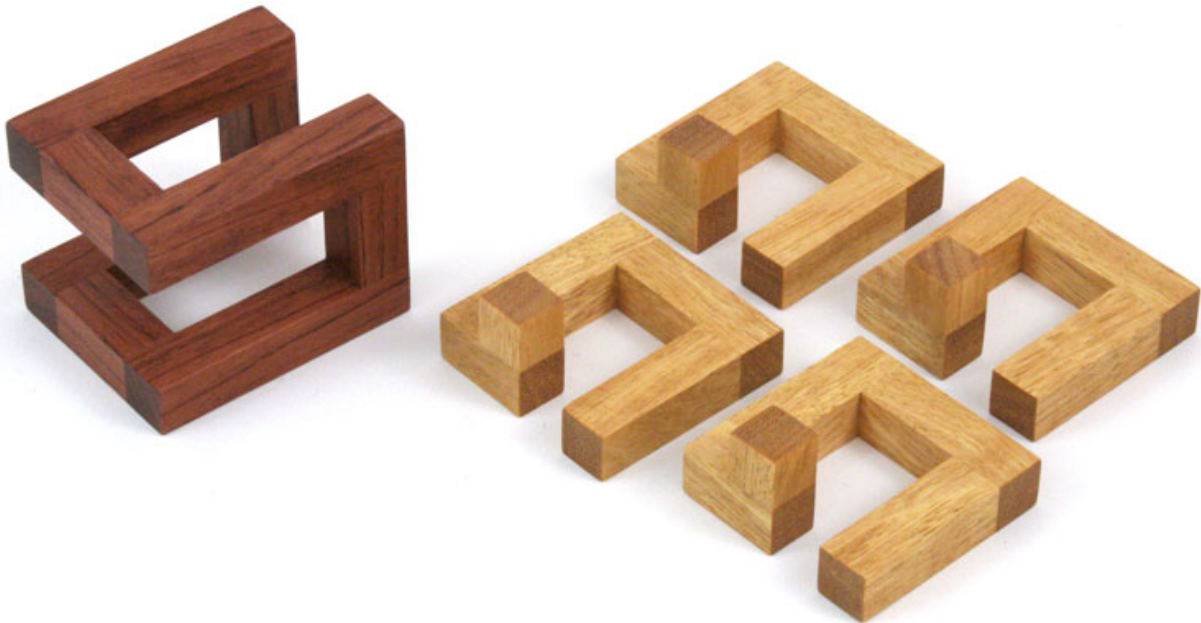
48

Ring Case

Puzzle Goal: Assemble the four pieces into the frame so that none of them sticks out.

Materials: Wood

Classification: Interlocking



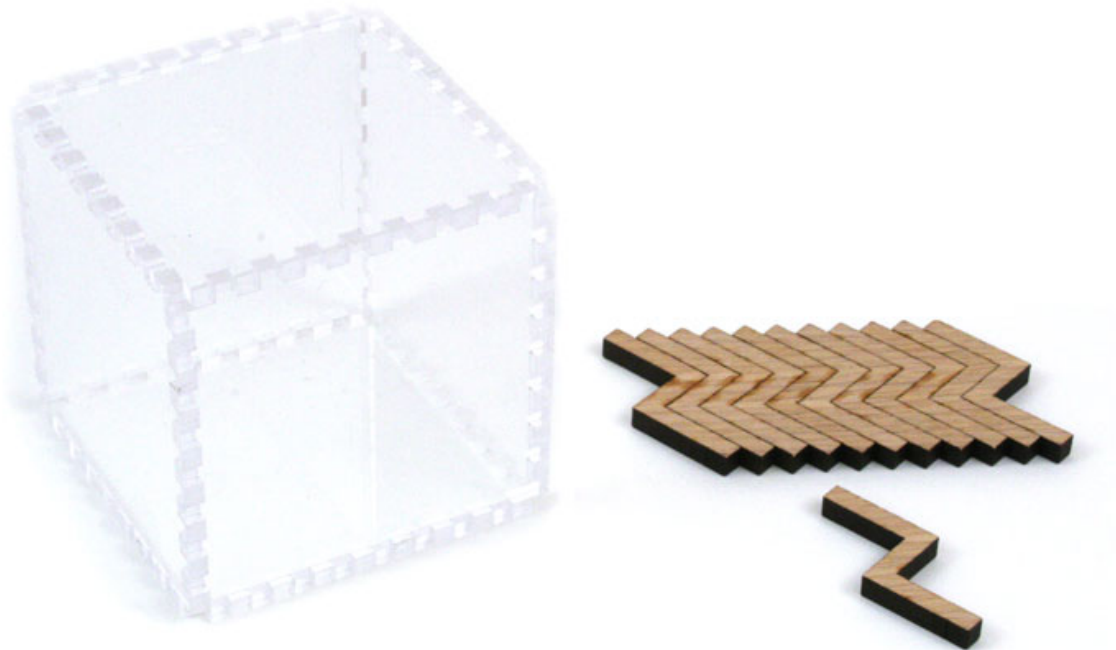
49

riZidity

Puzzle Goal: Assemble the 12 wooden pieces in the box so that when you shake it the pieces do not come loose.

Materials: Acrylic, MDF veneer

Classification: ASS-CART



50

S in Bloom

Puzzle Goal: Use the eight dark petals to make an S inside the frame.

Materials: Nylon 12, selective-laser-sintered (SLS)

Classification: Silhouette puzzle



51

Shift Pole

Puzzle Goal: Scramble and unscramble the pieces, using the two shells to guide the movement.

Materials: 24 nylon faces, 2 Acrylic shells, 24 magnets, iron sphere

Classification: SEQ-RT3D

Notes: The 24 face pieces are held in position by magnets. The figure will shape-shift if you rotate by hand without the aid of the shells.



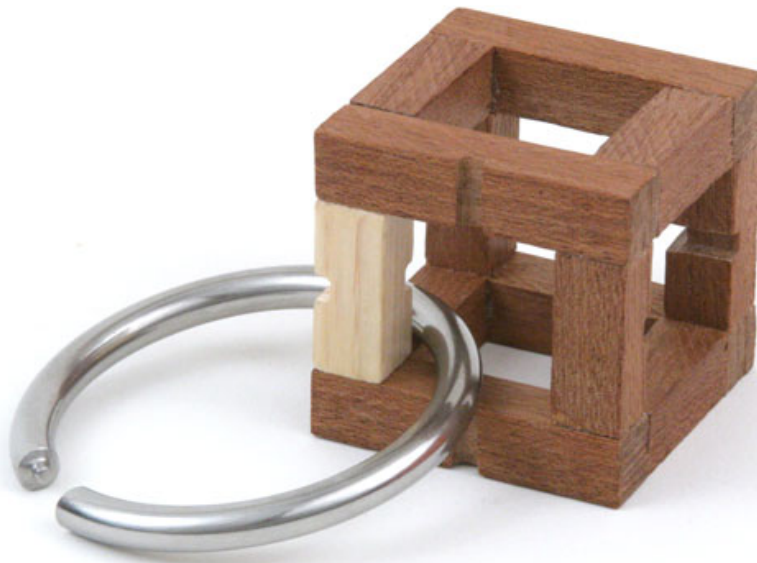
52

Simple Solid Ring Maze

Puzzle Goal: Starting from the position shown, free the ring from the cage.

