



We are going to look at possible jigsaw pieces.
The kind of jigsaw we're looking at is rectangular with straight edges.

Some of the most common jigsaw shapes are a bit like these four pieces below:



The flag picture has been added so you know which way up they go – the red at the top and the blue at the bottom. The two pairs of pieces above could look the same if you turned one around - but because the **red** needs to be at the **top** and the **blue** at the **bottom** each pair are counted as different.

So, for each jigsaw piece we start with a square template, then some sides have a hole and some sides have a peg. The edge pieces have one or two straight sides.

We will only use pieces that have at least one peg and one hole.

Challenge 1

Find all the possible pieces that have at least one peg and one hole.
Here are three to start you off:



Challenge 2

Again, only use pieces that have at least one peg and one hole and none the same.
Find **all the possible ways** of making a three pieces wide by two pieces deep, rectangular jigsaw with flat edges all the way round.

Challenge 3

Read all of this one before starting

Again, only use pieces that have at least one peg and one hole and none the same.
How many possible ways can you find of making a two by four rectangular jigsaw, starting with **this piece** in the top left-hand corner:



Before you start making/drawing/constructing pieces, think carefully and then estimate how many possible arrangements there will be and be able to explain your reasoning to others.