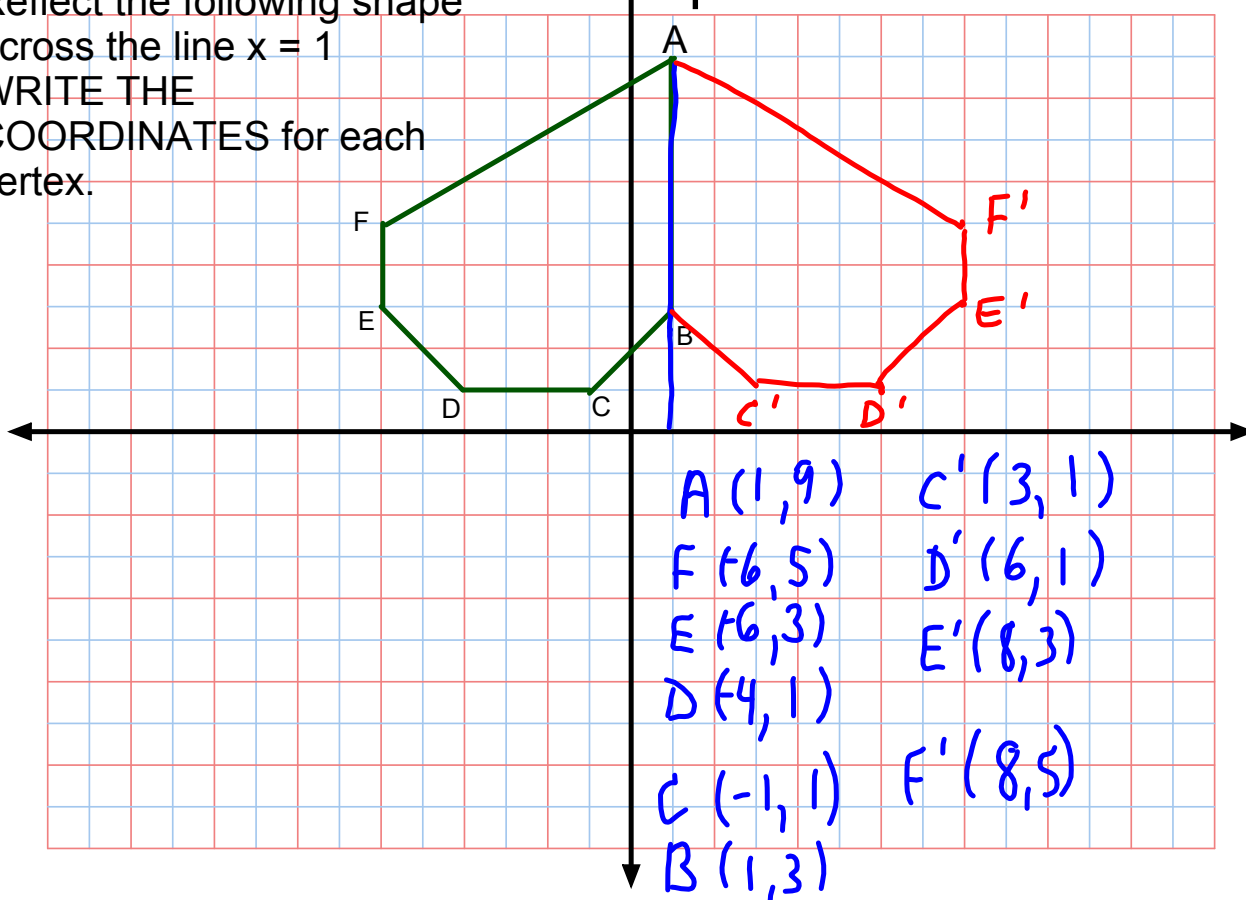


# Warm Up

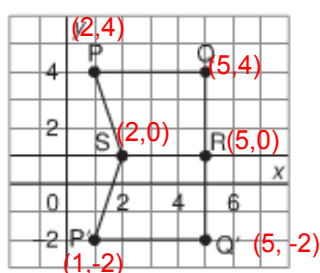
April 17, 2015

Reflect the following shape  
across the line  $x = 1$   
WRITE THE  
COORDINATES for each  
vertex.

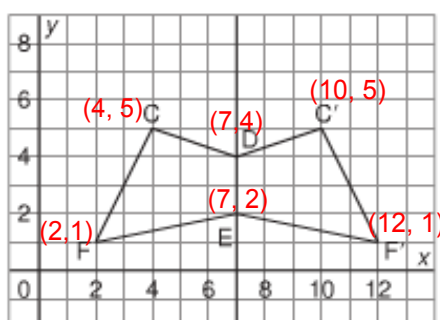


## Solutions to last night's Homework

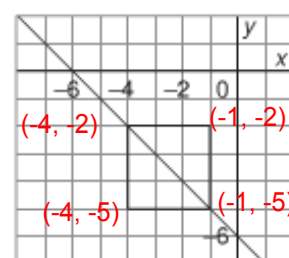
5. a)



b)



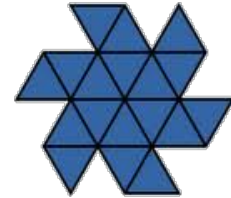
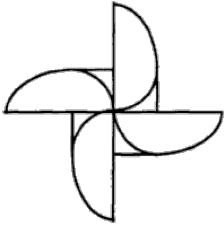
c)



10. Pentagon A is the reflection image in the horizontal line through 7 on the  $y$ -axis.  
 The line of symmetry is the horizontal line through 7 on the  $y$ -axis.  
 Pentagon C is the reflection image in the vertical line through 5 on the  $x$ -axis.  
 The line of symmetry is the vertical line through 5 on the  $x$ -axis.  
 Pentagon D is the reflection image in the horizontal line through 3 on the  $y$ -axis.  
 The line of symmetry is the horizontal line through 3 on the  $y$ -axis.