Materials: Stainless steel, wood

Classification: Disentanglement



53

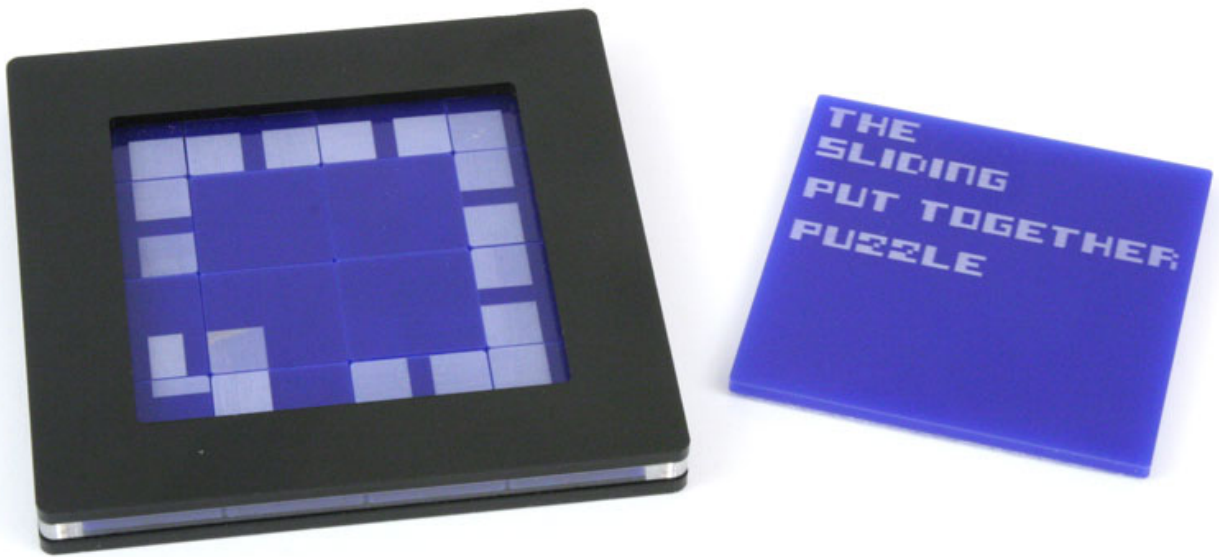
Sliding Put Together Puzzle

Puzzle Goal: Put the 15 pieces in the tray to construct the digits 1 through 9 in numerical order. Then slide the pieces to form a magic square (you must first determine how this magic square can be constructed).

Materials: Acrylic

Classification: Put together and sequential movement.

Notes: The solution starts with a hint, showing the form required for each digit.



54

Snake Cube

Puzzle Goal: Remove one panel to find the secret compartment.

Materials: Walnut, maple, angšana

Classification: Take-apart



55

Spin

Puzzle Goal: Remove the metal tube from the string.

Materials: Stainless steel wire (3.5mm), string, wooden bead, and metal tube

Classification: Disentanglement



56

Spinnomotto

Puzzle Goal: Find the three steps to open the box and find the small top inside.

Materials: Segmented wood, magnets, electronics

Classification: 2.1



57

Spiral-n

Puzzle Goal: Remove the string from the wire.

Materials: Nickel-plated 3mm wire, rope, plastic beads

Classification: Topological disentanglement

Notes: Techniques for solving Spiral-2 (or Snail-2) are used to solve Spiral-4.

