J1 *Reflections, Rotations and Enlargements* Activities

Activities

J1.1 Reflections
J1.2 Finding the Centre of Rotation

Notes and Solutions (1 page)

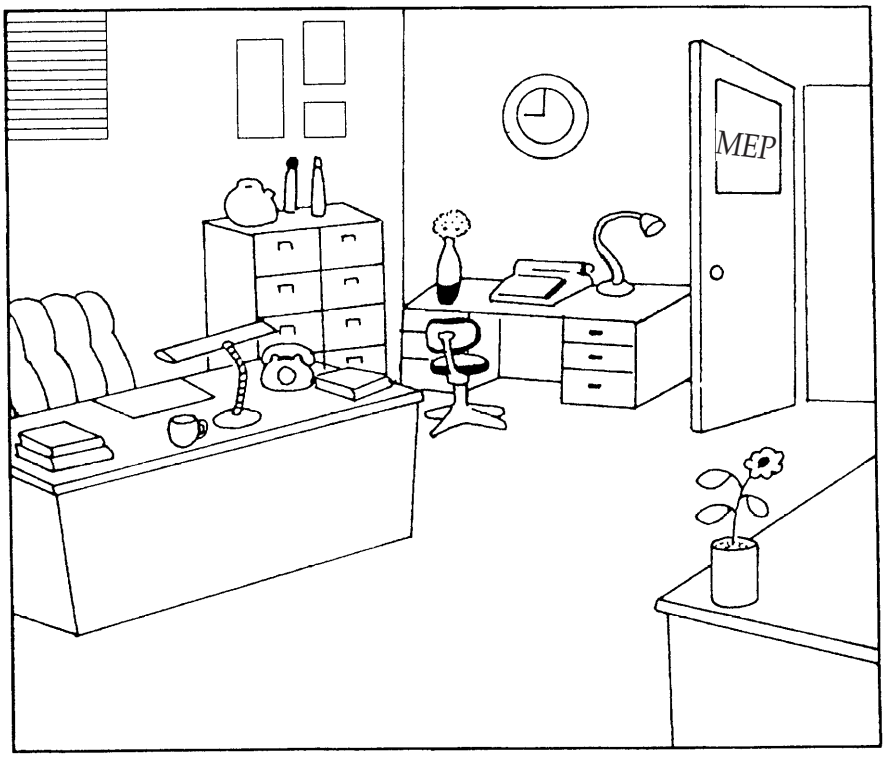
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ACTIVITY J1.1 *Reflections*

Picture 2 should be the reflection of *Picture 1* in the line AB. Circle the errors.

