2-D Transformations

Translation

A shape moves from one place to another without being transformed in any other way (it looks exactly the same, just in a new place).





Reflection

A shape is flipped over an invisible line, becoming a mirror image of itself.



original





Rotation

A shape is moved in a circular motion around a fixed central point. This central point is called the centre of rotation. A circle is 360 degrees and represents a full rotation.

Half a rotation is 180 degrees. A quarter rotation is 90 degrees.







Tessallation

A pattern made up of shapes that fit together without any gaps. Tessallations are created by repeating and transforming shapes.



original



and horizontal reflection

of repeated shape



half rotation (180 degrees)

12 shapes forming a tessallation, each was rotated 30 degrees from the shape beside it

Symmetry

Many of the designs created by transformations are symmetric. A shape or pattern is symmetric when all the parts on either side of an invisible line are identical to one another. The invisible line is called the line of symmetry.



vertical line of symmetry





reflection symmetry