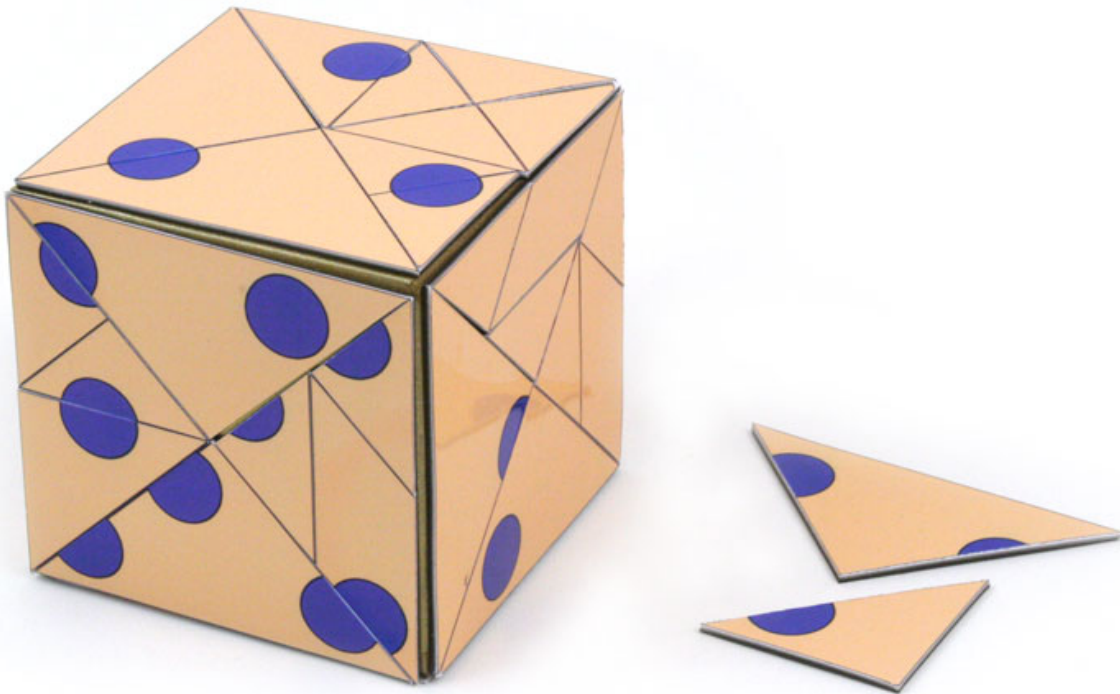


Spots

Puzzle Goal: Place 8 magnetic tiles on each face of the base cube so that there are 1 through 6 spots shown on the six faces. However, unlike a standard die, the spots are positioned asymmetrically.

Materials: Polystyrene, tin plate, plastic film, card, magnetic rubber

Classification: PAT-EDGE/1.3



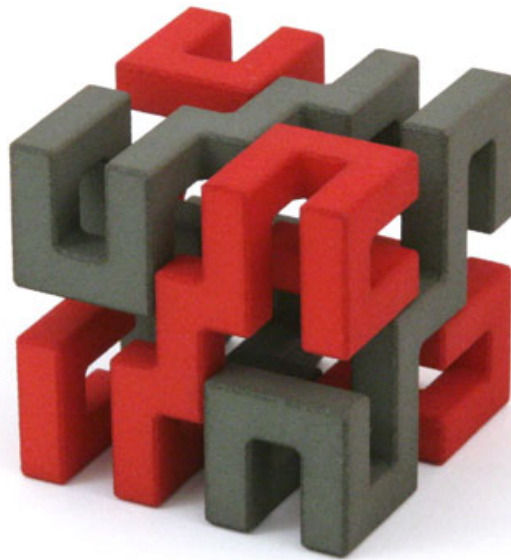
59

Superstrings

Puzzle Goal: Take the two pieces apart and reassemble them to fit back inside the box.

Materials: Selective laser sintered polyamide cube, acrylic box

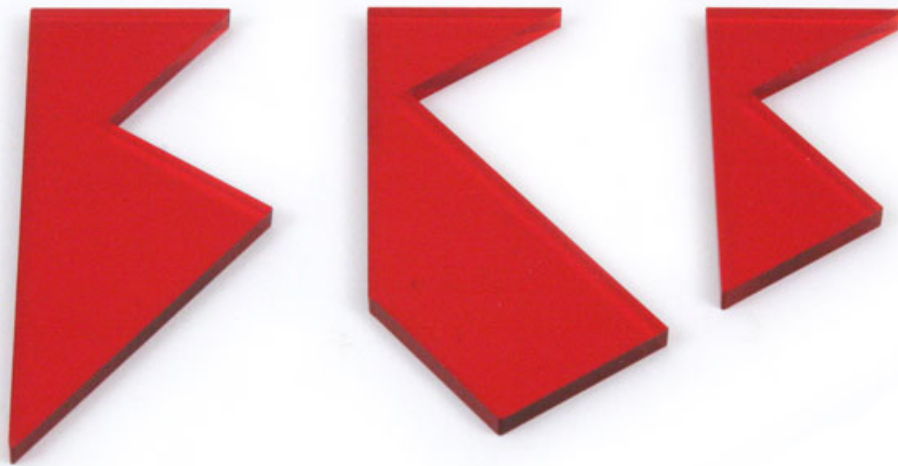
Classification: Interlocking/disentanglement



- Puzzle Goal:**
1. Arrange the three pieces to make a T pentomino.
 2. Arrange the three pieces to make three more pentominoes.

