

Rotation



This icon indicates the slide contains activities created in Flash. These activities are not editable.

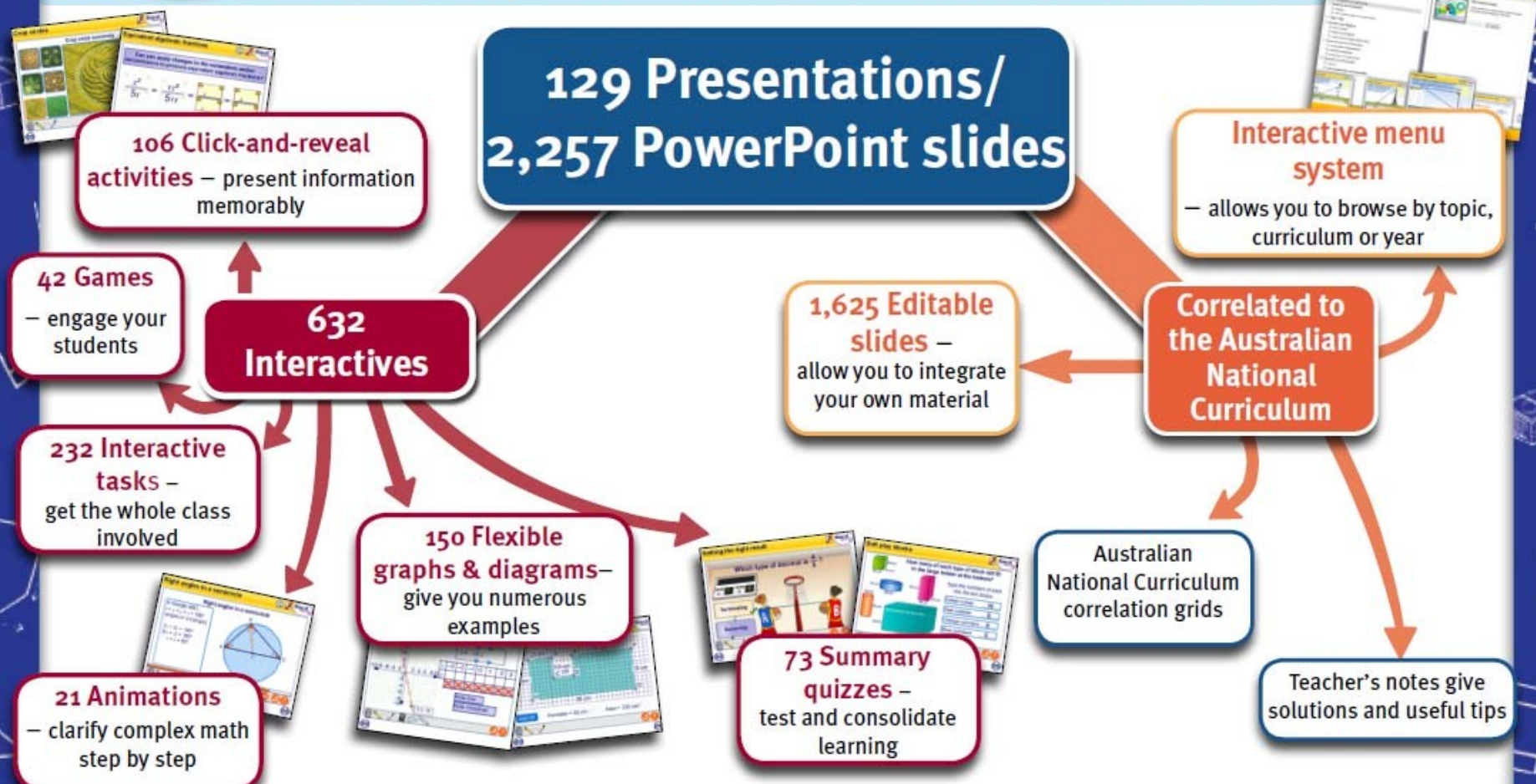


This icon indicates teacher's notes in the Notes field.

For more detailed instructions, see the *Getting Started* presentation.



What's in Maths for Australia?



This is an excerpt from the "Rotation" presentation in Boardworks Maths for

Rotations



Describing a rotation

A **rotation** occurs when an object is turned around a fixed point.

Descriptions of rotations involve three different pieces of information:

- The **angle** of the rotation.

