maths investigations   **finding pentominoes**
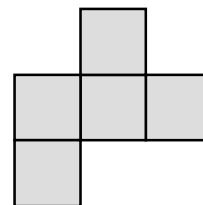
intro

Here we get pupils to investigate the different shapes they can make by joining squares together. Starting with two, then three and then four squares, pupils move on to generate the well-known set of pentominoes . . .
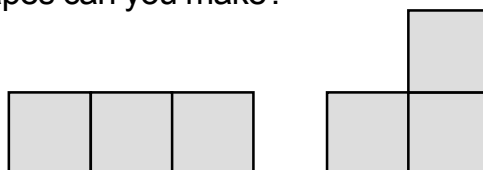
first steps

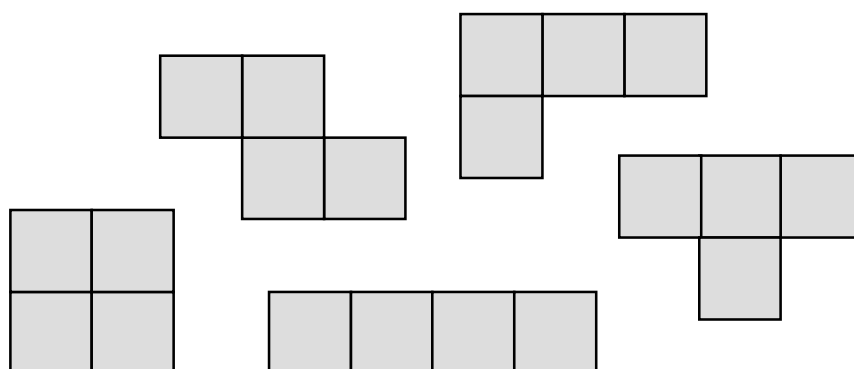Everyone knows what a domino looks like :

We've drawn this one without spots because for now we're just interested in the actual shape of the domino . . . as you can see, it's made up of two squares joined together. How would you describe how these two squares are joined?

Suppose you have three squares and you join them edge-to-edge, how many different shapes can you make?

These shapes are called 'trominoes' (or sometimes 'triominoes') and there are just two* of them. The shapes you can make from four squares joined together are called 'tetrominoes'; try to find all of them if you can.
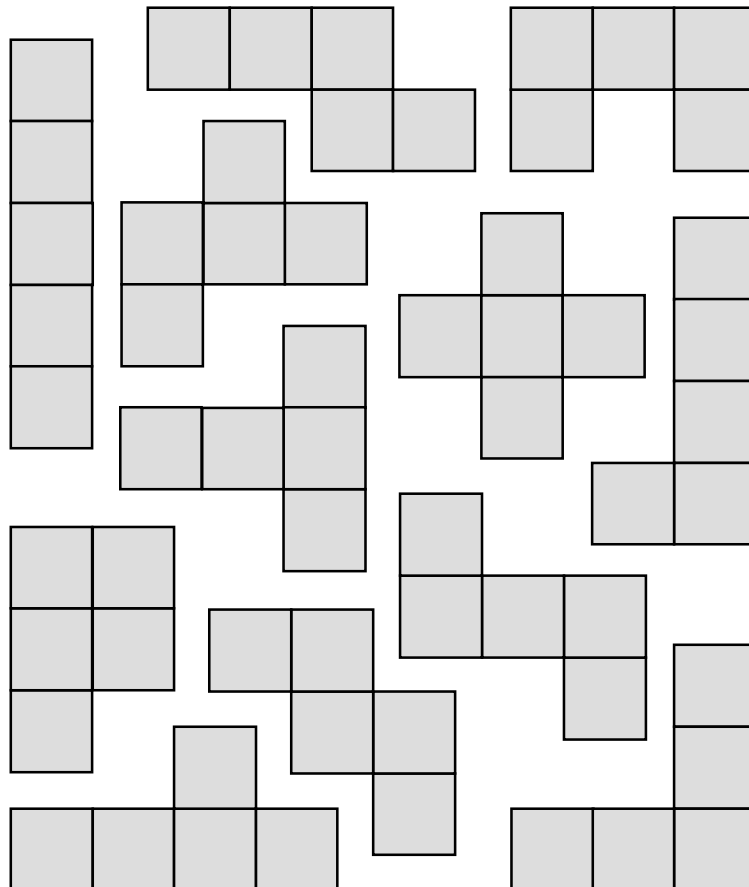
This time there are five* different shapes to be found.

* special note : In this investigation we're not counting mirror-images as different shapes.

finding pentominoes

the investigation	The challenge now is to find as many different shapes as possible made from five squares, joined edge-to-edge as before . . .
practical	All pupils can do this on their own; square grid paper is all they need . . .
results	The children should eventually find the 12 different pentominoes :

notes	This investigation is simple and straightforward but well worth doing – if only as a lead-in to work with actual pentominoes.
extension	o There are always the hexominoes to move on to . . .
	o Time spent investigating various properties of the pentominoes is time well spent – see separate investigation 'pentomino properties'.