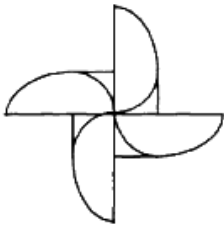


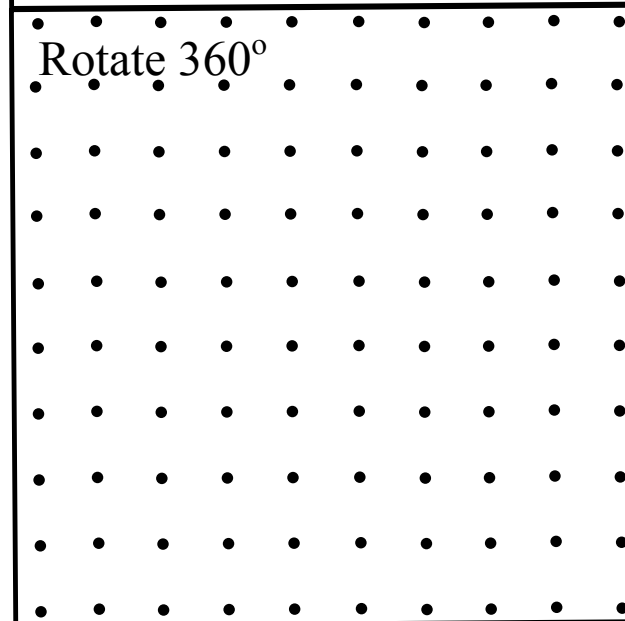
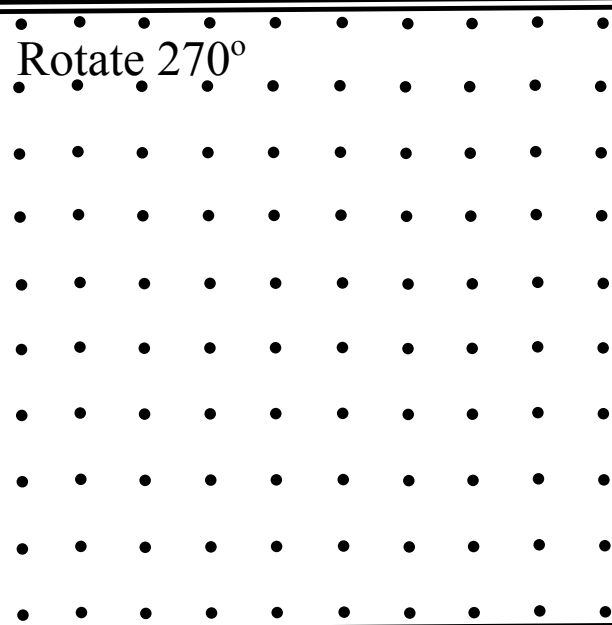