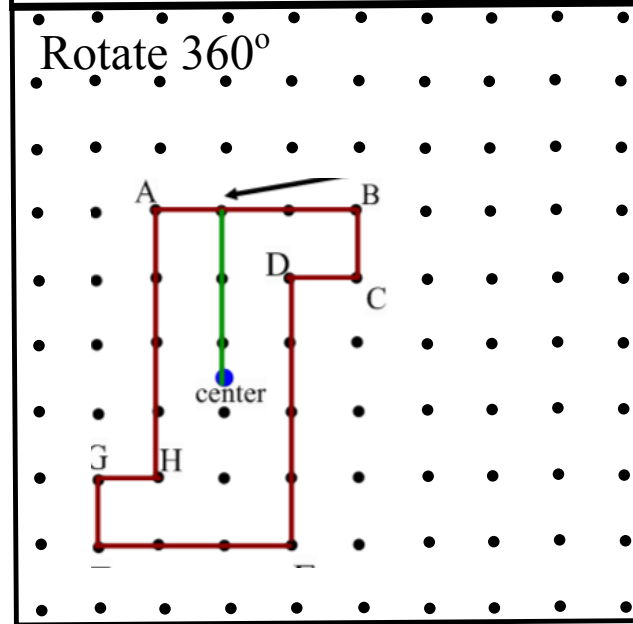
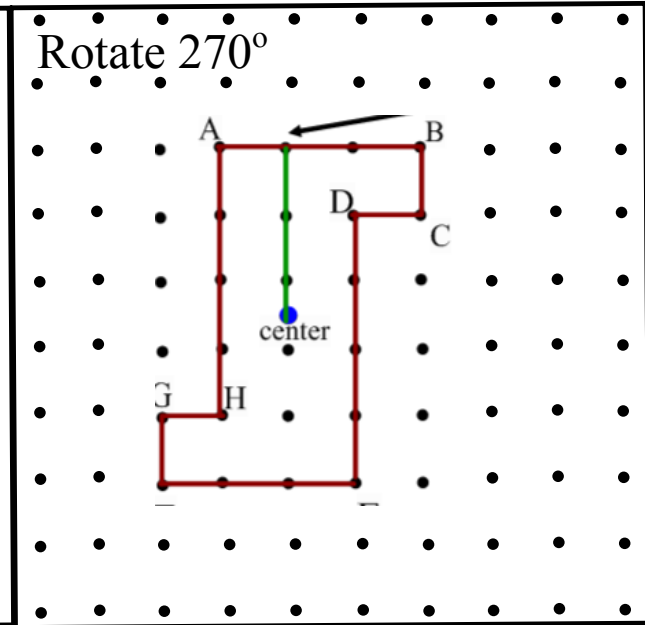
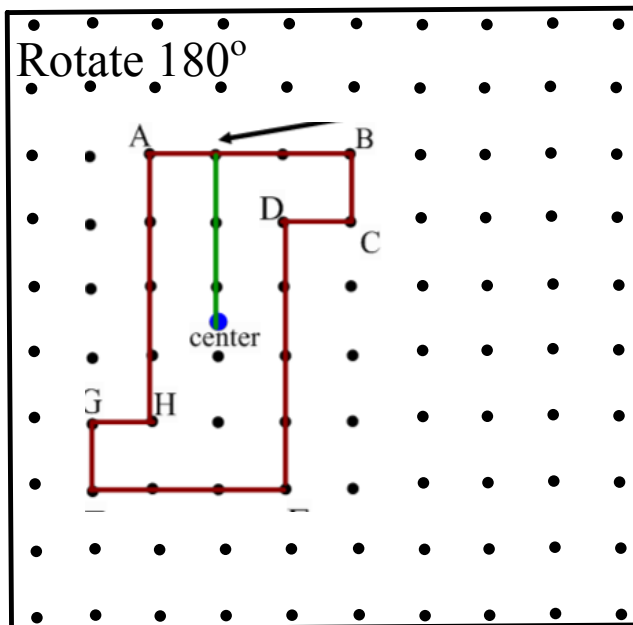
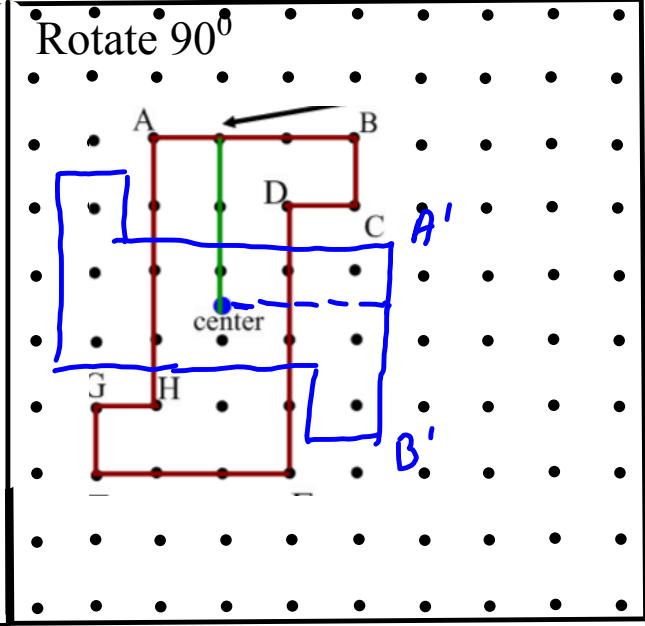
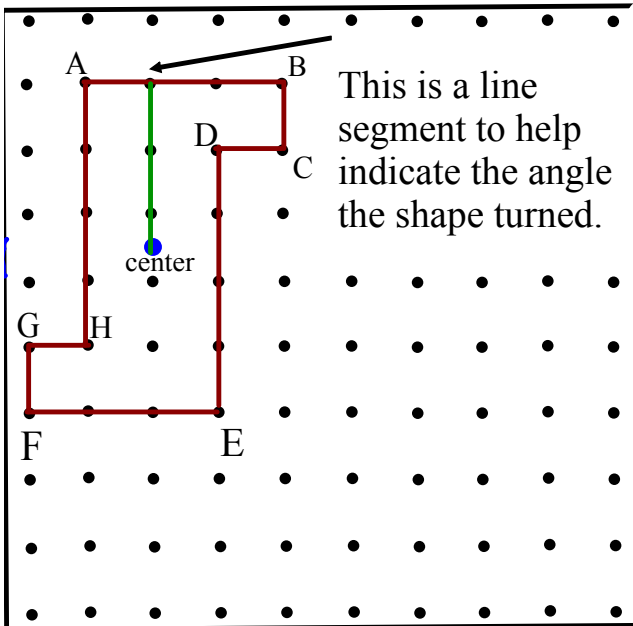
# Section 7.6

## 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?<br/> <math>0^\circ</math> and <math>360^\circ</math></p> <p>How many ??? _____</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 \_\_\_\_\_.