For example,

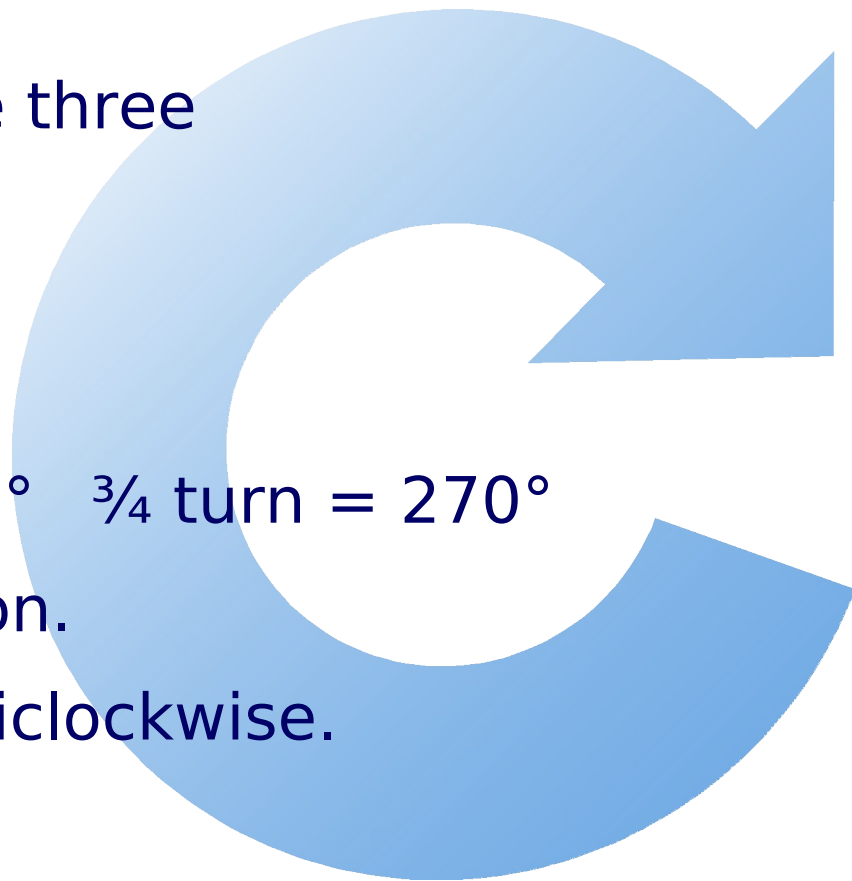
$\frac{1}{4}$ turn = 90° $\frac{1}{2}$ turn = 180° $\frac{3}{4}$ turn = 270°

- The **direction** of the rotation.

For example, clockwise or anticlockwise.

- The **centre** of rotation.

This is the fixed point about which an object moves.



Rotating images

Rotate this image 270° clockwise.





Rotating shapes

A rotation occurs when an object is turned around a fixed point.

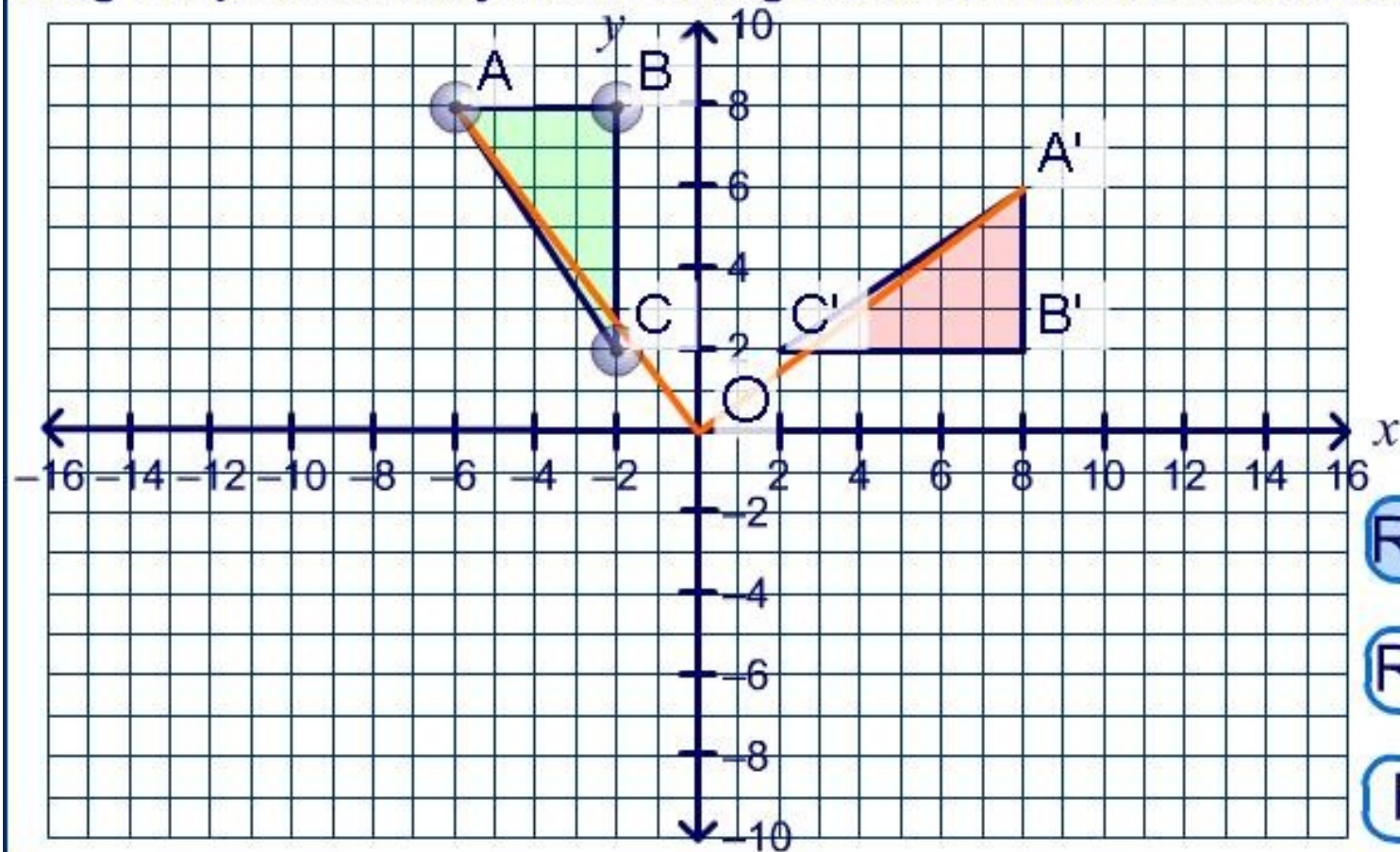
Press **play** to see how it happens.



