

Co-ordinates & Rotations

2

The objective of this lesson is:

- To work out the centre of rotation and the angle of rotation of a shape from its original position to its new position.
- To give the coordinates of a shape after a rotation without drawing the rotation.

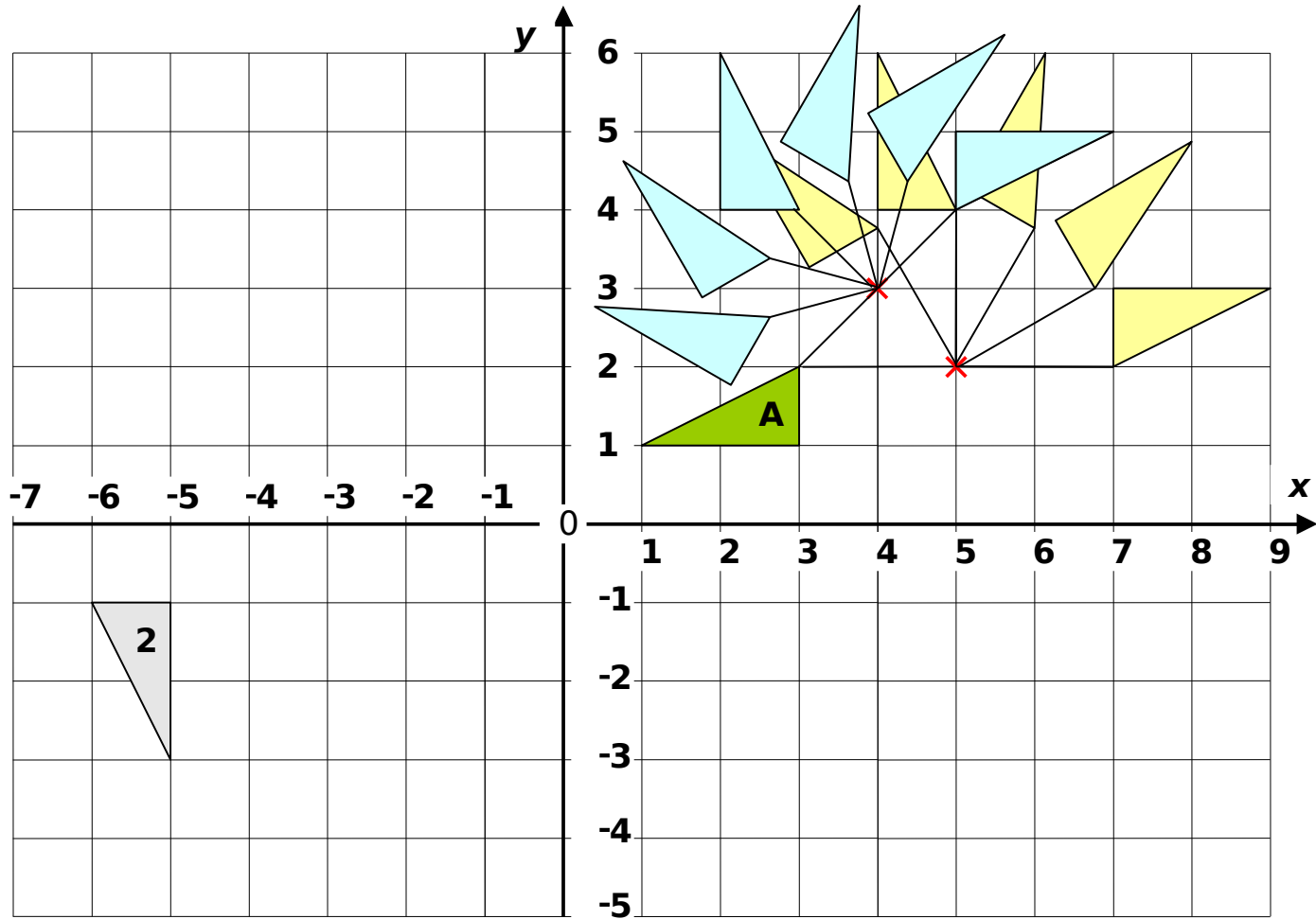
Rotation

Guess
where you
think the
centre of
rotation is.

The angle of
rotation
must be

Rotate A to
see where it
ends up.

