

Transformations

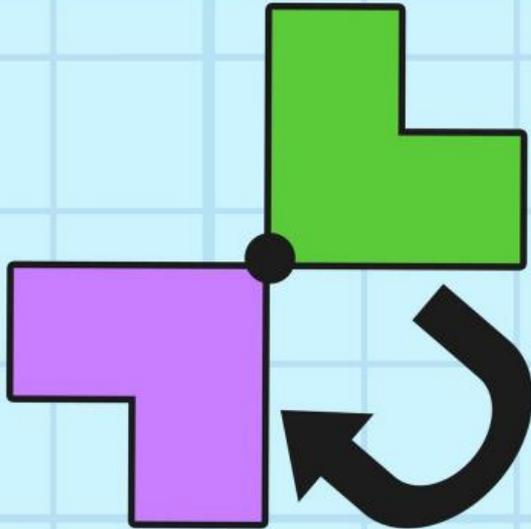
Rotations

Learning objective: To rotate objects around a point

Click on the link below to begin this lesson

Many objects in everyday living turn around or rotate (bike wheel, windmill, clock hand, lid on jar, fan, steering wheel , etc.).

Rotation means turning through an angle about a fixed point. The fixed point needn't be at the centre of the object.



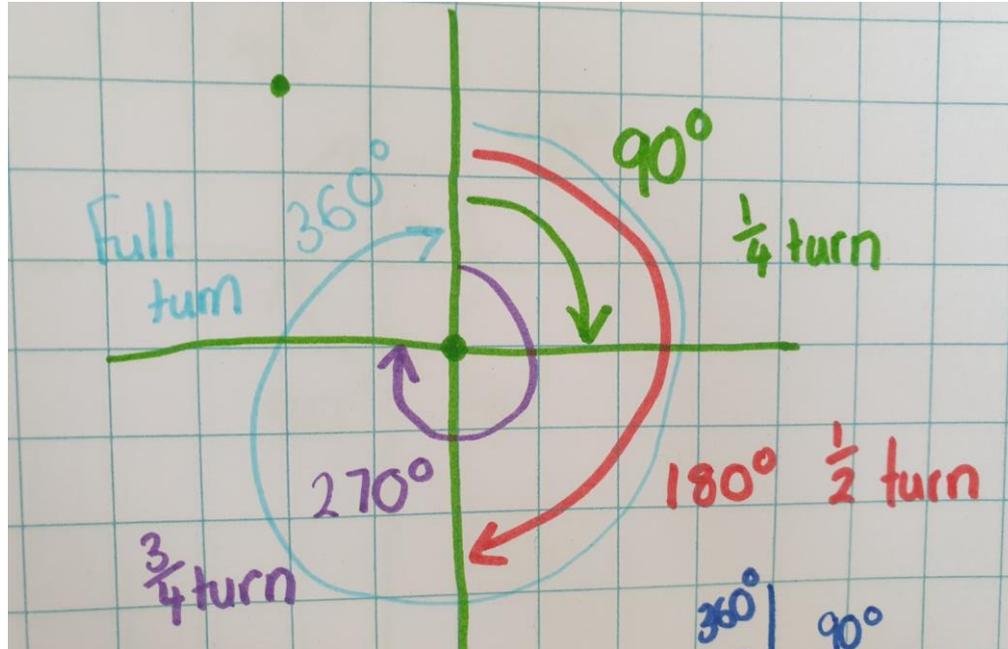
Rotation - Turn

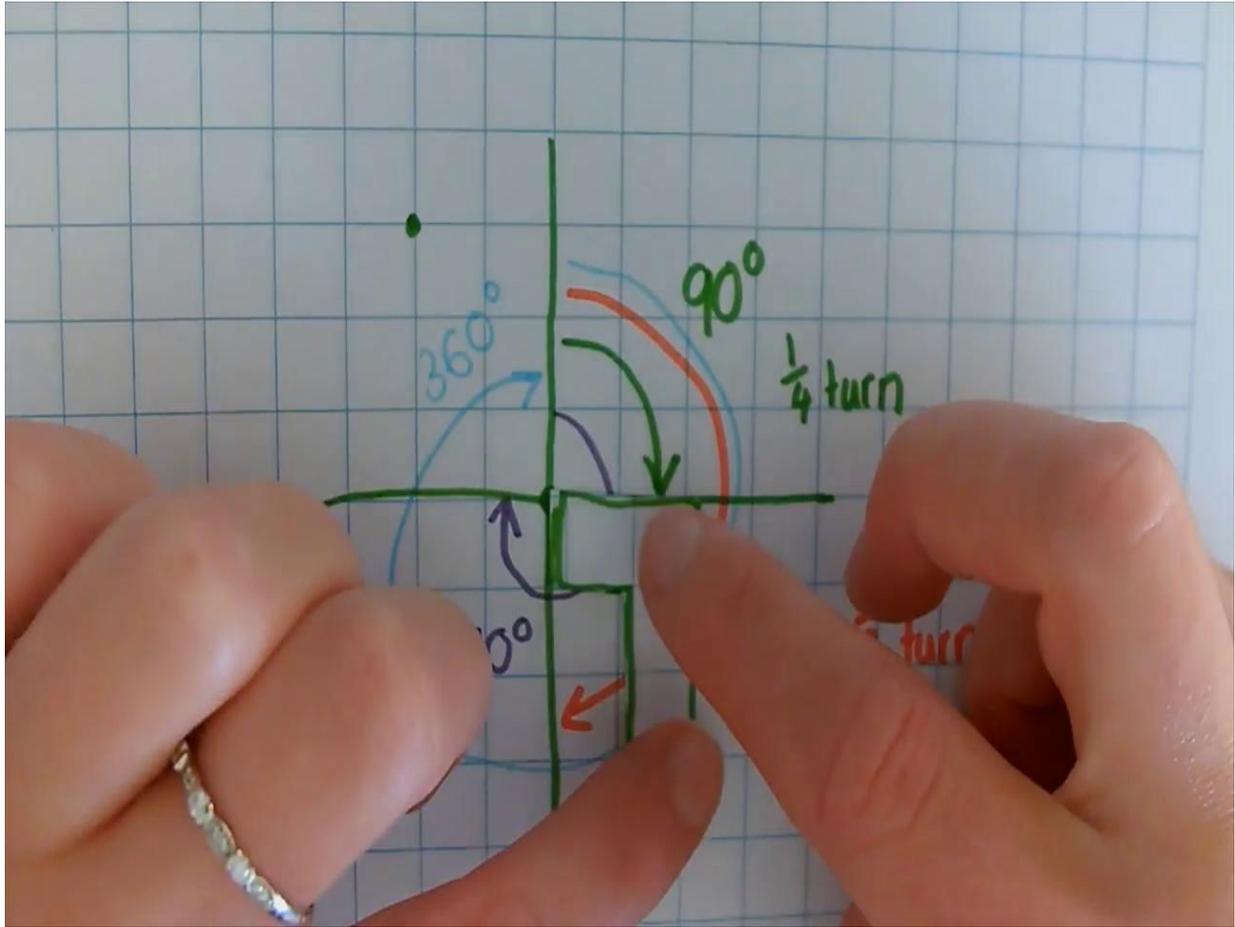
Moves a figure
around a point.

What is rotation of shapes?

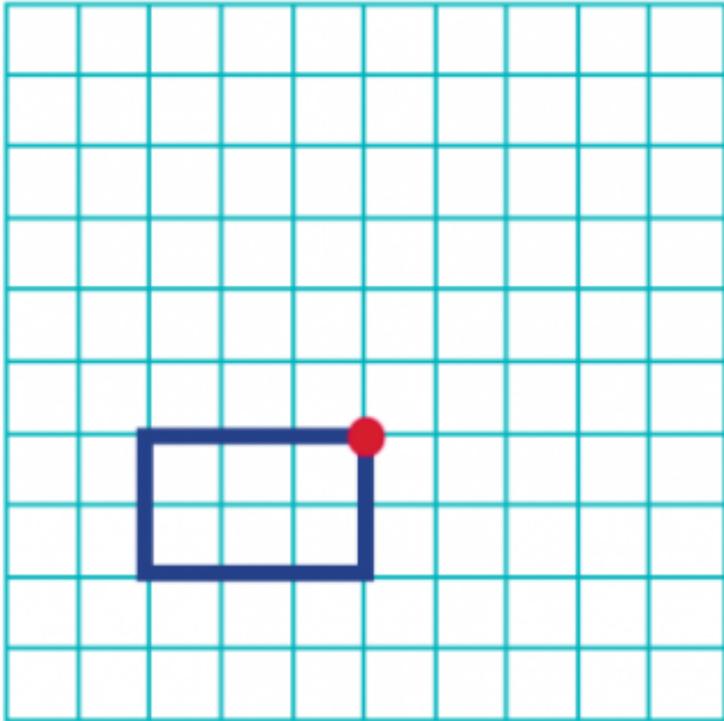
Rotating shapes means moving them around a fixed point (clockwise or anticlockwise, and by a certain number of degrees). The shape itself stays exactly the same, but its position in the space will change.

