Puzzles with Cardboard Boxes

YOUNG MATHEMATICIANS

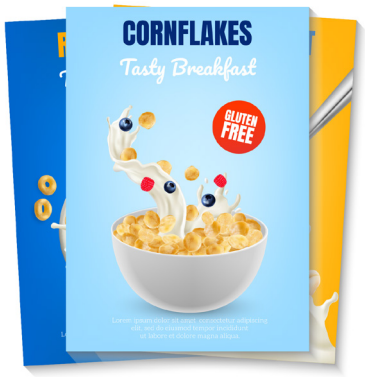
Players 1+ | Ages 3+ | 5–10 min

GOAL

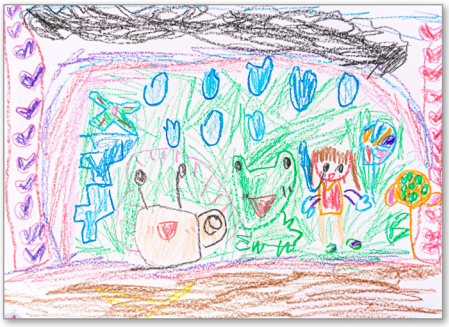
To make and solve your own puzzles.

MATERIALS

Cardboard boxes, such as cereal boxes, toy boxes, etc.



Your own drawing or photo



Scissors

VOCABULARY

Attributes of shapes such as:
long, *short*, *curved*, *straight*

Positional words such as:
next to, *beside*, *close to*, *above*, *below*

Orientation words such as:
flip, *slide*, and *turn*

QUESTIONS

How many pieces do you want your puzzle to have?

What shapes do you want to make in your puzzle?

Tell me about this shape. What do you notice?

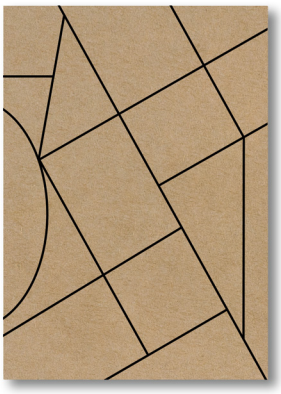
How can we figure out where to put this piece in your puzzle?

HOW TO PLAY

1. Find a cardboard box, such as a cereal box, cut off the sides to flatten it, and choose one part to use for your puzzle.

You could also glue a photograph or drawing onto the front of the cardboard to make the puzzle picture.

2. On the back of your puzzle picture, draw your puzzle pieces using a straightedge or freehand.



You can draw triangles, rectangles, squares or any other shape you would like. You can increase the level of difficulty of the puzzle by cutting more pieces.

Note: Depending on the age, you may want to draw the pieces for your child. Or, your child may be able to draw the pieces themselves.

3. Using a pair of scissors, you or your child can cut along the lines you drew.

4. Once the pieces are cut, mix them up, and solve the puzzle! Use mathematical language with your child to describe the **attributes** of the pieces and their **positions** relative to each other. For example, a child may say, "I think this piece with a

curved edge belongs *next* to this piece." You can also prompt your child to count how many pieces are in the puzzle in all.

5. Play continues as time allows. Children may want to make another puzzle using a different box or may want you to make a puzzle for them.

TIPS FOR PLAYING

- It is helpful but not necessary to have a variety of materials to choose from to make a puzzle, such as cardboard packaging from toys, magazine covers, and cereal or cracker boxes.
- Children may need adult support to draw the puzzle shapes and cut through the cardboard.
- If you do the cutting, you can intentionally cut shapes to discuss with your child. Practice using shape names, such as *triangle*, *quadrilateral*, *rectangle*, *trapezoid*, *parallelogram*, *rhombus*, or *square*.
- You could challenge your child to make a puzzle of only triangles, only squares, or only rectangles.

WHAT CHILDREN ARE LEARNING

- Throughout this activity, children are exposed to a few important geometric ideas. They are learning about identifying shapes and describing their position relative to each other using positional language. They are composing and comparing shapes within their puzzle. They also have the opportunity to count the number of puzzle pieces.
- Doing puzzles is a great way to help even very young children practice their visual-spatial skills. Strong visual-spatial skills are highly correlated with success in higher-level math.
- Notice how at first, children may solve the puzzle with trial and error, experimenting with how the pieces fit together. As they gain experience, particularly with repetition with the puzzle

they will more intentionally flip and turn the pieces in the air and place the pieces where they fit more easily. When a puzzle becomes too easy, make another one.

MATH TOPICS

Shapes and Geometry

Spatial Relations

VIDEO

Watch Game Video

View the QR code in your smartphone's camera app or QR code reader to watch a video that shows how to play *Puzzles with Cardboard Boxes*.