The shape A is rotated to obtain 1. Work out the
Change the position of the centre of rotation and
centre of rotation and the angle of rotation in order
repeat until you obtain the correct centre.
to get from A to 1

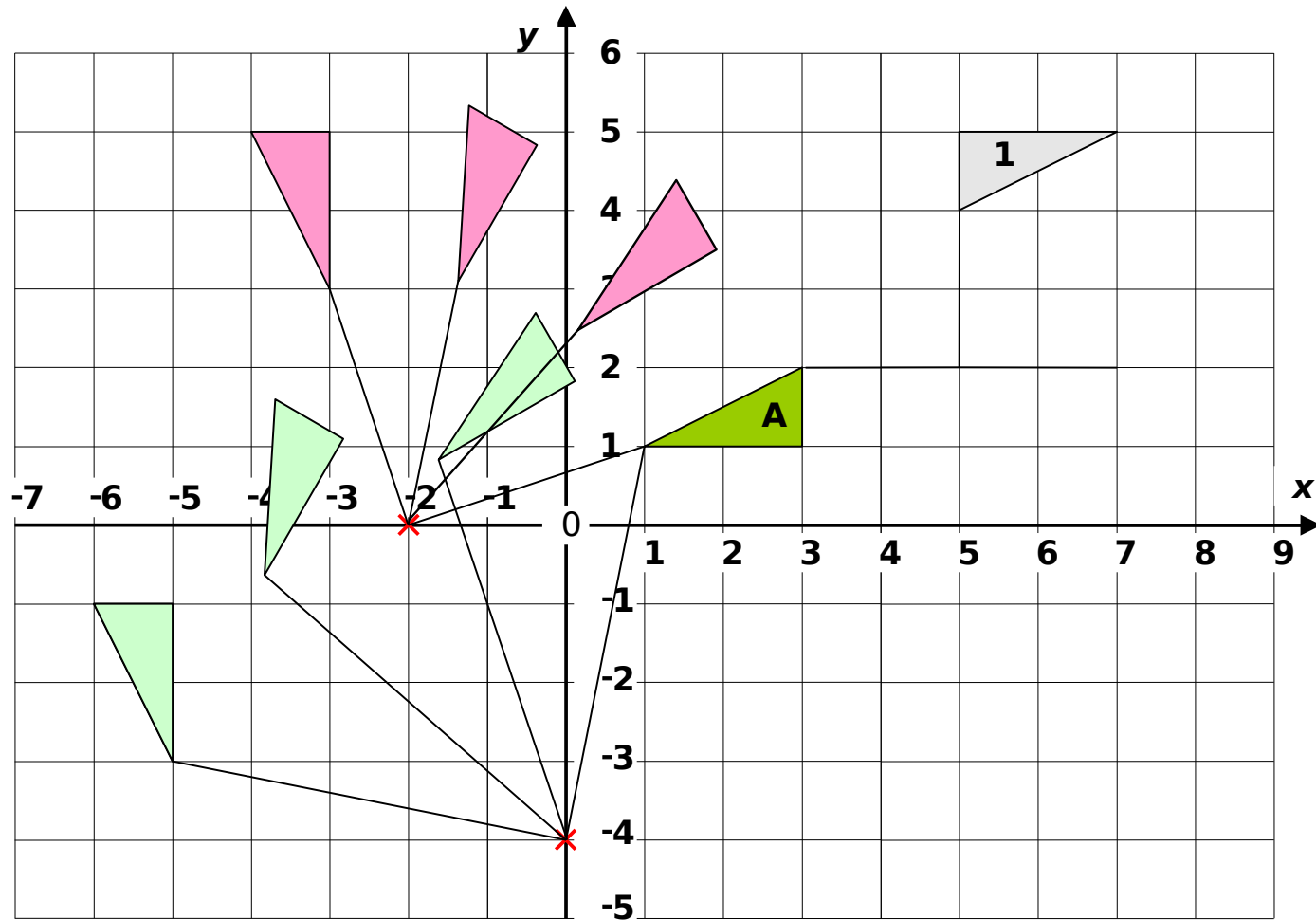


Rotation

Guess
where you
think the
centre of
rotation is.

The angle of
rotation
must be
 90°
anticlockwise

Rotate A to
see where it
ends up.