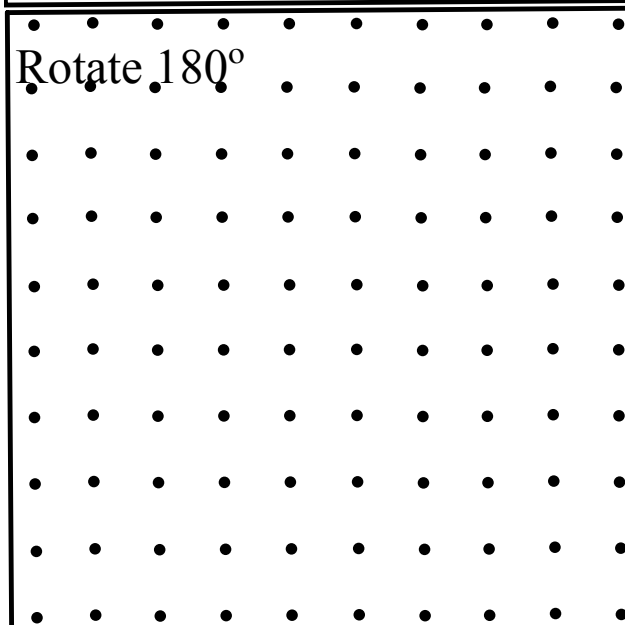
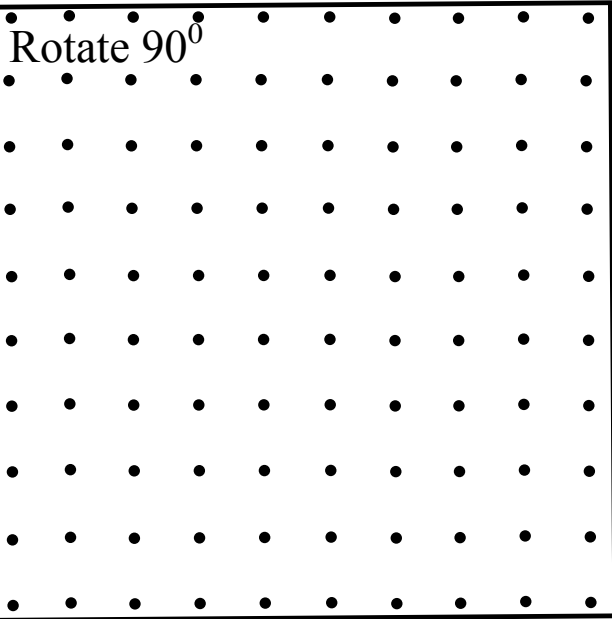
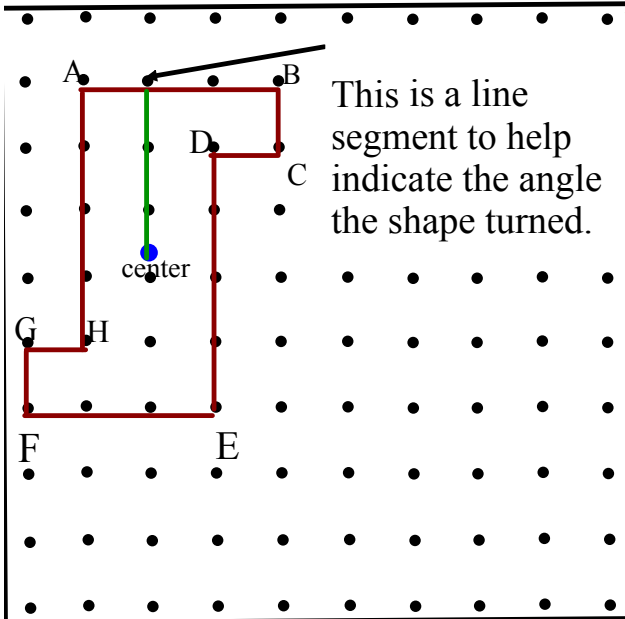
# Section 7.6

