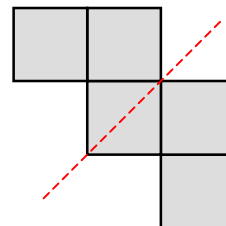# pentomino properties

intro	In this simple investigation, pupils are encouraged to look carefully at the twelve individual shapes which make up the standard set of pentominoes. By investigating their properties, pupils get to know the shapes better – and also to revise / reinforce their knowledge of some key spatial concepts.

the investigation	There are three parts to this investigation:

- o **symmetry** – Pupils look at which pentominoes have bilateral or rotational symmetry (or both).

- o **tessellation** – Pupils try to find which pentominoes can be used for tessellating and whether the tessellations they discover are unique.

- o **nets of a cube** – Some of the pentominoes form the nets of open-top cubes . . . and some don't!

Obviously, it might well be worth going over the above concepts before pupils begin their investigations.

| practical	Pupils can work on their own or in pairs / small groups. They should have sets of pentominoes to work with – and squared paper to record their results. You might like pupils to cover all three investigations or you might prefer to have different pupils working on the three different areas and perhaps reporting their findings back to the others.

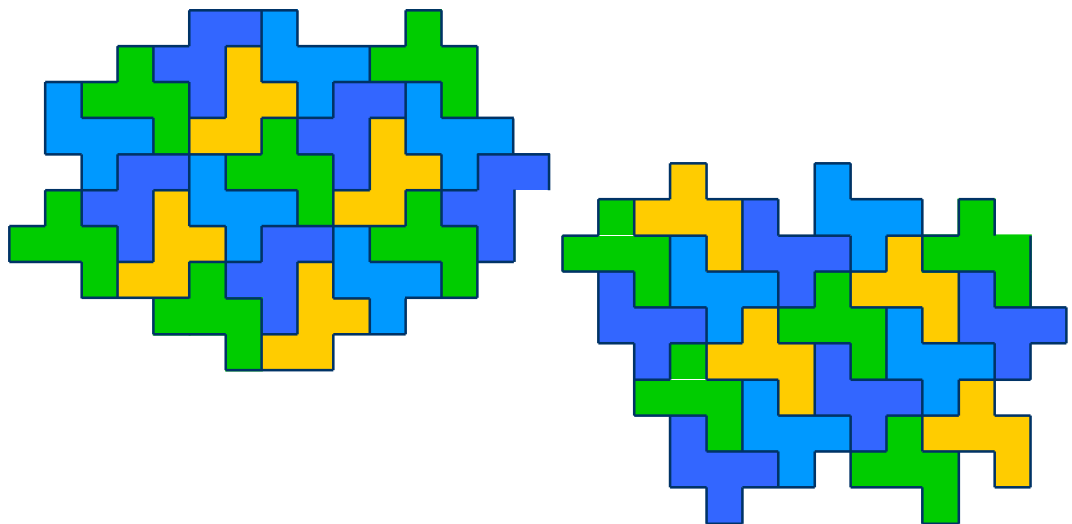| results	Pupils should have little difficulty in getting results. For reference :

bilateral symmetry
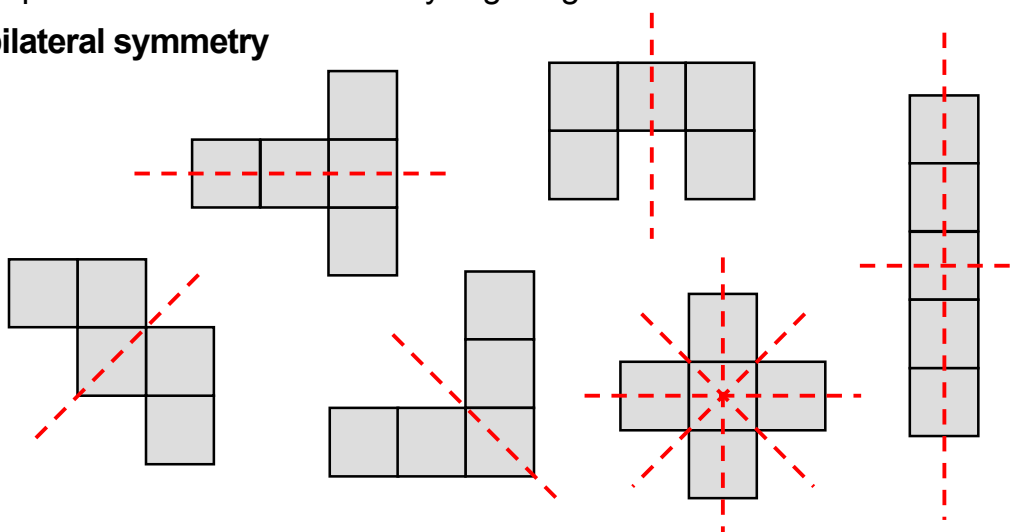
rotational symmetry
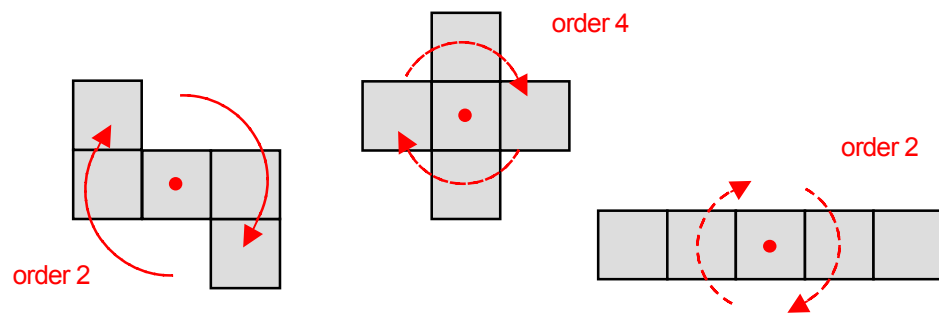
tessellation

Each of the pentominoes can be used for tessellating – and there are numerous alternatives to be found eg

nets of a cube

any of these can be used as the net of a cube: