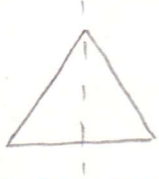




Notes 7.6 – Geometric Transformations

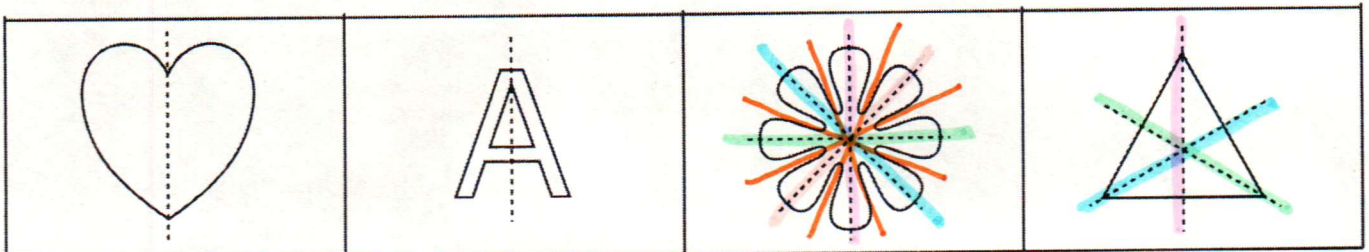
Warmup

1. Determine slope of line
2. Find perpendicular slope
3. Draw perpendicular lines through each corner of shape.
4. Measure distance of each corner to line of reflection
5. Copy on other side and draw shape.

Lesson

Word	Meaning/Notation	Example
Line Symmetry	A line that bisects so each side is a perfect mirror image of the other	
Rotational Symmetry	When an image can be rotated less than one turn and still look the same	
Order of Rotational Symmetry	The number of times in one full turn that an image maps onto itself	
Angle of Rotational Symmetry	The amount of rotation needed to map onto itself	1 full turn $\rightarrow \frac{360}{\text{order}} = 120^\circ$ order $\rightarrow 3$

The following shapes all have line symmetry, how many lines of symmetry do you see on each one?



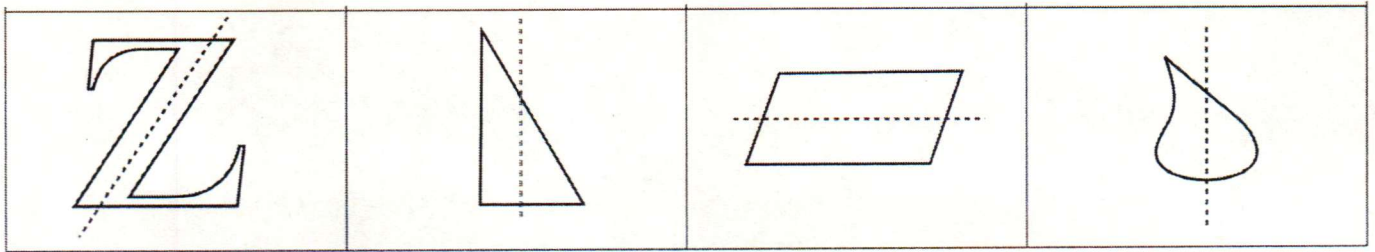
one

one

eight

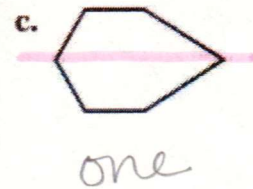
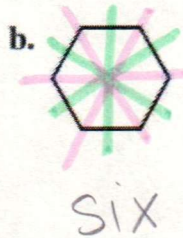
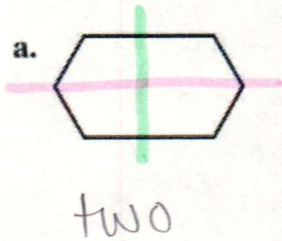
three

Explain why each of the following shapes has no lines of symmetry.