## Rotations & Rotational Symmetry



Lets rotate this object about its center

On your copy draw the rotated figure



Which pictures look like the original?

Lets rotate this object about its center

On your copy draw the rotated figure

	<p>Rotate <math>90^\circ</math></p>
<p>Rotate <math>180^\circ</math></p>	<p>Rotate <math>270^\circ</math></p>
<p>Rotate <math>360^\circ</math></p>	<p>Which pictures look like the original?  <math>180^\circ</math> and <math>360^\circ</math></p> <p>How many ??? <u>2</u></p> <p><b>coincides</b> : looks the same as the original</p>

LOOK AT THE NEXT SLIDE THEN COME BACK TO THIS

This object has Rotational symmetry of order 2.

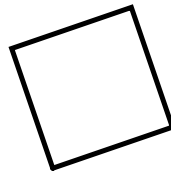
Angle of Rotaional Symmetry: \_\_\_\_\_

= \_\_\_\_\_

= \_\_\_\_\_

# Rotations

A shape has rotational symmetry when it coincides with itself after a rotation of less than  $360^\circ$  about its centre.



Order of Rotation is the number of times a shape coincides with itself during a  $360^\circ$  rotation

How to state this?  
rotational symmetry of order \_\_\_\_\_

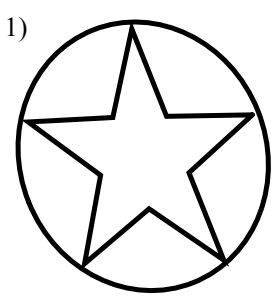
Angle of Rotational Symmetry:  $\frac{360^\circ}{\text{the order of rotation}}$

Look at the web book video in rotations

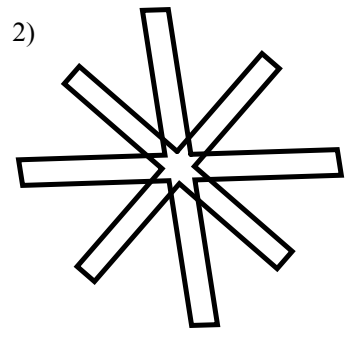
[www.mathmakessense.ca](http://www.mathmakessense.ca)



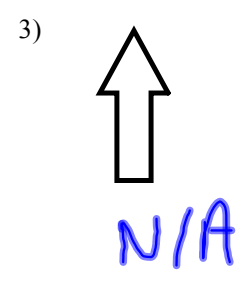
Determine if the following shapes have rotational symmetry. If so state the order of rotation and the angle of rotationsymmetry.



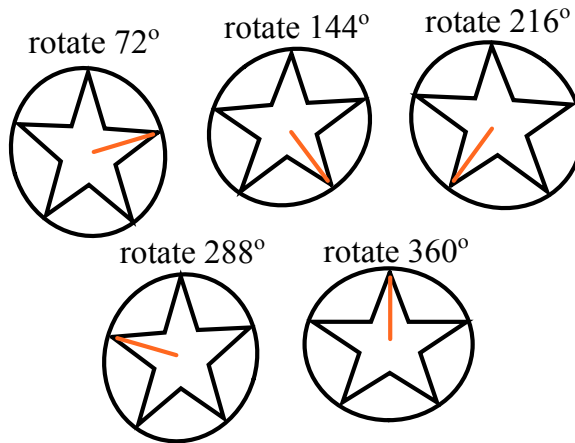
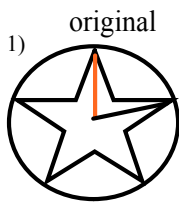
Angle of rotation =  $\frac{360}{5}$   
=  $72^\circ$



$\frac{360}{4} = 90^\circ$

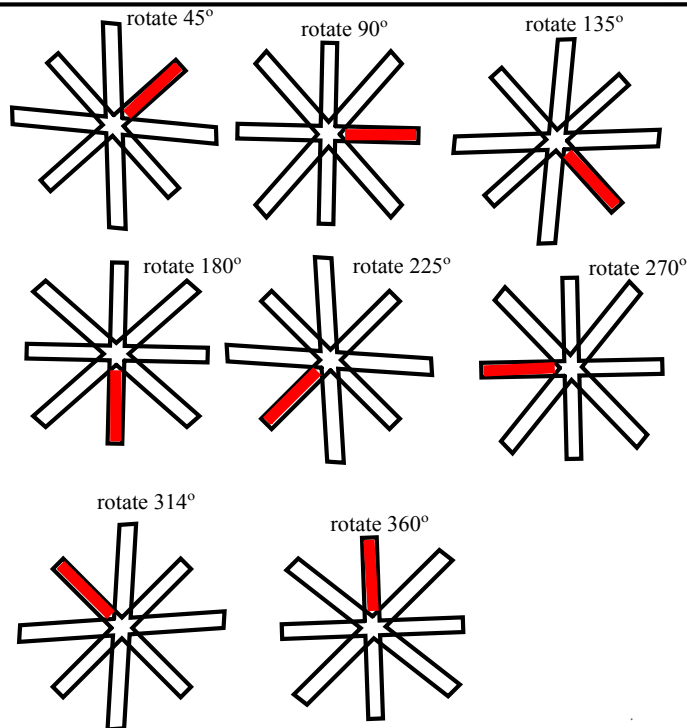
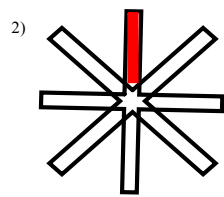


