2.4 Symmetry

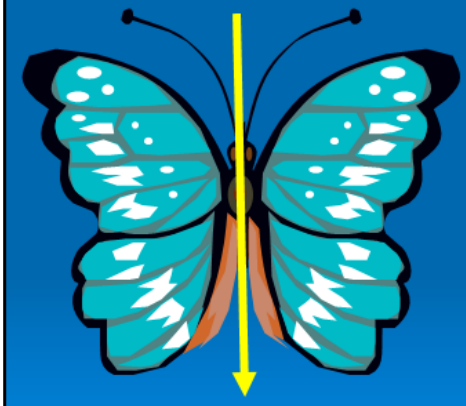
Essential Question: How do you determine whether a figure has line symmetry or rotational symmetry?

Symmetry- a rigid motion exists that maps the figure onto itself

Rigid Motion - A transformation that keeps the same size and shape of the figure

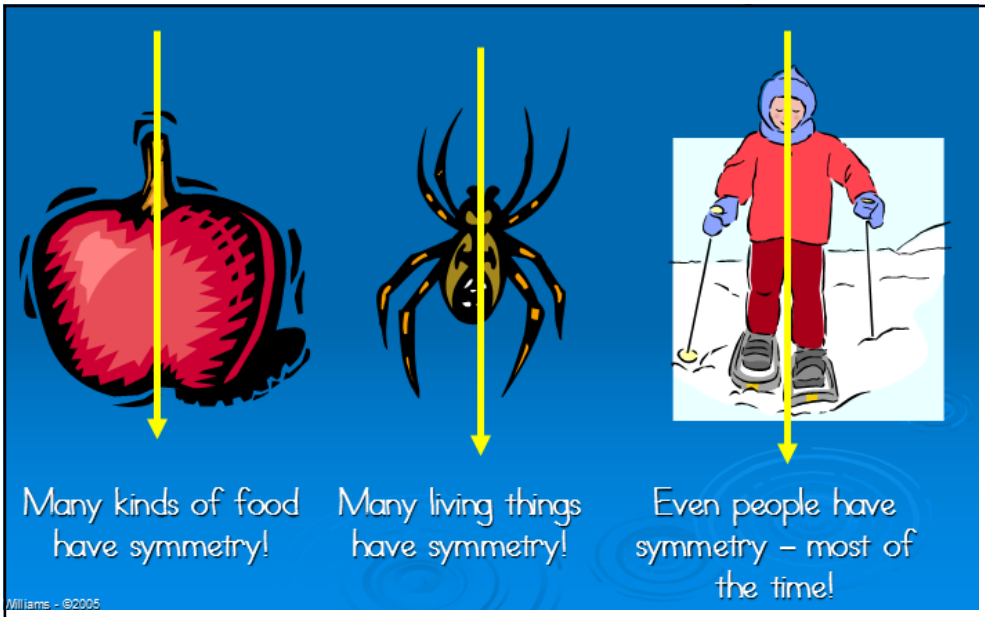
Line Symmetry (reflectional symmetry)- a reflection maps the figure onto itself

- Symmetry = Same
- If something has symmetry it is the SAME on both sides



A buttertly has symmetry.

If you draw a line down the center of a butterfly, both sides are the same!