Materials: Acrylic board

Classification: 2-D Assembly



61

Tea Time

Puzzle Goal: Remove the wooden cube from the spoon and string.

Materials: Wood and rope

Classification: Disentanglement



62

Three-Cornered Deadlock

Puzzle Goal: Open all the lids at the same time.

Materials: Magnolia, cherry, walnut, maple

Classification: Take-apart



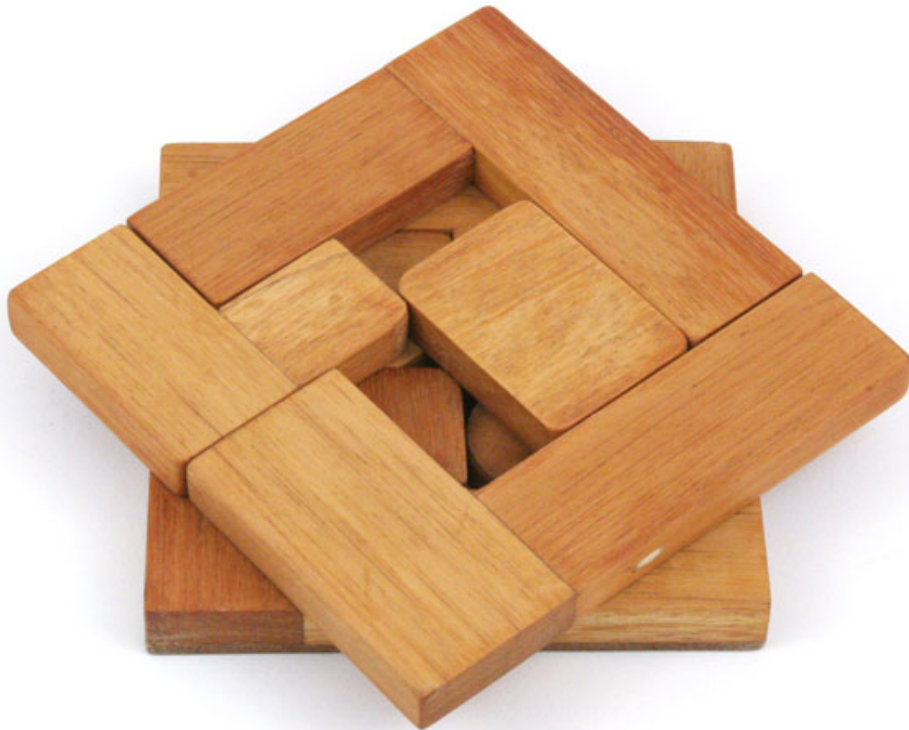
63

Tick Box

Puzzle Goal: By sliding, disassemble and reassemble the puzzle.