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

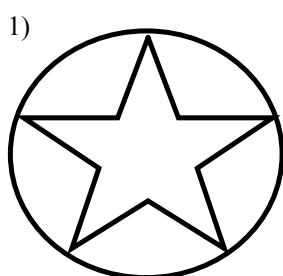
How to state this? rotational symmetry of order \_\_\_\_

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

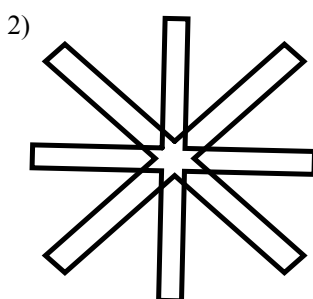
Look at the web book video in rotations

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

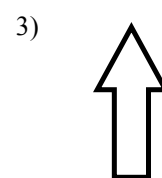
Determine if the following shapes have rotational symmetry. If so state the order of rotation and the angle of rotational symmetry



$$\frac{360}{5} = 72^\circ$$

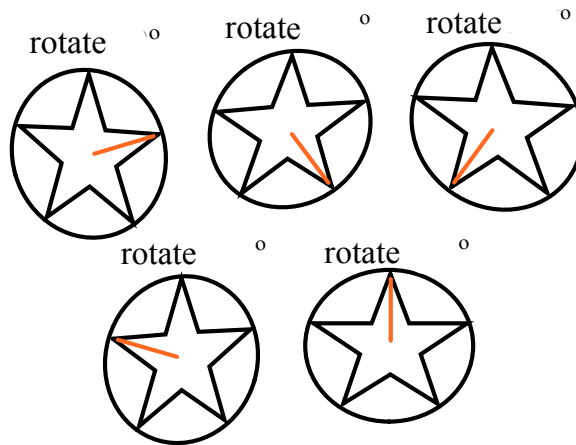
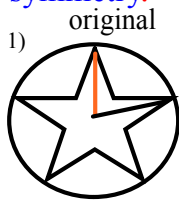


$$\frac{360}{8} = 45^\circ$$



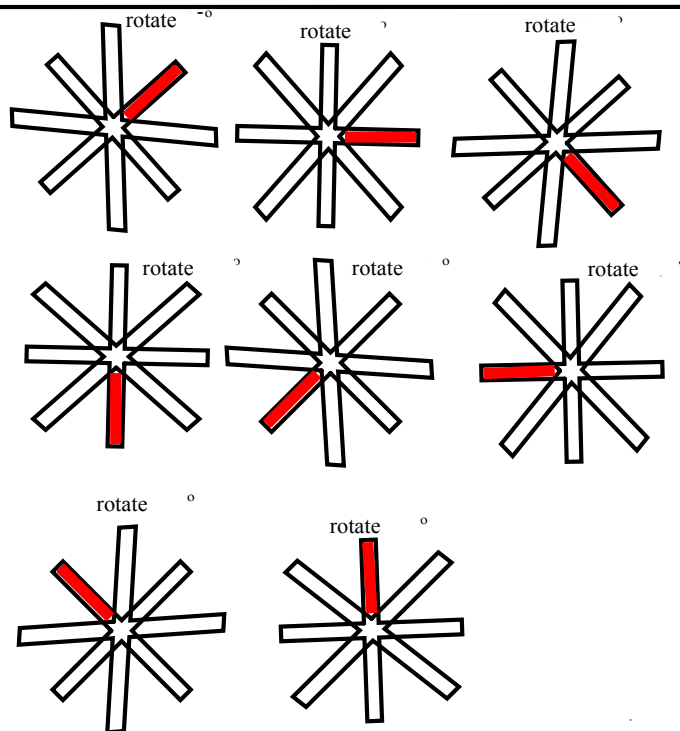
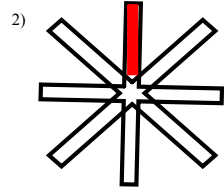
No rotational  
Symmetry

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



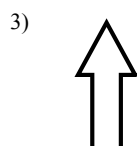
Rotational symmetry of order 5

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



Rotational symmetry of order 8

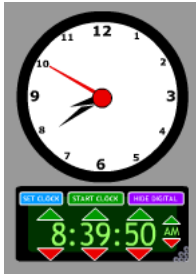
Angle of rotation:  $\frac{360^\circ}{8} = 45^\circ$



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



# Rotational Directions



clockwise



Counter - Clock Wise Rotations



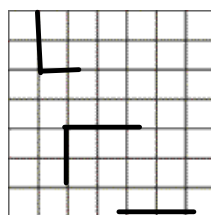
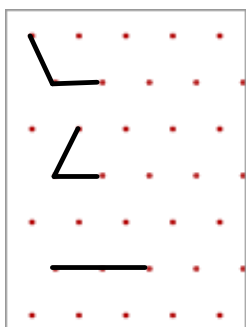
Earth turns counter-clockwise.

