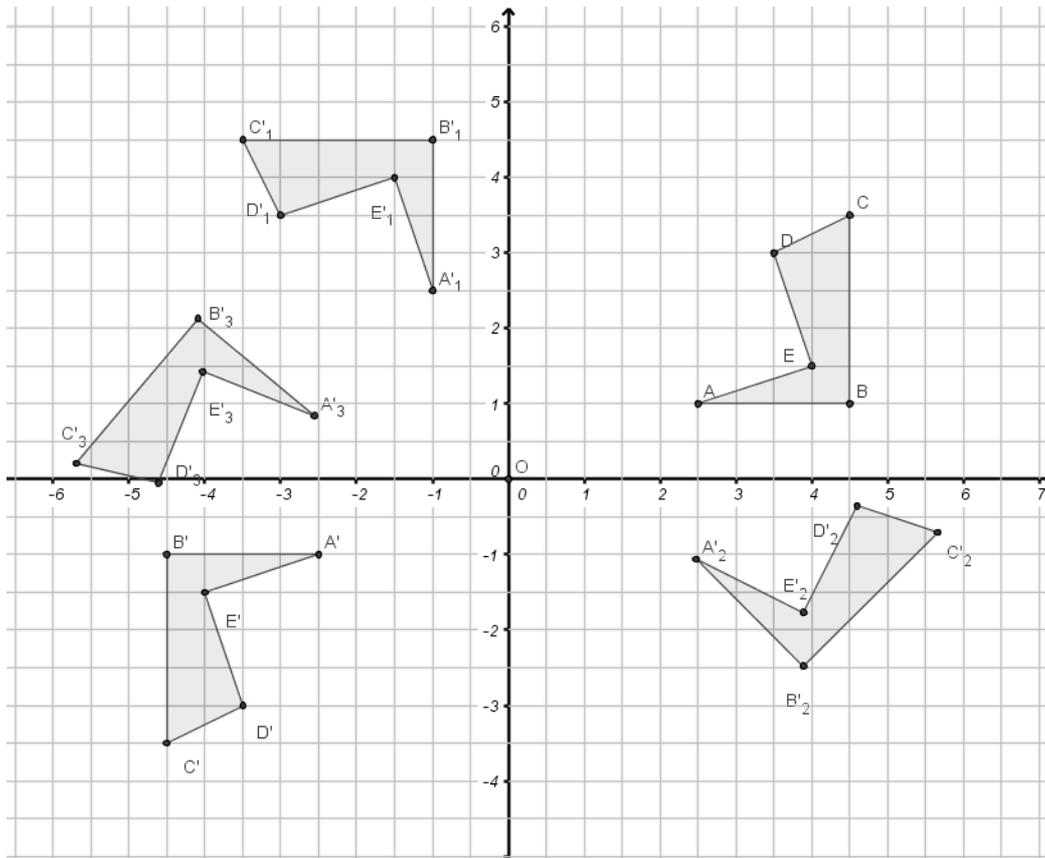


WORKSHEET: ROTATION

Look at the picture below:

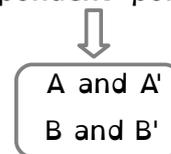


Calculate the distance of every point from the origin. What can you observe?

Use a goniometer and measure the angles between the correspondent point of two figures. What can you observe?

The angles are -----

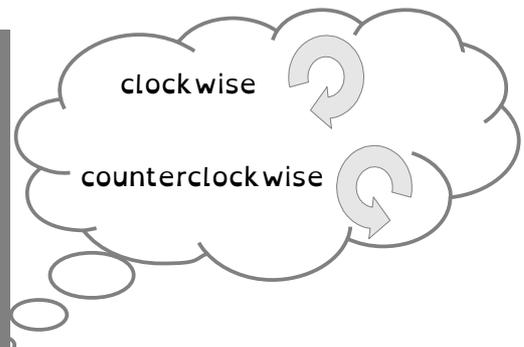
The figures are -----



The process you observe is named ROTATION

A rotation is the movement of a geometric figure about a fixed point. The amount of the rotation is described in terms of degrees ($^{\circ}$), clockwise or counterclockwise. You need to define a center of rotation.