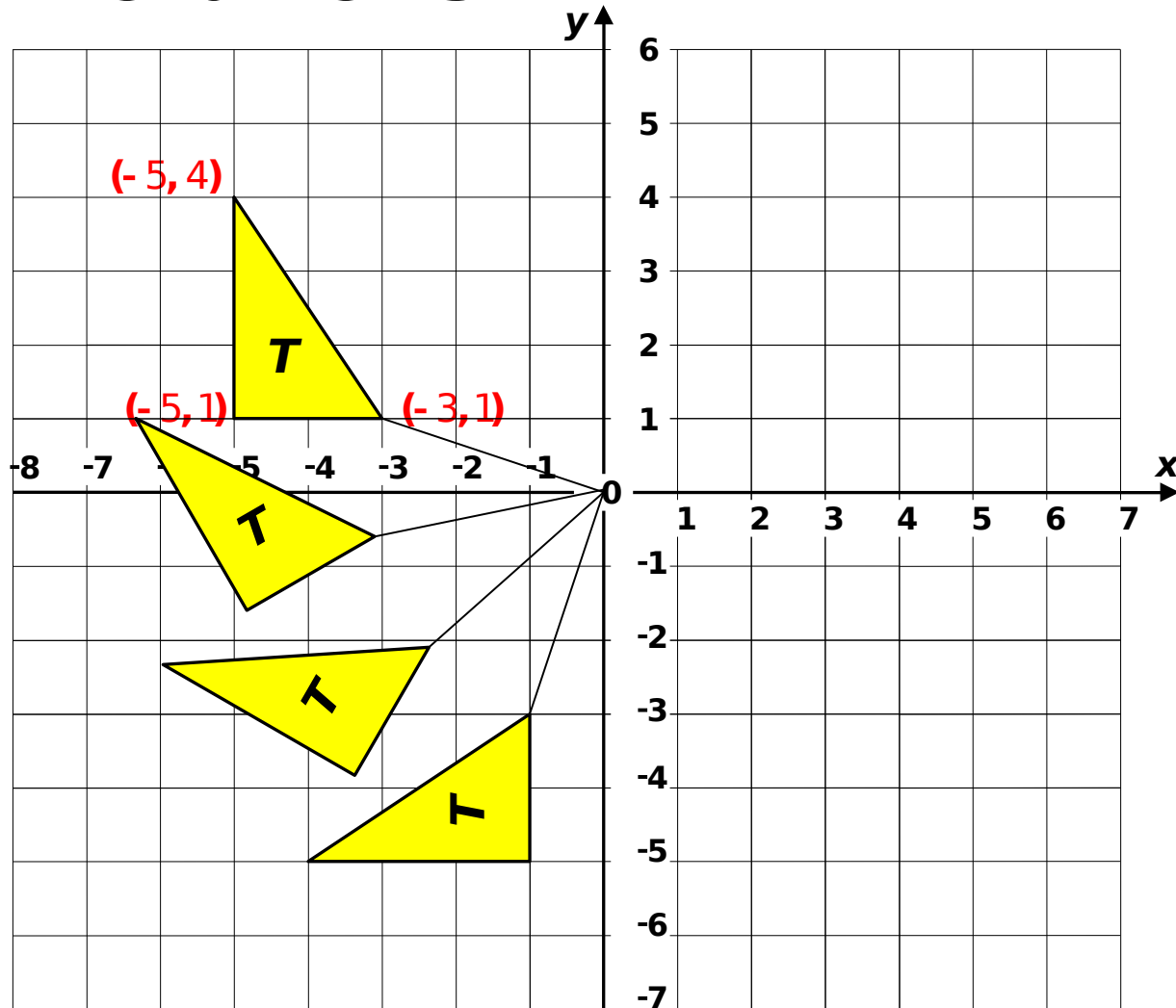


The shape A is rotated to the center 2. of rotation and
represented by you and the angle of rotation in order
to get from A to 2

Rotations

Rotate the
shape T
anticlockwise
90°
Centre $(0, 0)$

What are the
new
coordinates of
the triangle?



How can you work them out without drawing
a grid or the shape?

Rotations

How to work out the coordinates without drawing a grid or the shape?