Determine if the following shapes have rotational symmetry. If so state the order of rotation and the angle of rotationsymmetry.



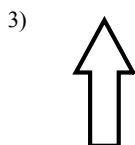
Rotational symmetry of order :

$$\text{Angle of rotation: } \frac{360^\circ}{5} = 72^\circ$$



Rotational symmetry of order 8

$$\text{Angle of rotation: } \frac{360^\circ}{8} = 45^\circ$$



Is rotated one complete turn before it coincides. It **DOES NOT** have rotational symmetry.

# Rotational Directions



clockwise



Counter - Clock Wise Rotations



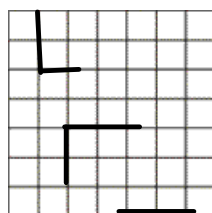
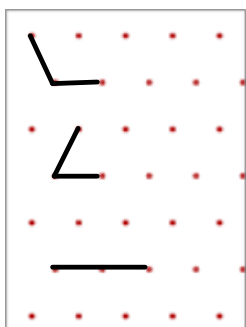
Earth turns counter-clockwise.

## Rotations Are Transformatio



### Text book

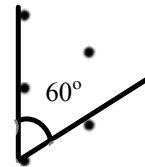
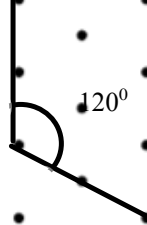
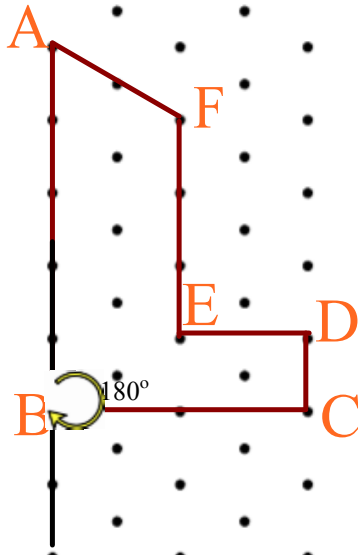
- Dot paper will be used to illustrate rotations of  $60^\circ$  (or  $120^\circ$  or  $180^\circ$ )
- Grid paper will be used to illustrate rotations of  $90^\circ$  (or  $180^\circ$  or  $270^\circ$ )



# Rotating Images



Rotate the image  $180^\circ$  clockwise about vertex B.  
Draw the rotation image.  
Pick a line connected from the vertex of interest

