

Pentomino pursuits

Tiling puzzles

Easier: How many ways can you find to make a 3x5 rectangle? a 5x5 square? a 7x5 rectangle?

Hard: Can you make a rectangle using twelve pentominoes? Several different rectangles are possible, and there are usually many ways to get each one.

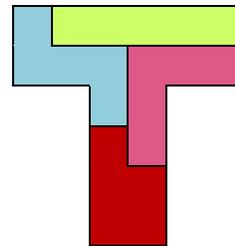
Try to arrange the set of pentominoes to enclose the biggest possible area. The pieces should connect along at least the side of one square, not just barely touch at a corner.

Take many copies of the same shape and try to tile the plane with it. That means fit the pieces together so there are no gaps and no overlaps. (It's obvious how a couple of them will work, but some are quite tricky. This can actually be done with each one of them.)

Take many copies of each of two shapes and try to tile the plane.

Similar shapes

The T-shape can be made using 4 pentominoes, like this:



Can you make a big U, Z, W or P from 4 pentominoes?

Studying mathematical properties

Which pentominoes have rotational symmetry? Which have reflective symmetry?

Which pentominoes can be folded up to make an open box? What do they have in common?

Do they all of the same perimeter and area?

How do the perimeters of the usual T and the big T (above) compare? What about their areas?

Study geometric transformations by creating one pattern of pentominoes from another via slides, flips, and/or turns.

Other

A book called *Chasing Vermeer* by Blue Balliett (2004) is popular among teachers and students alike. It incorporates a puzzle with pentominoes into a story about a painting by Vermeer.

A game for two or more people: take turns placing one pentomino on an 8x8 grid. The winner is the last person who can place a piece so that it does not extend beyond the grid or overlap with a previously played piece.

There are many websites with ideas!