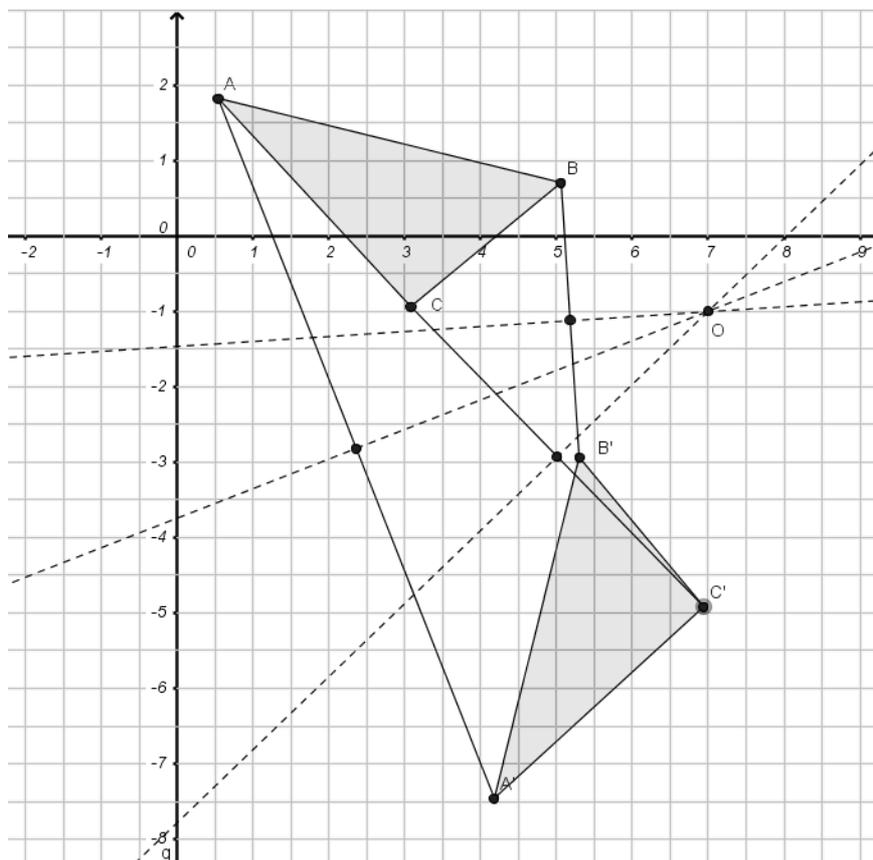
The initial object is called the pre-image and the object after the rotation is called the image.



You can write “rotation through 180° clockwise about the point $A(4;1)$ ”.

Where can you find rotation in nature or in real life?

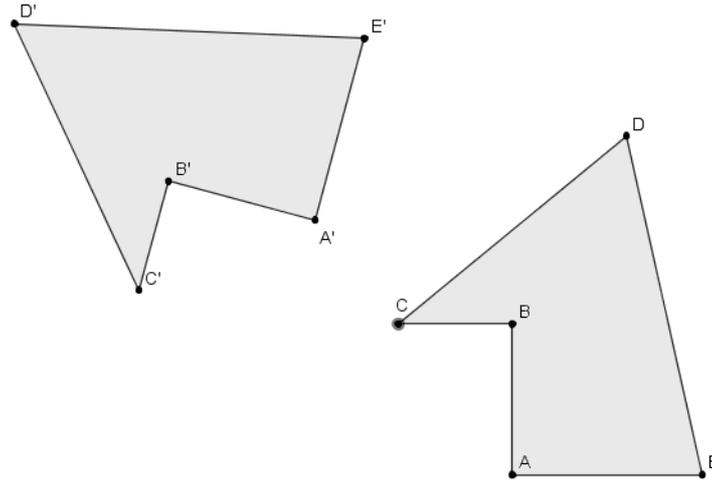
Example: determine the center of the rotation O



1. Join the point A with A' and draw the perpendicular line which passes through (“attraverso”) the middle point.
2. Repeat the process for B, B' and C, C' .
3. Observe where the lines intersect. This is the center of rotation.

EXERCISES:

1. Draw the figure which has coordinates $A(1;2)$, $B(2;5)$, $C(6;5)$ e $D(3;4)$. Rotate this through 90° clockwise about the origin.
2. Draw the figure which has coordinates $A(2;1)$, $B(5;1)$, $C(5;3)$ e $D(3;3)$. Rotate this through 180° counterclockwise about the point $(1;2)$.
3. The diagram below shows a shape which is rotated to give $A'B'C'D'$. Determine the center of the rotation and the degrees.



4. Construct a map to explain the rotation to your classmates.