Materials: Recycled rahmin

Classification: SEQ-SL2D



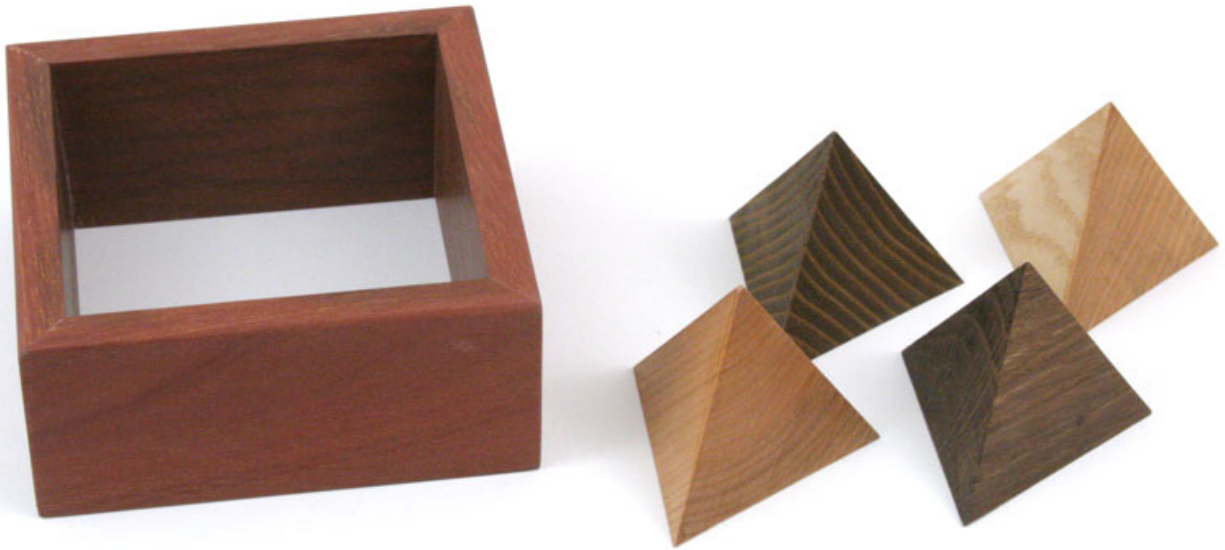
64

Tornado

Puzzle Goal: Place the four tetrahedrons inside the frame so that no piece is loose. There are at least two different solutions.

Materials: Frame: walnut; various hardwoods for the tetrahedrons

Classification: Slocum: 1.2, 3-D assembly

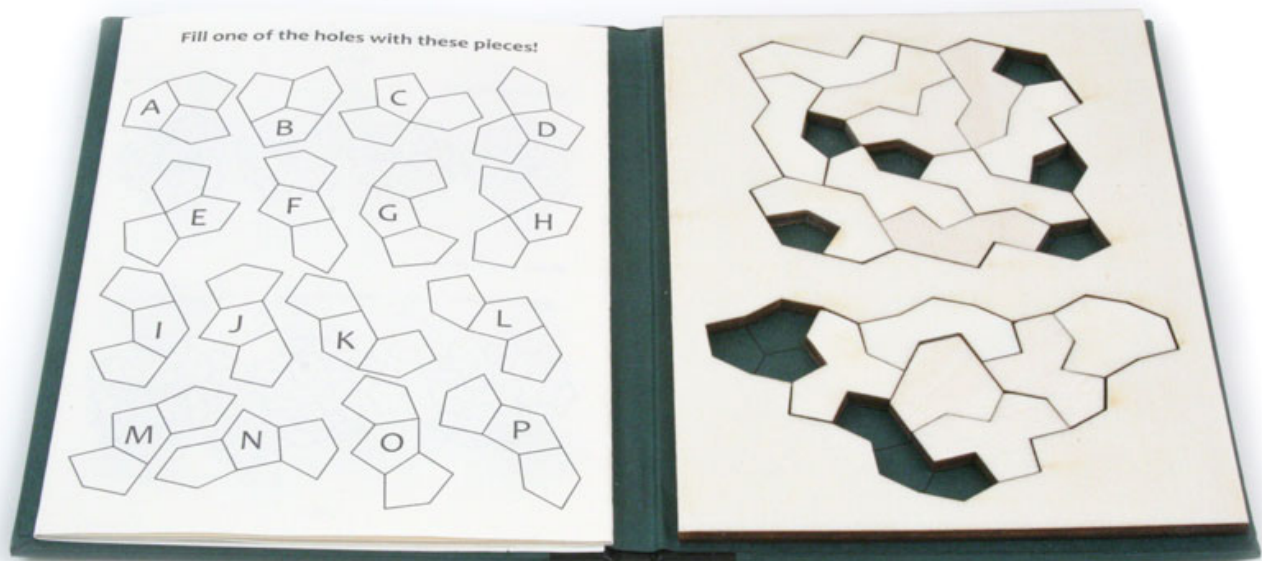


TriPenTile

Puzzle Goal: Fill the holes in the book or solve tiling problems as described in the attached booklet.