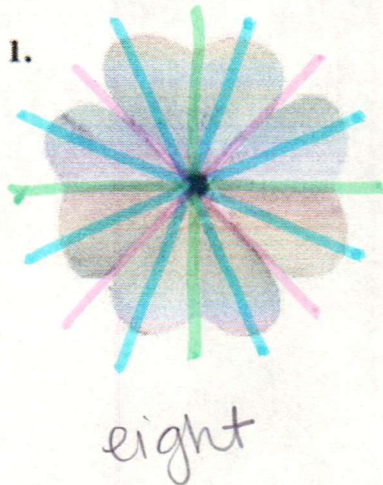


When folded over the dotted line the two sides do not match

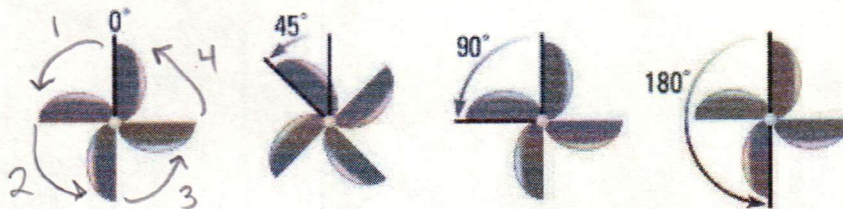
1. How many lines of symmetry does the hexagon have?



2. How many lines of symmetry does the object appear to have?



Rotational symmetry has a center of symmetry (a point) that you use to rotate the shape.



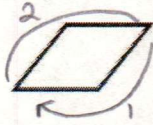
* Rotations can be done clockwise or counterclockwise (MOSTLY COUNTERCLOCKWISE!)

3. In the above figure, determine the order and angle of rotation.

order = 4 angle: $\frac{360}{4} = 90^\circ$

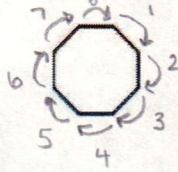
4. Does the figure have rotational symmetry? If so, describe any rotations that map the figure onto itself.

a. Parallelogram



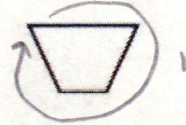
$$\frac{360}{2} = 180^\circ$$

b. Regular octagon



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

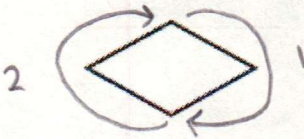
c. Trapezoid



No rotational symmetry

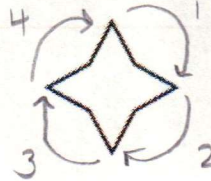
5. Does the figure have rotational symmetry? If so, describe any rotations that map the figure onto itself.

a. Rhombus



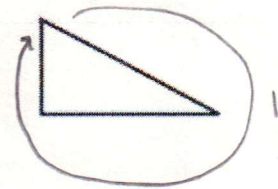
$$\frac{360}{2} = 180^\circ$$

b. Octagon



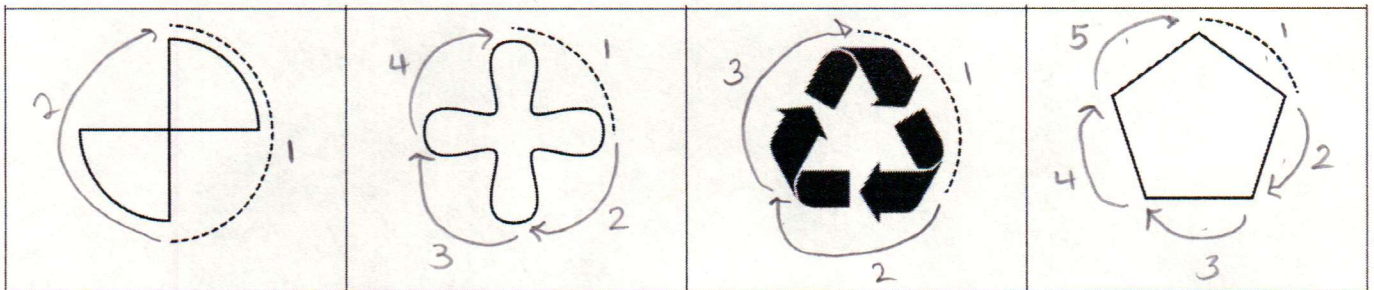
$$\frac{360}{4} = 90^\circ$$

c. Right Triangle



No rotational symmetry

6. Find the order and angle of rotation for each of the shapes.



$$\frac{360}{2} = 180^\circ$$

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

$$\frac{360}{3} = 120^\circ$$

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