Rotations on a coordinate grid



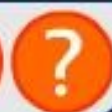
Drag the points to adjust the triangle and see how it is rotated by each angle.



Rotate 270°

Rotate 180°

Rotate 90°



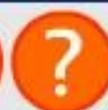
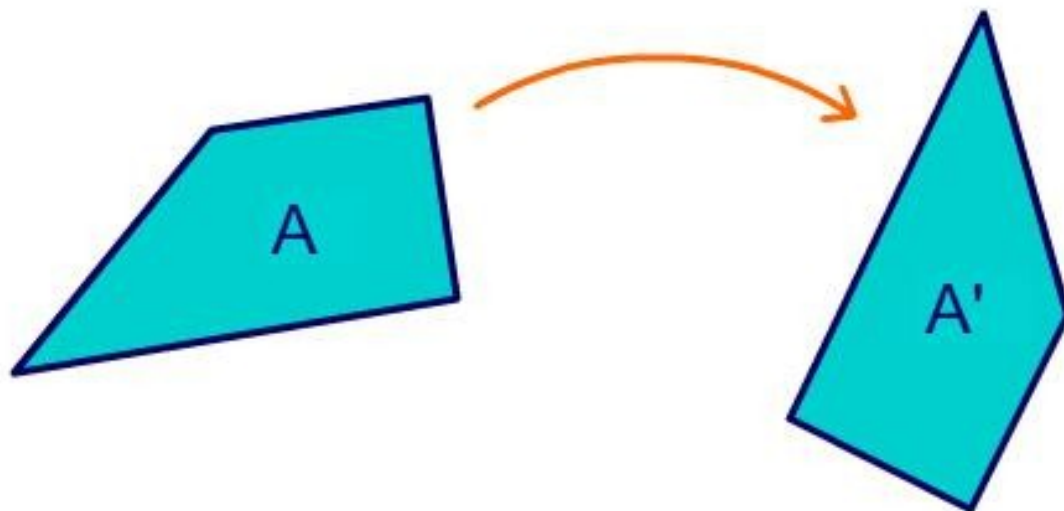
Finding the centre and angle of rotation



Centre of rotation and angle of rotation

Shape A is rotated about a centre onto its image A'.