Materials: Paper, plywood, synthetic leather

Classification: 1.1 2-D combinatorial assembly



66

Triple Mosaic

Puzzle Goal: Fill the tray with three different mosaics: with 9, 6 or 4 black squares.

Materials: Box: bubinga; pieces: wenge, maple

Classification: 2-D assembly



67

Twelve Piece Burr Ball

Puzzle Goal: Take apart and put together.

Materials: Double-sided tempered hardboard

Classification: 3.2 Interlocking geometric object

Notes: There is only one way to solve this puzzle, taking advantage of the slight flexibility of the hardboard.



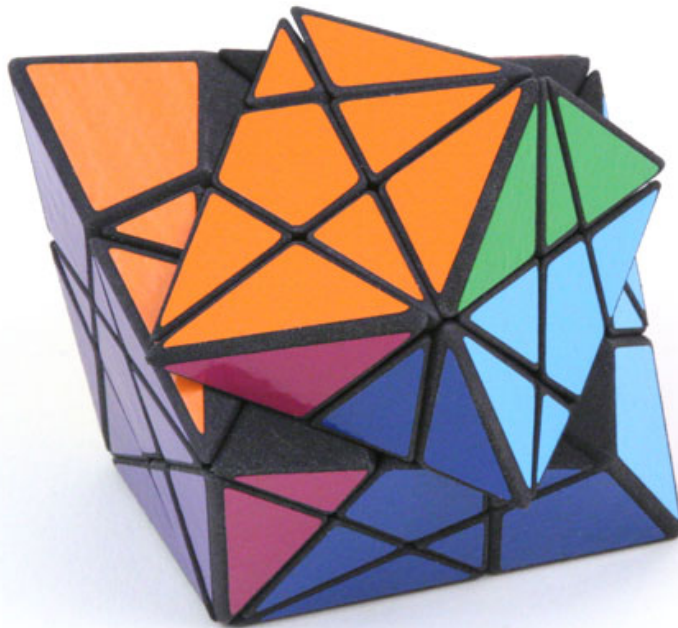
Twisted-8

Puzzle Goal: Scramble the puzzle by making random turns on various axes. Now the goal is to restore the puzzle to its original shape, with all faces showing a single color.

Materials: Selective laser sintered (SLS) nylon, vinyl stickers

Classification: Sequential movement

Notes: This puzzle turns on 10 different axes. The eight axes around the equator turn 180 degrees, while the two axes at the four-sided vertexes can turn in 45 degree increments, allowing for shape-shifting.



69

Wandering Chain - Three Rings

Puzzle Goal: Remove the chain and put it back.

Materials: Wire, chain

Classification: 4.2, or 4.3 Wire with non-rigid element



Puzzle Goal: Create free-standing circuits (with no beginning or end) by connecting pieces by joining circular faces. **Sample puzzles:**

1. Build a free-standing circuit using 2 L's, 2 C's, and 1 S.
2. Build a free-standing circuit using 2 L's, 3 C's, and 1 S, where only one L touches the table surface.
3. Place all 18 blocks into the 6x6x1 box.
4. Assemble all 18 blocks into a 3x3x4 block.

Materials: Oiled beech

Classification: Put-together



71

Xmatrix Cubus

Puzzle Goal: Navigate the ball from the gold frame into the opposite silver frame and back again.

Materials: Acrylic box, GPPS internals, steel ball

Classification: Route-finding/dexterity



72

Zen

Puzzle Goal: Remove the rope.

Materials: Acrylic, rope and metal ring

Classification: Disentanglement