Rotate the shape 90° anticlockwise (0, 0)
centre

$$T \quad (-5, 4) \rightarrow (-4, -5)$$

$$(-5, 1) \rightarrow (-1, -5)$$

$$(-3, 1) \rightarrow (-1, -3)$$

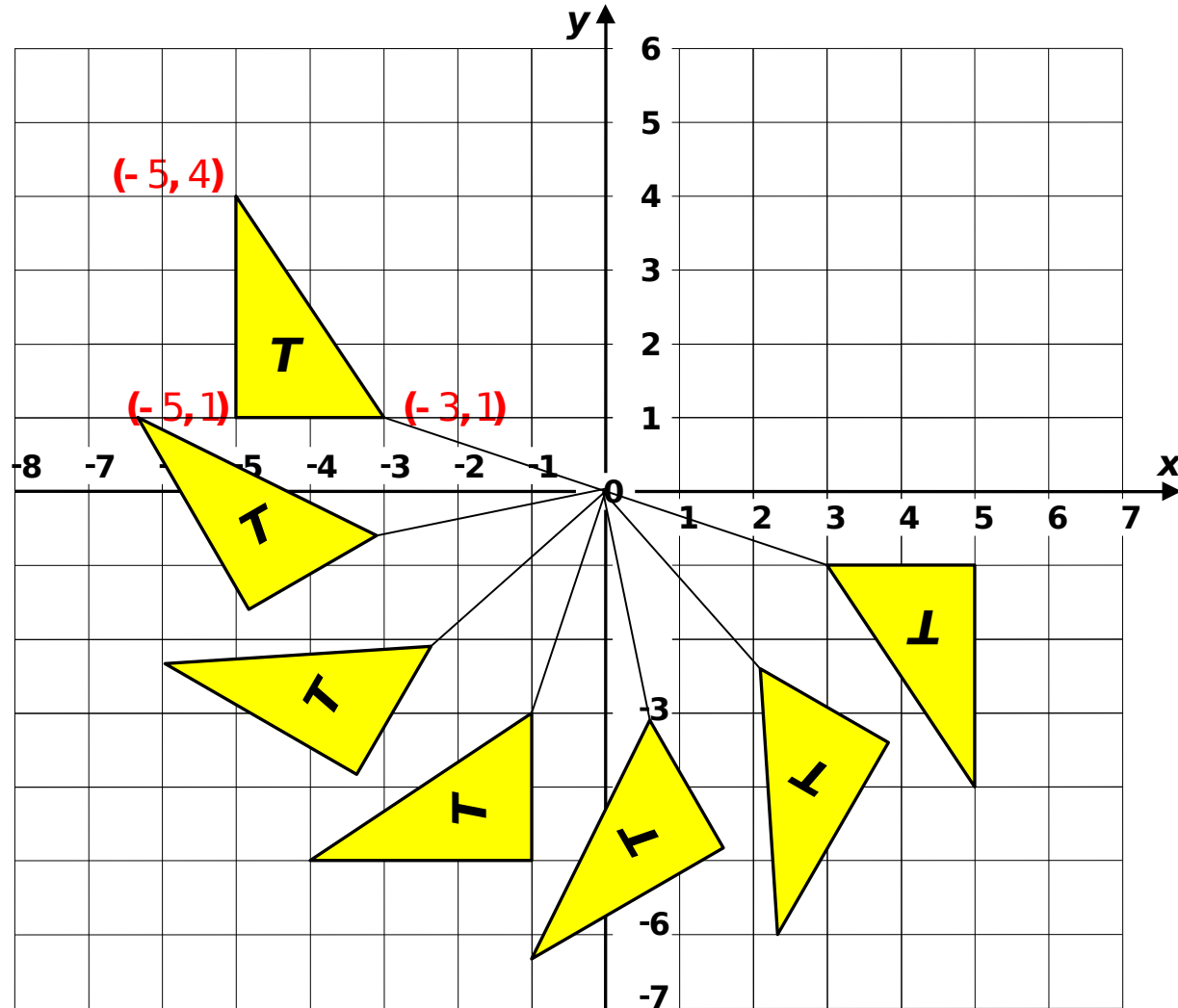
Explain in your exercise book how to get from the left hand coordinate to the right hand coordinate.

Change the sign of the y coordinate and then swap the coordinates around.

Rotations

Rotate the
shape T
anticlockwise
by 90°
about centre $(0, 0)$

What are the
new
coordinates of
the triangle?



How can you work them out without drawing
a grid or the shape?

Rotations

How to work out the coordinates without drawing a grid or the shape?