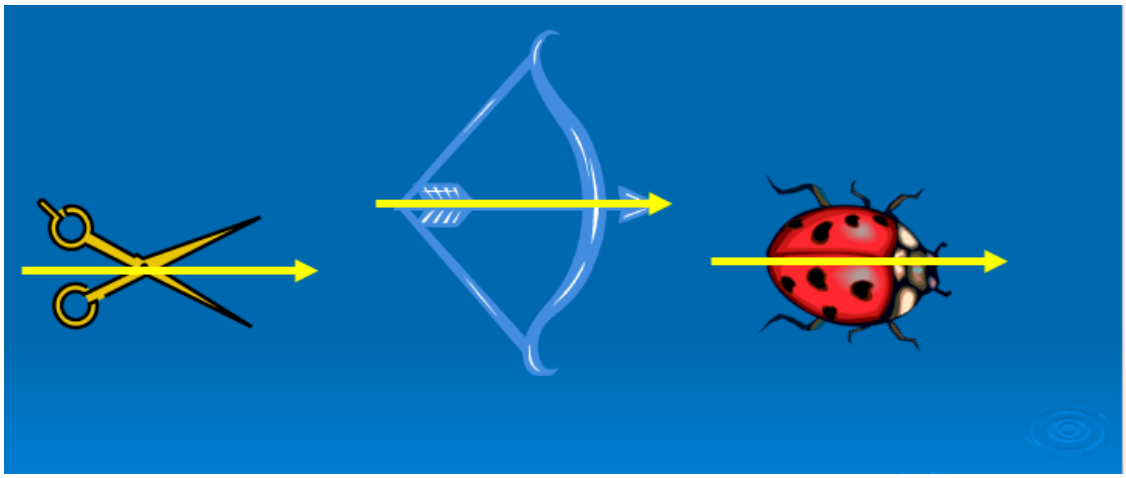


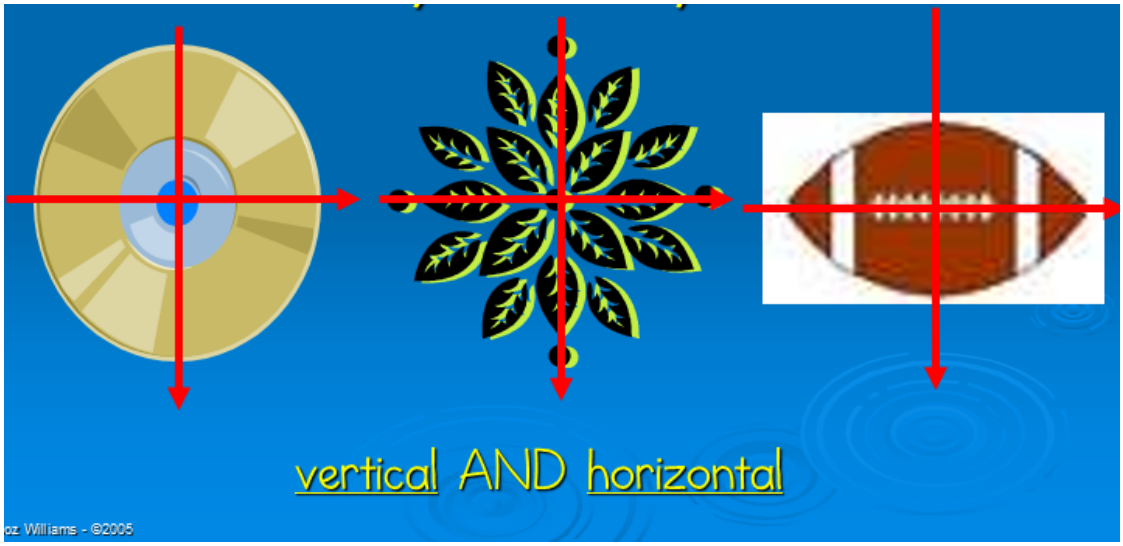
When the line of symmetry goes up and down,

It is called VERTICAL symmetry

Another kind of symmetry is HORIZONTAL symmetry

Horizontal means across, or side to side

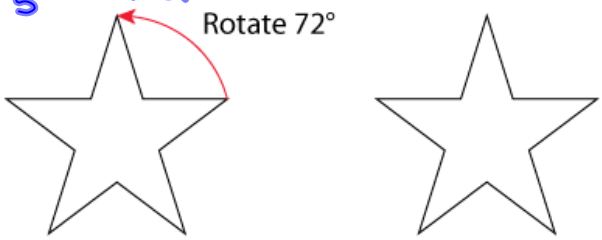




A figure has **rotational symmetry** if a rotation maps the figure onto itself.

The **angle of rotational symmetry**, which is greater than 0° but less than or equal to 180°, is the smallest angle of rotation that maps a figure onto itself.
An angle of rotational symmetry is a fractional part of 360°.

$\frac{360}{5} = 72°$



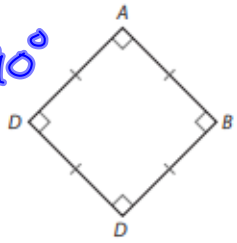
2 ways to check

① If regular figure, then $\frac{360°}{\#\text{ of angles}}$

② If not regular, check 90°, 180°

6. Figure *ABCD*

$\frac{360}{4} = 90°$



Types of symmetry: line, rotational

Number of lines of symmetry: 4

Angles of rotation: 90°

7. Figure *EFGHI*

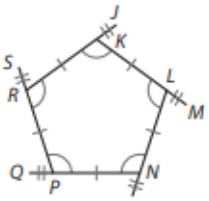
Types of symmetry: line

Number of lines of symmetry: 1

Angles of rotation: no rot. sym.

8. Figure *KLNPR*

$\frac{360}{5} = 72°$

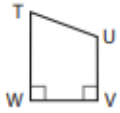


Types of symmetry: rot

Number of lines of symmetry: 0

Angles of rotation: 72°

9. Figure *TUVW*



Types of symmetry: _____

Number of lines of symmetry: _____

Angles of rotation: _____

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