You need to have a good knowledge of **angles** before you can carry out tasks involving rotating shapes. You need to know off-by-heart that 90° is a quarter turn, 180° degrees a half turn, 270° a three-quarter turn and 360° a full turn.

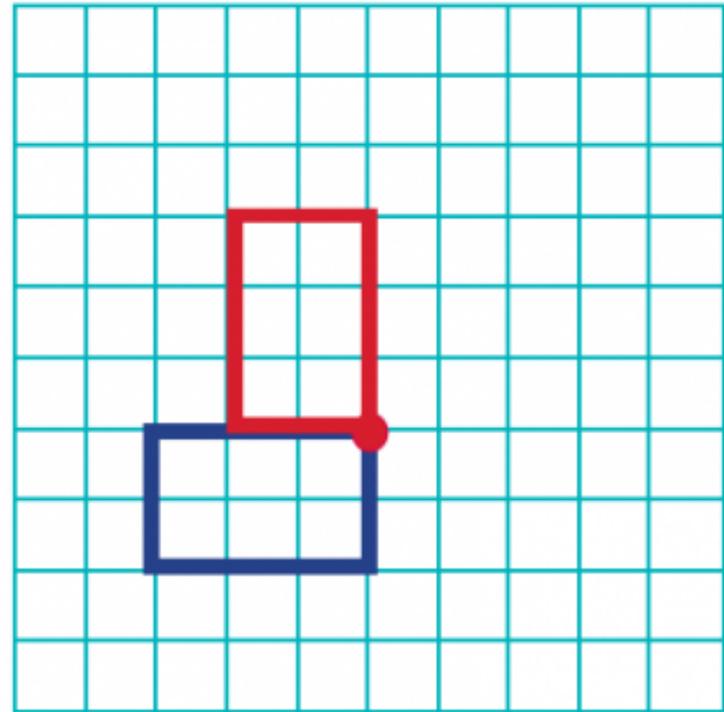




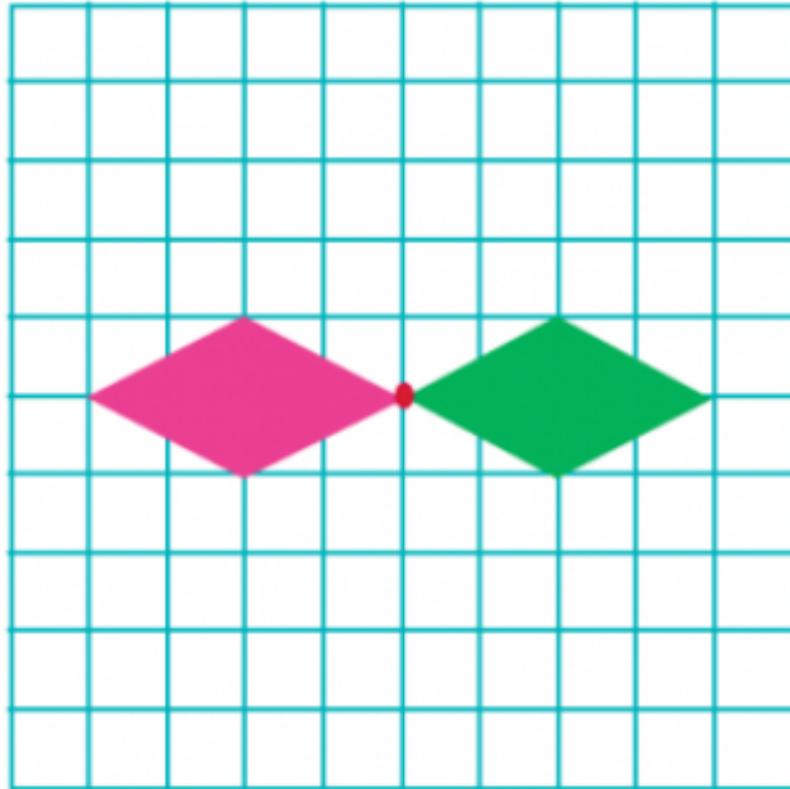
You may be given a shape like the following one in blue and asked to rotate it 90° clockwise about the vertex marked with the red dot:

