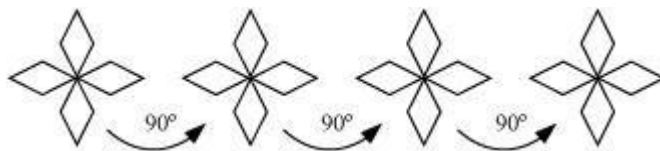


# Symmetry

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- Rotational symmetry
  - Rotation means turning of an object about a fixed point.
  - The fixed point is known as the centre of rotation.
  - The angle of turning during the rotation is called the angle of rotation.
  - If an object looks exactly the same after rotation, it is said to have rotational symmetry.
  - A complete rotation means a rotation of  $360^\circ$ .
  - In a complete rotation, the number of times an object looks exactly the same is known as the order of rotational symmetry.

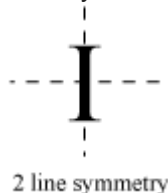
For example: Consider the rotation of the following floral design.

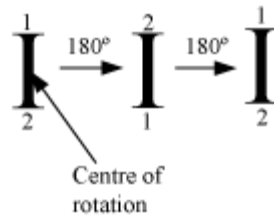


Here, the angle of rotation is  $90^\circ$  and in a full turn, there are precisely four positions when the figure looks exactly the same. Therefore, it has a rotational symmetry of order four.

- - The order of rotational symmetry of a square is 4.
  - The order of rotational symmetry of an equilateral triangle is 3.
- Some figures have both lines of symmetry and rotational symmetry. If a figure has more than one line of symmetry then it has rotational symmetry of order equal to the number of its lines of symmetry.

For example, the letter I has both line symmetry and rotational symmetry.





Rotational symmetry

The letter I has two lines of symmetry and rotational symmetry of order two about its centre.

- When the lines of symmetry do not exist for a figure, the figure can still have rotational symmetry.