Rotate the shape 180° anticlockwise (0, 0)
centre

$$T \quad (-5, 4) \rightarrow (5, -4)$$

$$(-5, 1) \rightarrow (5, -1)$$

$$(-3, 1) \rightarrow (3, -1)$$

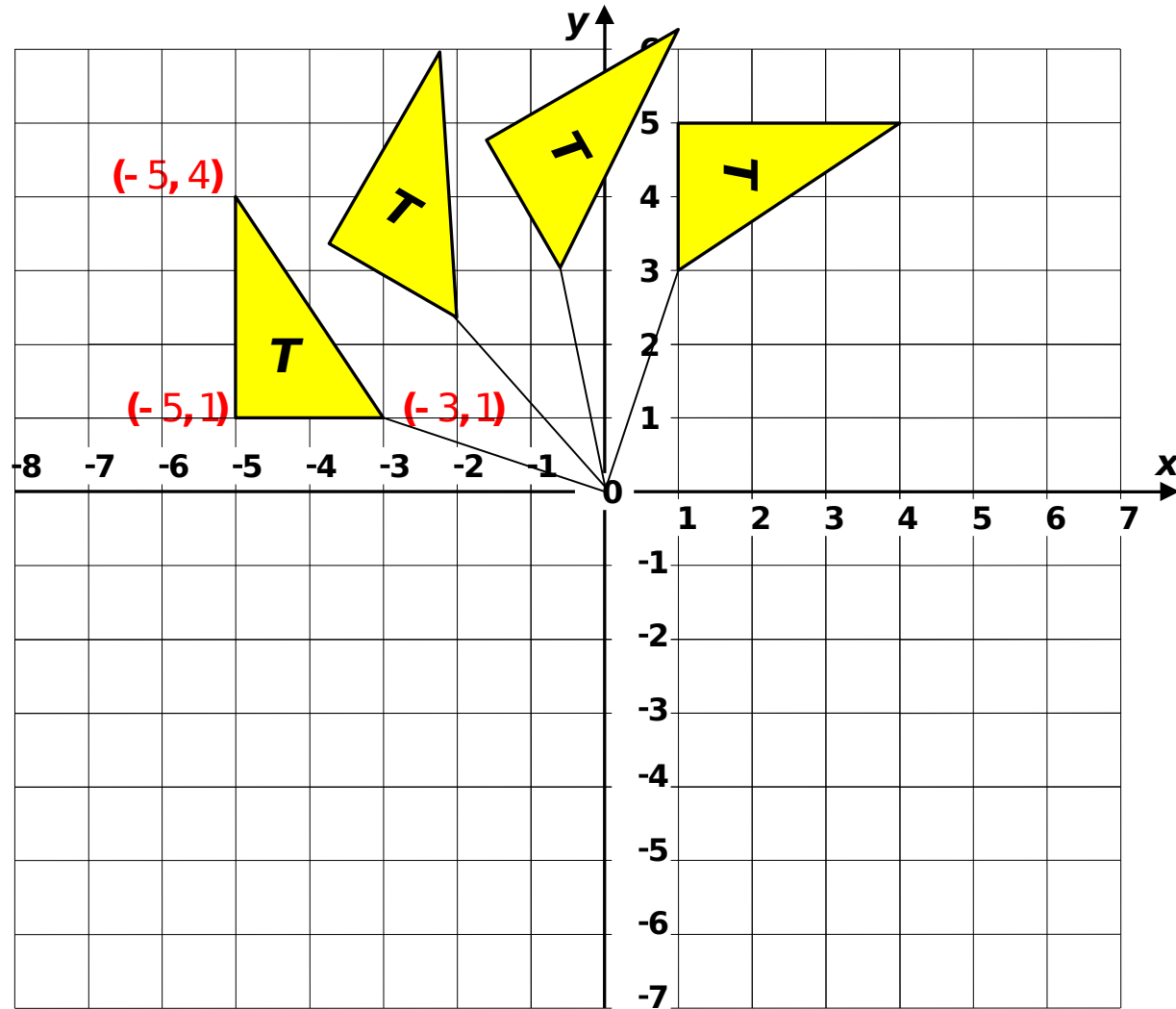
Explain in your exercise book how to get from the left hand coordinate to the right hand coordinate.

Change the sign of the x coordinate and
change the sign of the y coordinate.

Rotations

Rotate the
shape T
90°
clockwise
centre $(0, 0)$

What are the
new
coordinates of
the triangle?



How can you work them out without drawing
a grid or the shape?

Rotations

How to work out the coordinates without drawing a grid or the shape?

Rotate the shape 90° clockwise centre (0, 0)

T

$$(-5, 4) \rightarrow (4, 5)$$

$$(-5, 1) \rightarrow (1, 5)$$

$$(-3, 1) \rightarrow (1, 3)$$

Explain in your exercise book how to get from the left hand coordinate to the right hand coordinate.

Just change the sign of the x coordinate and then swap the coordinates around.

Plenary

- You should be able to look at two shapes and work out the centre of rotation and the angle of rotation required to get from one to the other.
- You should be able to give the coordinates of a given shape after a rotation of 90° or 180° about the origin without drawing the rotation.