
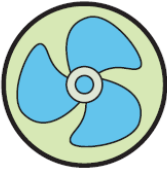



TYPES OF SYMMETRY NOTES/EXAMPLES		
Example(s)	Type of Symmetry	Explain/Notes
		Lines of symmetry:
		Center of rotation: Angle of rotation:
		

How I know if a figure has reflection symmetry:

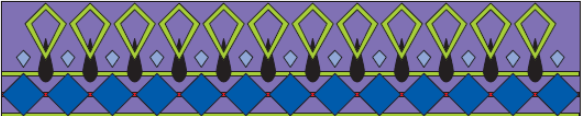
Two things I need to explain if a figure has rotation symmetry:

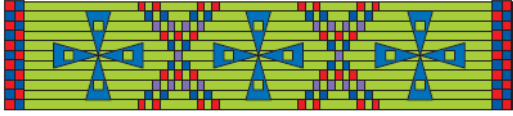
How I know if a figure has translation symmetry:


What I need to do to describe the translation symmetry of an object:


Problem 1.1 Reflection Symmetry


Find all the lines of symmetry in each figure.


A. 

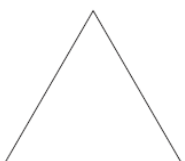
B. 

C. 

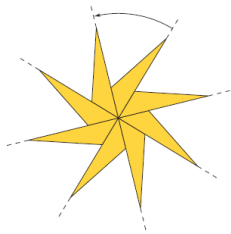
D. 

E. 

F. 

G. 

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



- D. The hubcaps below have rotation symmetry. Complete parts (1) and (2) for each hubcap.



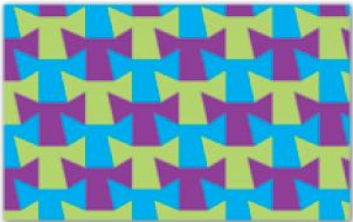
Hubcap 1



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.

Problem 1.4 Translation Symmetry



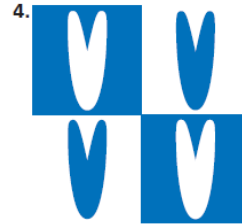
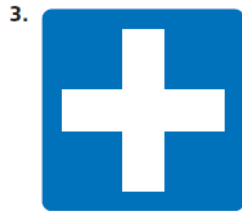
Explain the shape that is being translated:

Describe how the shape is being translated:

1. Which capital letters have reflection symmetry? For each one that does, describe all the lines of symmetry.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

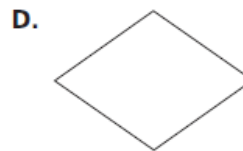
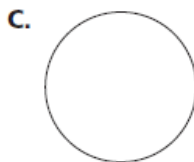
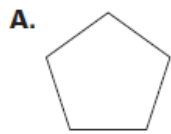
Tell whether the design has reflection symmetry. If it does, draw all the lines of symmetry.



10. Which of the above figures have rotation symmetry? For each one that does, find the angle of rotation and tell which multiples of this angle rotate the figure to a position in which it looks like the original.

11. Look at the capital letters in question #1 above. Which letters have rotation symmetry? For each one that does, give the angle of rotation.

17. **Multiple Choice** Which figure does not have rotation symmetry?



For Exercises 20 and 22, draw a design with the given lines of symmetry.