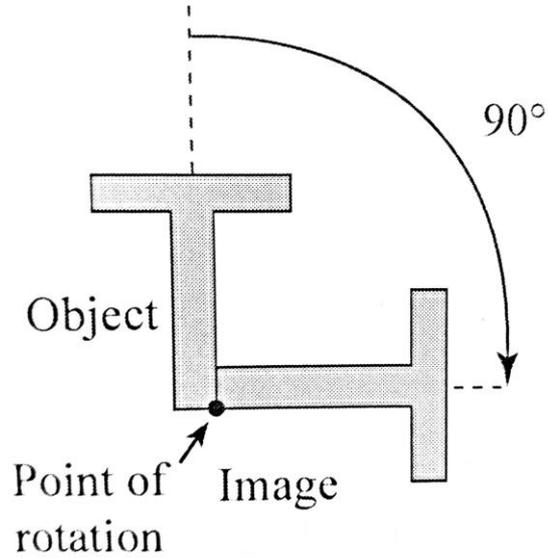


you should end up with a new shape (in red; the original shape is still shown in blue) like this:



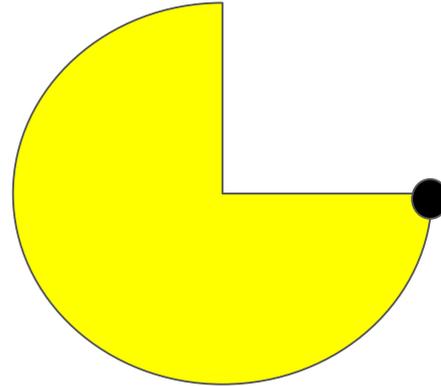
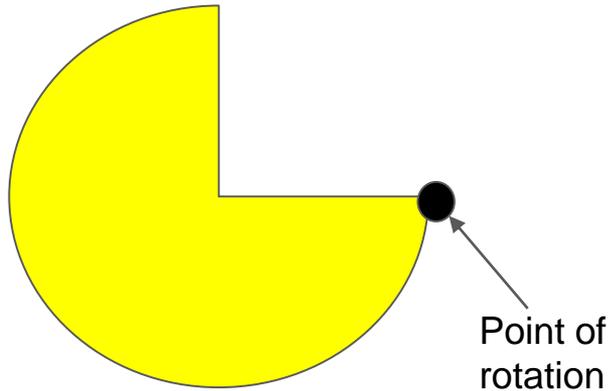
Alternatively, you may be given a shape and asked to rotate it about its centre. In this case, someone started with the pink shape and rotated it 180° anticlockwise about the vertex marked with the red cross, resulting in the green shape:

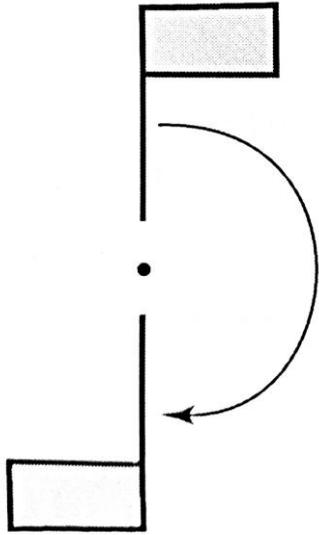




The letter T has been rotated in a clockwise direction through one right angle or 90°

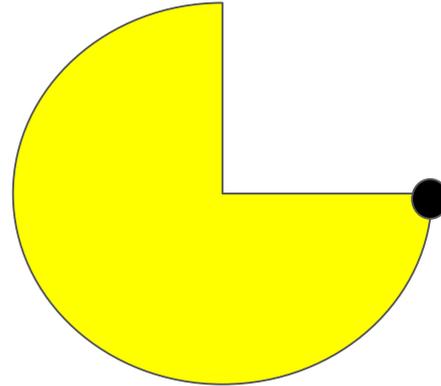
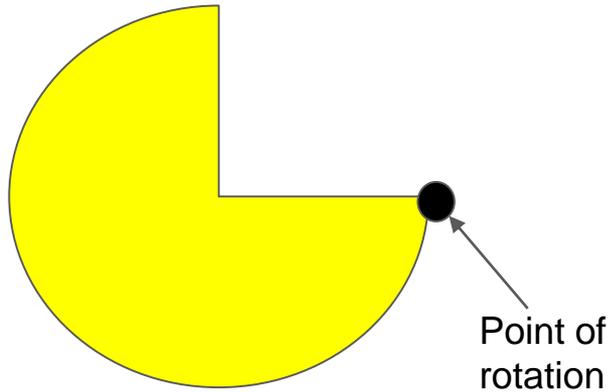
If you rotate this packman in a clockwise direction through one right angle or 90° using the point of rotation. Remember 90° is a quarter turn. Use the second packman to show where the packman will end up.