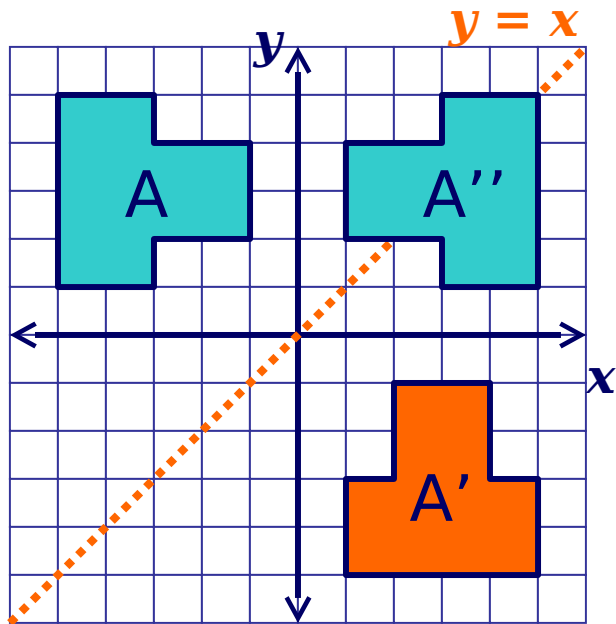
Press **play** to see how to find the centre of rotation and the angle of rotation.



Combining transformations

When one transformation is followed by another, the resulting change can often be described by a single transformation.

Shape A is reflected in the line $y = x$ to give its image A' .



A' is rotated through 90° about the origin to give the image

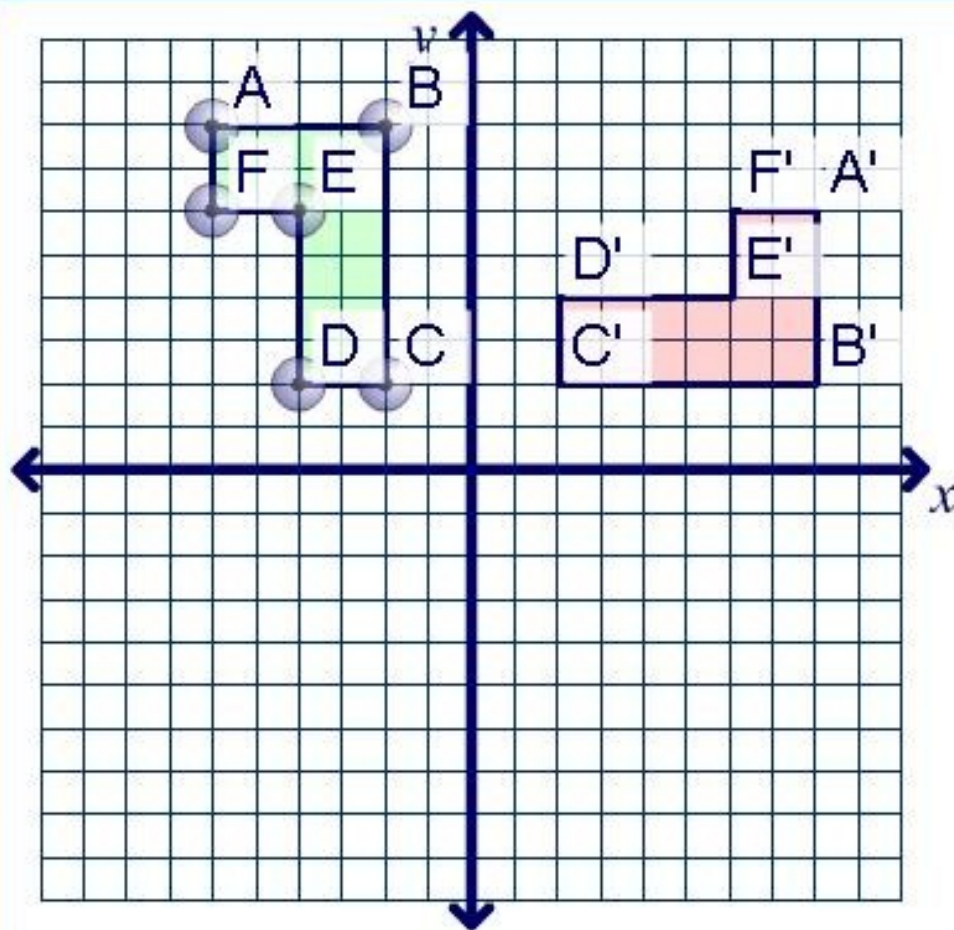
What single transformation will map shape A onto A'' ?

Map shape A onto shape A''

by a reflection in the y -axis.



Combining transformations



A reflect in the x-axis

B reflect in the y-axis

C reflect in $y = x$

D reflect in $x = 1$

E rotate 90° about (0, 3)

F rotate 90° about (0, 0)

G translate by $\begin{bmatrix} 2 \\ -1 \end{bmatrix}$

H translate by $\begin{bmatrix} -3 \\ 2 \end{bmatrix}$

I enlargement -1 about (0, 0)

B followed by C 

