



Children's Museum of Houston

Pre/Post Classroom Activities

Tricky Letter Puzzle

Rationale

Think Tank encourages children to use higher level thinking skills by using an array of lively and interactive components and activities. Four child characters serve as the gallery guides, spreading the message that thinking and problem solving is fun, hip, and “the thing to do.” This lesson introduces children to higher level thinking skills and provides practice of processes and tools used in problem solving.

TEKS Objectives (Mathematics)

1.11C, 2.12C: select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out in order to solve a problem

Background

The words slide, flip, turn are used to describe moving a geometric shape without changing its shape. The children will move the puzzle pieces in these three ways to solve the puzzles they create. They can use this special vocabulary to give specific hints about how to solve the puzzles. In this lesson, children think about what makes a puzzle challenging when they design one for a classmate to solve. Then in solving another classmate’s puzzle, they work out strategies for solving this type of puzzle. Students will be able to talk about what they did to solve another’s puzzle.

Vocabulary

Slide – move from one place to another without changing any other way (formal geometric term is translation)

Flip – move to the other side of a line so that the shape is a mirror image of what it used to be (formal geometric term is reflection)

Turn – spin the shape around a point (formal geometric term is rotation)

Materials

- Copies or cutouts of large block letters
- Pencil/crayon
- Scissors
- Envelopes

Procedure

Set Up: Copy and/or cut out the block letters you wish to use. You may wish to begin the lesson by showing the children the pieces to a puzzle that you already made and asking them what they think it will make. As a group, put the puzzle back together. Use the key words as you move the pieces. Then show the children how you created the puzzle.

1. Trace a block letter onto an envelope.
2. Cut the block letter into three or four pieces.
3. Put the pieces back together using the shape you traced onto the envelope as a guide.
4. Store the puzzle pieces in the envelope.
5. Trade puzzle envelopes to solve one that someone else made.

Questions to ask

- What do you do to solve the puzzle when you don't know what it's supposed to be?
- What do you do when a piece doesn't fit the way you thought it would?
- How would you tell a friend to solve your puzzle?

Extensions

Take the same letter and make several different puzzles. Cut each one a different way to see which one would make the trickiest puzzle.

Make puzzles from several different letters. Cut each one the same way (four strips across the letter or in half up and down and then in half across). Which letter makes the easiest puzzle? Do any of the letters have the same shaped piece?

Resources

You can find more definitions and examples of geometric transformations in *Math to Know* by Mary C. Cavanagh, Houghton Mifflin Company, 2000.