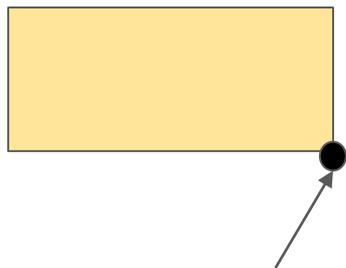


The flag has been rotated about
the point 180°

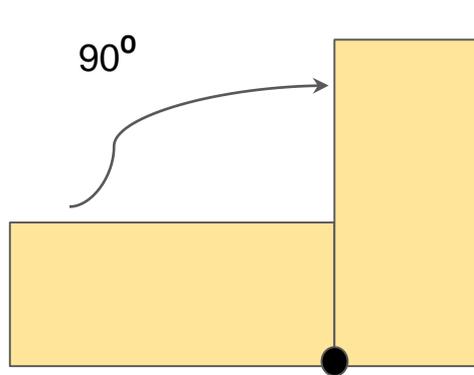
If you rotate this packman in a clockwise direction 180° using the point of rotation. Remember 180° is a half turn. Use the second packman to show where the packman will end up.



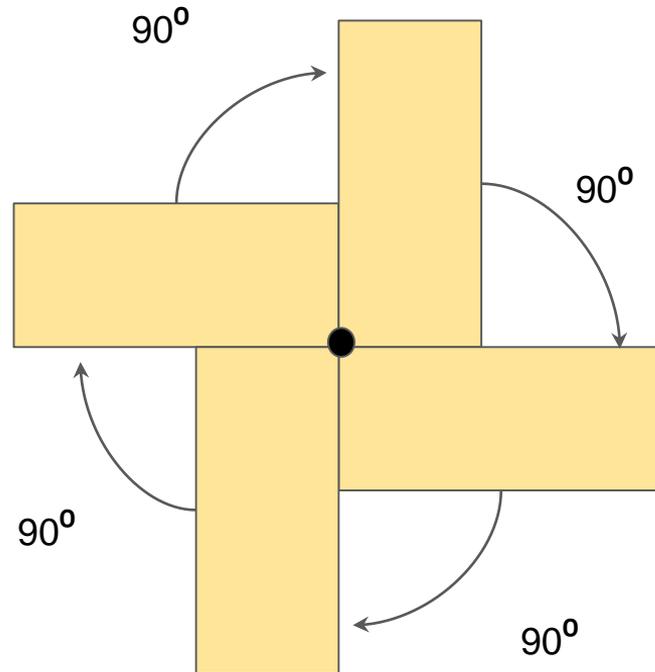
Example Question: Rotate the rectangle through a right angle about a fixed point shown. Repeat this step 2 more times, showing all the positions of the rectangle.



Fixed point



After rotation
of one right
angle

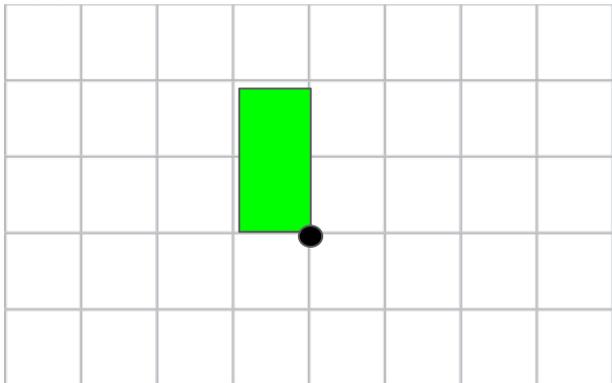


After rotation
of three right
angles

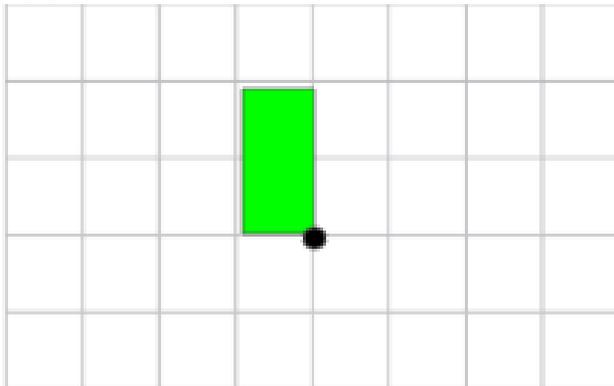
Enabler

Please complete all work in your maths book as you will need grid paper.