## Rotations Are Transformations



### Text book

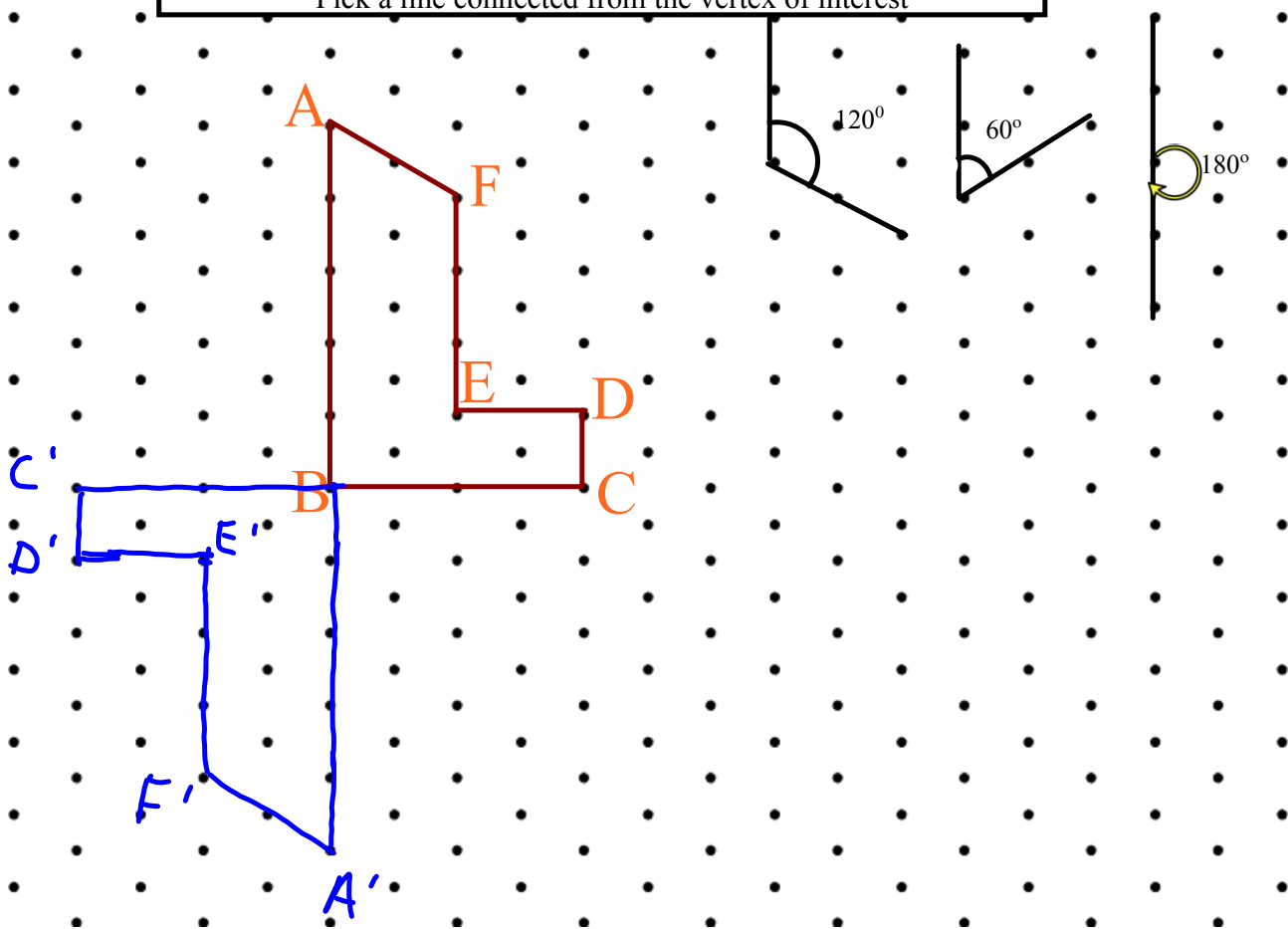
- Dot paper will be used to illustrate rotations of  $60^\circ$  (or  $120^\circ$  or  $180^\circ$ )
- Grid paper will be used to illustrate rotations of  $90^\circ$  (or  $180^\circ$  or  $270^\circ$ )



