

Name _____

Agenda 1/29/14

Standard:

- **8.G.A.** Understand Congruence and similarity using physical models, transparencies, or geometry software.

Essential Questions:

- How can I use Symmetry to describe shapes and properties in a design or problem ?

Activities

- 1. Warm up – Review**
- 2. Rotational Symmetry 1.2**
- 3. In the Bag**
- 4. Exit Ticket - Symmetry Exercises**

Name _____

Warm Up

Define **symmetry** in your own words.

In the Bag

Sort objects into the correct categories.

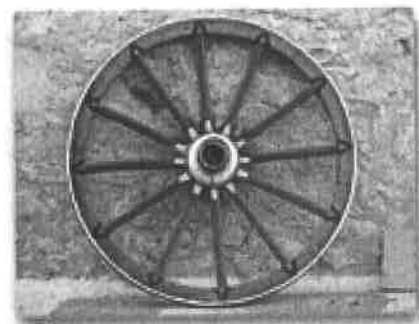
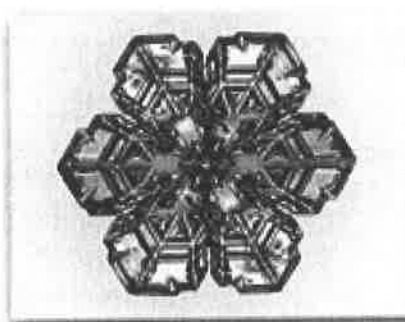
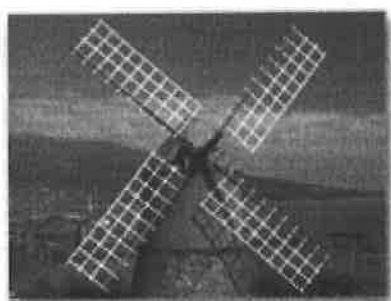
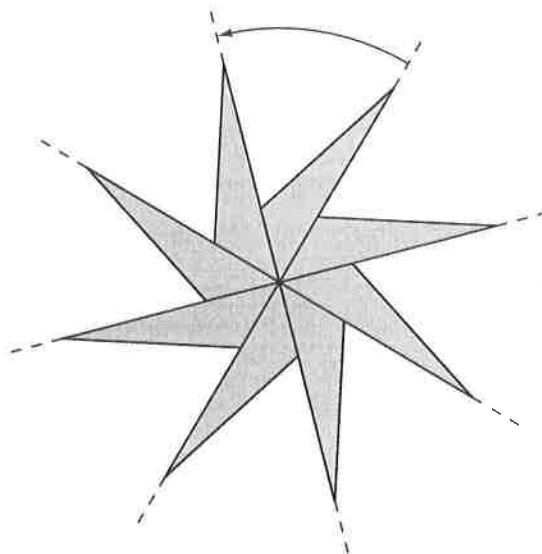
Reflection Symmetry	Rotational Symmetry

Create an object that has **Reflection Symmetry**
(use object from bag)

1.2 Rotation Symmetry

The pinwheel design at the right does not have reflection symmetry. However, it can be turned less than a full turn around its center point in a counterclockwise direction to positions in which it looks the same as it does in its original position. Figures with this property are said to have **rotation symmetry**.

The windmill, snowflake, and wagon wheel pictured below also have rotation symmetry.



Which two of the three objects pictured above also have reflection symmetry?

To describe the rotation symmetry in a figure, you need to specify two things:

- The *center of rotation*. This is the fixed point about which you rotate the figure.
- The *angle of rotation*. This is the *smallest* angle through which you can turn the figure in a counterclockwise direction so that it looks the same as it does in its original position.

There are several rotation angles that move the pinwheel design above to a position where it looks like the original. In this problem, you will consider how these angles are related to the angle of rotation.

Problem 1.2 Rotation Symmetry

- A.** List all the turns of less than 360° that will rotate the pinwheel design to a position in which it looks the same as what is pictured. What is the angle of rotation for the pinwheel design?
- B.** In parts (1)–(3), list all the turns of less than 360° that will rotate the object to a position in which it looks the same as what is pictured. Then give the angle of rotation.
1. the windmill 2. the snowflake 3. the wagon wheel
- C.** Look at your answers for Questions A and B. For each object or figure, tell how the listed angles are related to the angle of rotation.
- D.** The hubcaps below have rotation symmetry. Complete parts (1) and (2) for each hubcap.



Hubcap 1



Hubcap 2

1. On a copy of the hubcap, mark the center of rotation. Then, find all the turns of less than 360° that will rotate the hubcap to a position in which it looks the same as what is pictured.
2. Tell whether the hubcap has reflection symmetry. If it does, draw all the lines of symmetry.
- E.** Draw a hubcap design that has rotation symmetry with a 90° angle of rotation but no reflection symmetry.
- F.** Draw a hubcap design that has rotation symmetry with a 60° angle of rotation and at least one line of symmetry.
- G.** Investigate whether rectangles and parallelograms have rotation symmetry. Make sketches. For the shape(s) with rotation symmetry, give the center and angle of rotation.

ACE Homework starts on page 15.

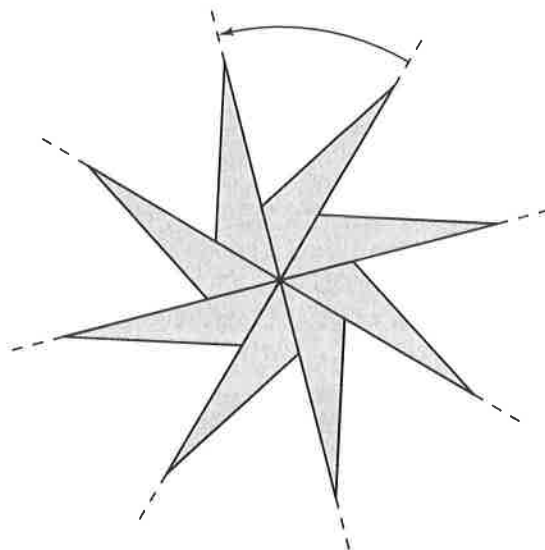
active math
online

For: Hubcap Maker
Visit: PHSchool.com
Web Code: apd-5102

Labsheet 1.2

Kaleidoscopes, Hubcaps, and Mirrors

Pinwheel and Hubcaps



Hubcap 1



Hubcap 2

Skill: Identifying Reflection Symmetry

Investigation 1

Kaleidoscopes, Hubcaps, and Mirrors

How many lines of symmetry can you find for each letter?

1. W

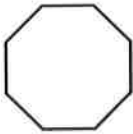
2. X

3. H

4. T

Draw all the lines of symmetry for each figure.

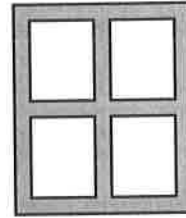
5.



6.

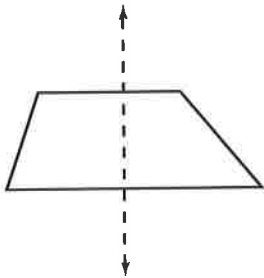


7.

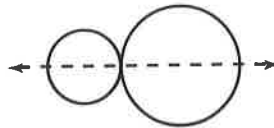


Is the dashed line a line of symmetry? Write yes or no.

8.



9.



10.