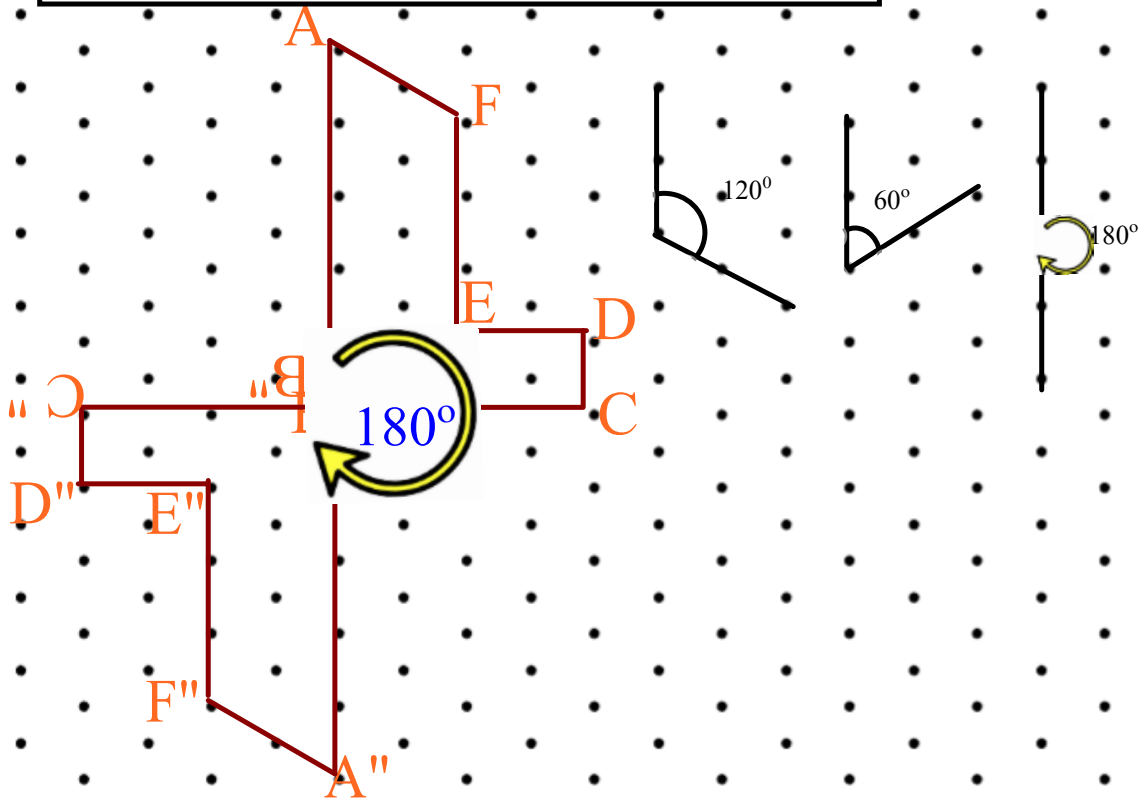




# Rotating Images



Rotate the image  $180^\circ$  clockwise about vertex B.  
Draw the rotation image.



Your Turn

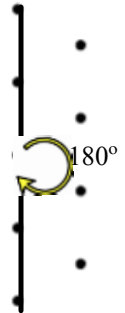
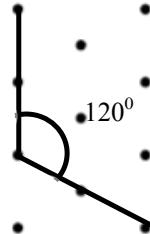
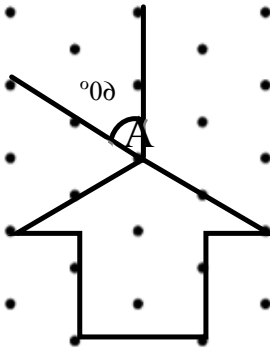
# Rotating Images



Rotate the image  $60^\circ$  counter-clockwise about vertex A.

Draw the rotation image.

Pick a line connected from the vertex of interest Use protractor to help



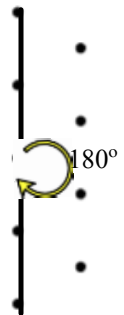
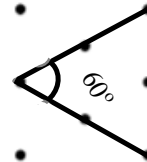
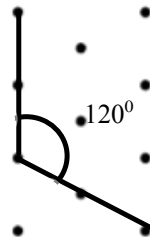
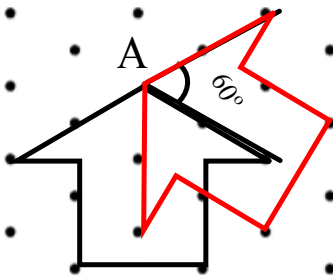
Your Turn

# Rotating Images



Rotate the image  $60^\circ$  counter-clockwise about vertex A.  
Draw the rotation image.

Use protractor to help



# Class/Homework

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#s 4 - 6, 8, 9, 10