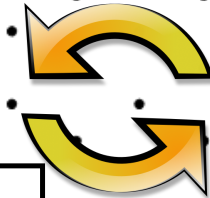
# Rotating Images



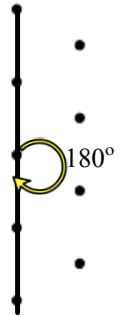
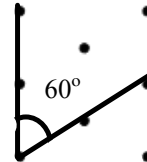
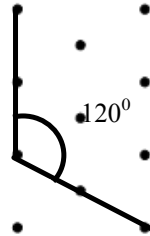
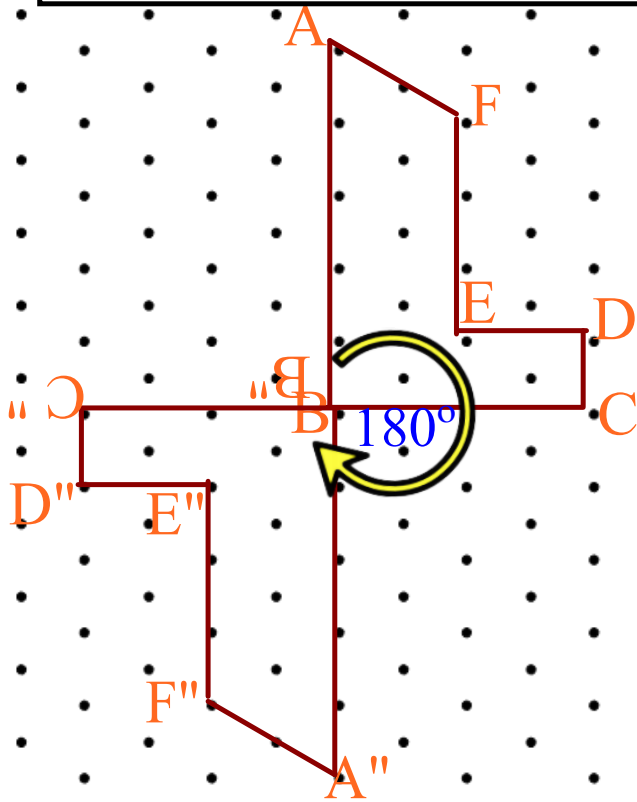
Rotate the image  $180^\circ$  clockwise about vertex B.  
Draw the rotation image.  
Pick a line connected from the vertex of interest



# Rotating Images



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



Your Turn

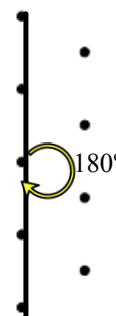
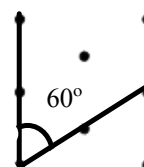
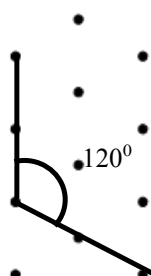
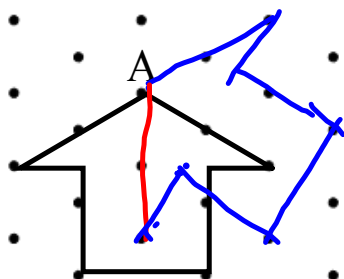
# Rotating Images



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

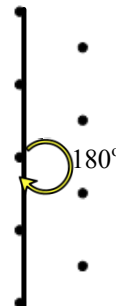
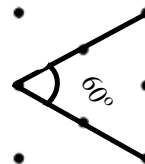
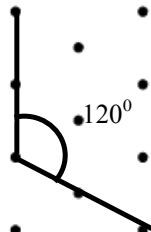
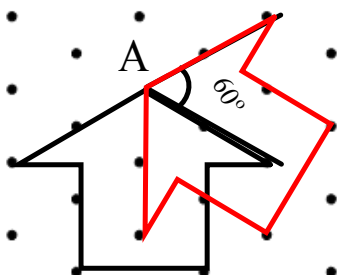


Your Turn

# 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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4 - 8



When finished...

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