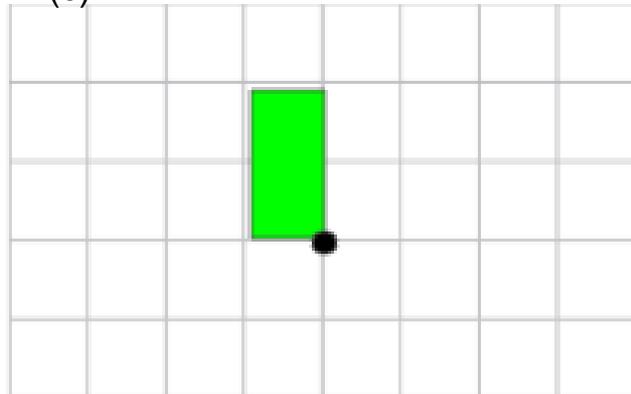
(a)



(a)



(c)



Rotate 90° $\frac{1}{4}$ turn

Rotate 180° $\frac{1}{2}$ turn

Rotate 270° $\frac{3}{4}$ turn

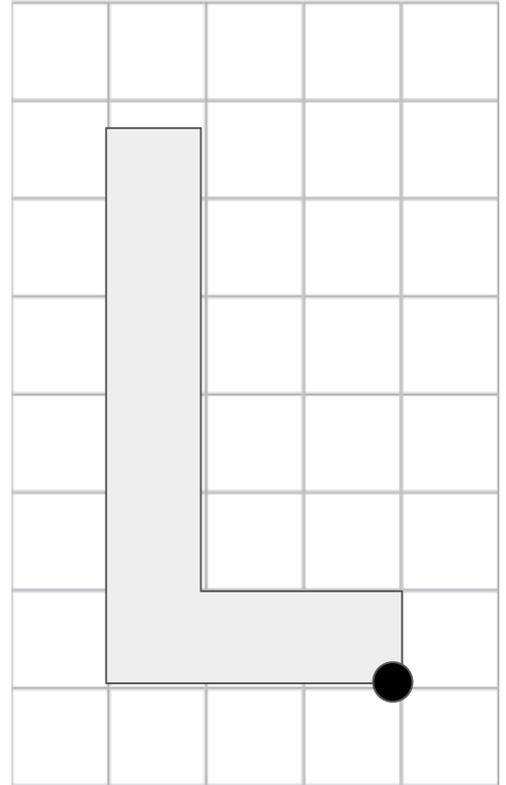
Core

Please complete all work in your maths book as you will need grid paper.

The figure L shown on the right is rotated clockwise about the point shown point of rotation ●.

Draw it's final position after:

- (a) Rotation of 90°
- (a) Rotation of 180°
- (a) Rotation of 270°

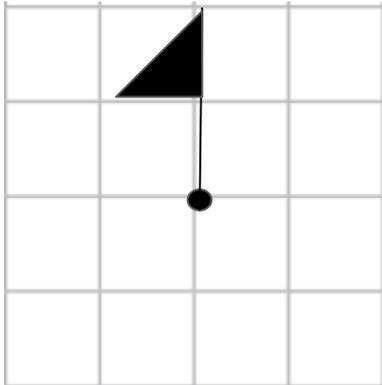


Extender

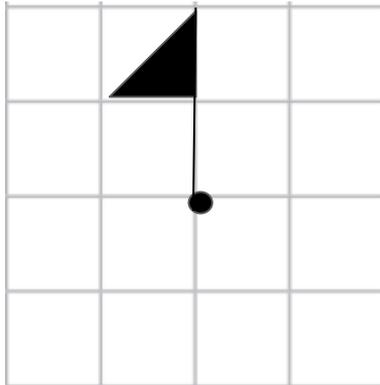
Please complete all work in your maths book as you will need grid paper.

Rotate the flags below by the angle shown

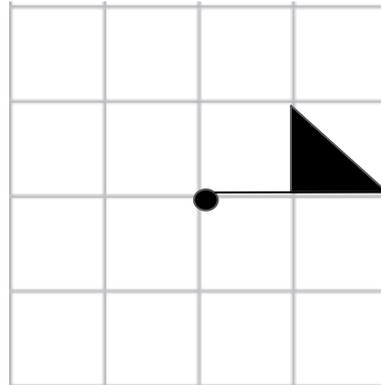
(a) 90°



(b) 270°



(c) 180°



(d) 90°