Picture 1

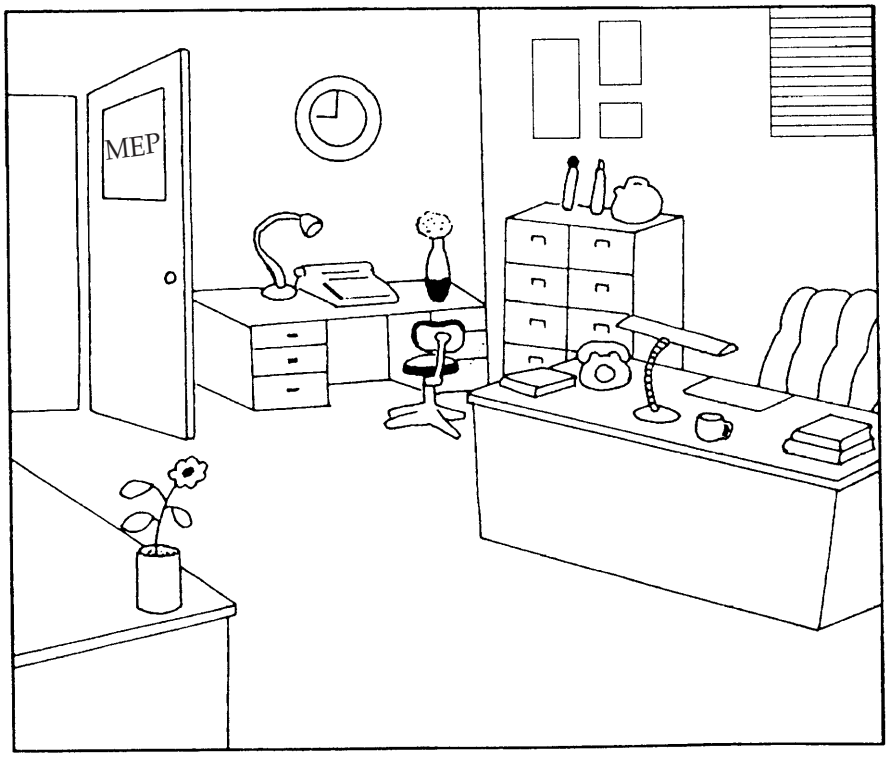
A



B

Picture 2

A



B

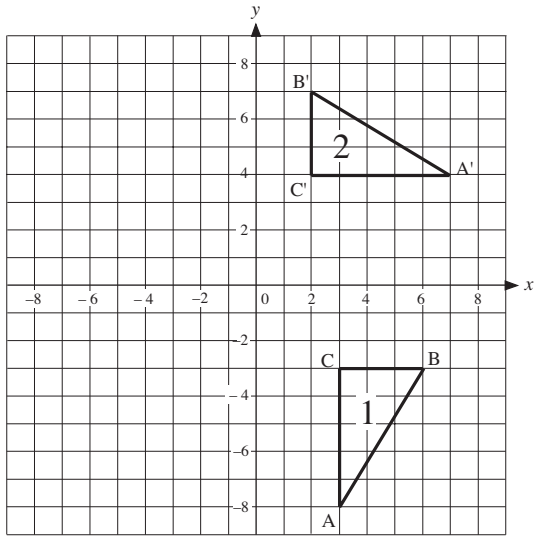
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ACTIVITY J1.2 *Finding the Centre of Rotation*

Problem

Shape 1 has been transformed to *Shape 2* by a rotation.

Where is the centre of rotation?



Solution

The centre of rotation can often be seen by inspection (i.e. trial and error) but this is not satisfying from a mathematical viewpoint.

Here is a procedure for determining the centre of rotation, which we will put into practice and then see why it works.

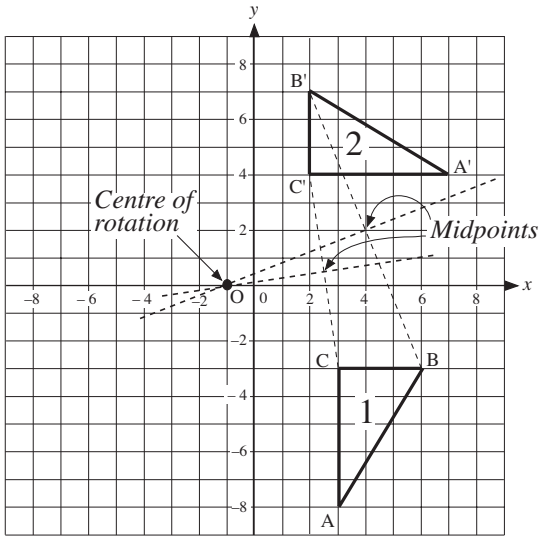
Method

1. Join two (or more) pairs of corresponding points together,

   e.g. B to B' and C to C'.

2. Construct the perpendicular bisector for any pair of points and their image. For example, AA', BB' or CC'.

3. The point where the perpendicular bisectors intersect is the centre of rotation (–1, 0).



Why does it work?

CC' is a chord of the circle, radius OC (= OC'), so a perpendicular bisector of CC' will pass through the centre of this circle, O.

Similarly for BB' – a different circle but the same centre, O.

Hence the intersection of the perpendicular bisectors gives the centre of rotation.

Extension

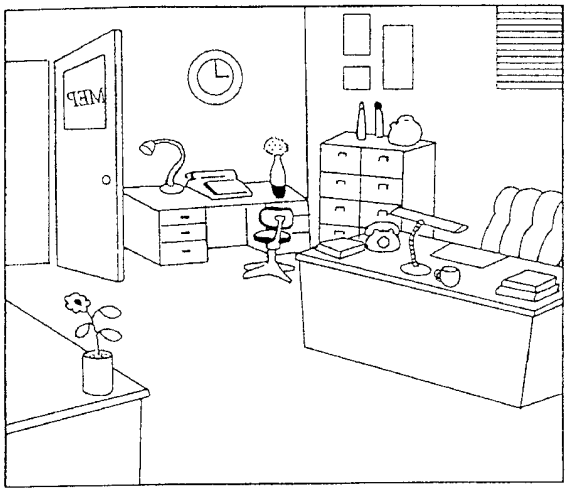
Draw two identical shapes, A and B, so that B is a 90° rotation from A and also translated to a new position. Use the method above to find the centre of rotation.

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ACTIVITY J1.1 *Notes and Solutions*

Notes and solutions given only where appropriate.

J1.1 Correct reflection is:



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