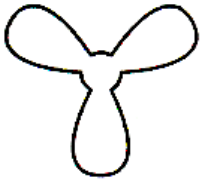
Learning Intentions:

I can identify if a shape has rotational symmetry

I can find the order of rotation and the angle of rotational symmetry

Definitions: A figure that can be mapped onto itself with a turn of less than one complete rotation has **rotational symmetry**. The number of times the figure matches itself in a turn of 360^o is the **order of rotation**. To determine the order of rotation, place a point on the centre and turn the figure. Count the number of times the tracing matches the original figure in a 360^o turn.

Example 1: For each figure, write the order of turn symmetry.

(a) 

(b) 

Definitions: The **angle of rotation symmetry** is the minimum angle needed to turn a shape or design onto itself. It is equal to 360^o divided by the order of rotation.

From the examples above, the angle of rotation would be the following:

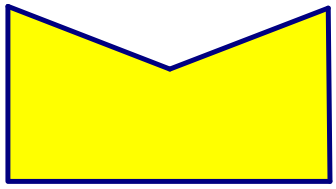
(a) (b)

Definition: Rotational symmetry of order **180 degrees** is also called point symmetry.

A simple test to determine whether a figure has **point symmetry** is to turn it upside-down and see if it looks the same. A figure that has point symmetry is unchanged in appearance by a 180 degree rotation.

Symmetry

A shape that requires a rotation of 360^{o} to return to its original position has order one.
We say it does <u>not</u> have rotational symmetry.



Example 2: Determine the order or rotation and the angle of rotation for each figure below:

(a)

Order of rotation:

Angle of rotation:

(b)

Order of rotation:

Angle of rotation:

<u>Example 3:</u> For the playing card shown at the right:

(a) Determine the order of rotation for the card:

(b) Why do you think the card is designed like this?

(c) Does this playing card have line symmetry? Explain.