

Transformations

Vocabulary

Transformations

- A transformation occurs when a shape changes size, location, or orientation
- There are four types of transformations:



Dilation



Translation



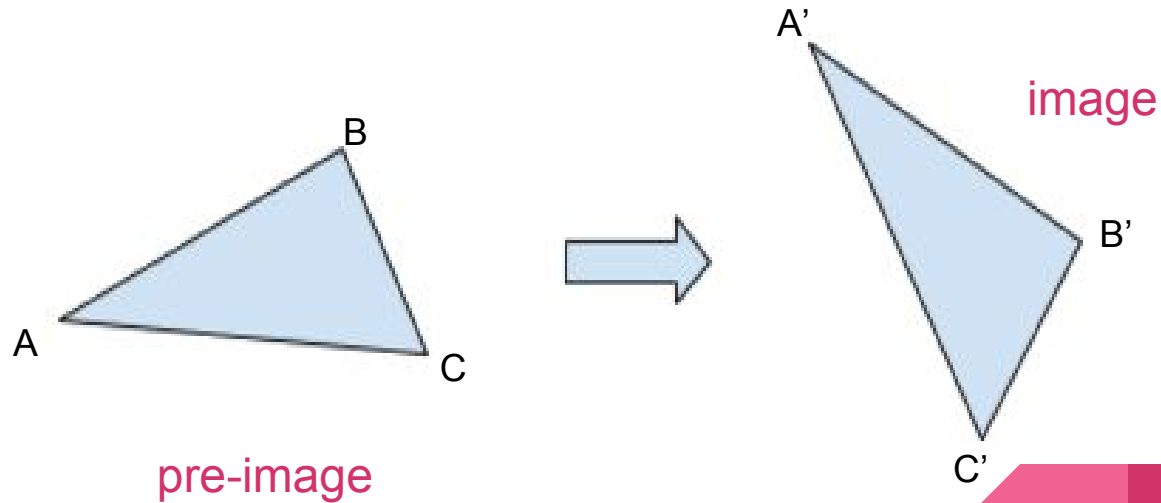
Rotation



Reflection

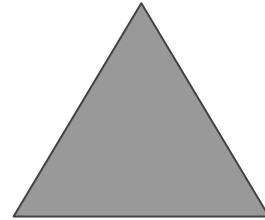
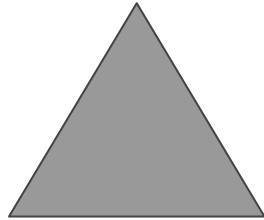
Transformations

- The original figure prior to a transformation is called the **pre-image**
- The result of a transformation is called the **image**



Rigid Transformations

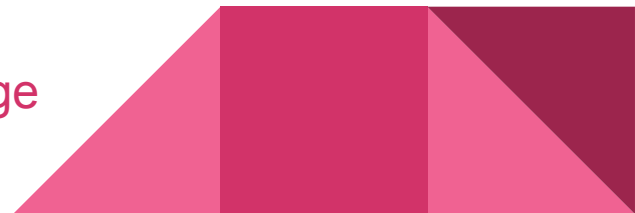
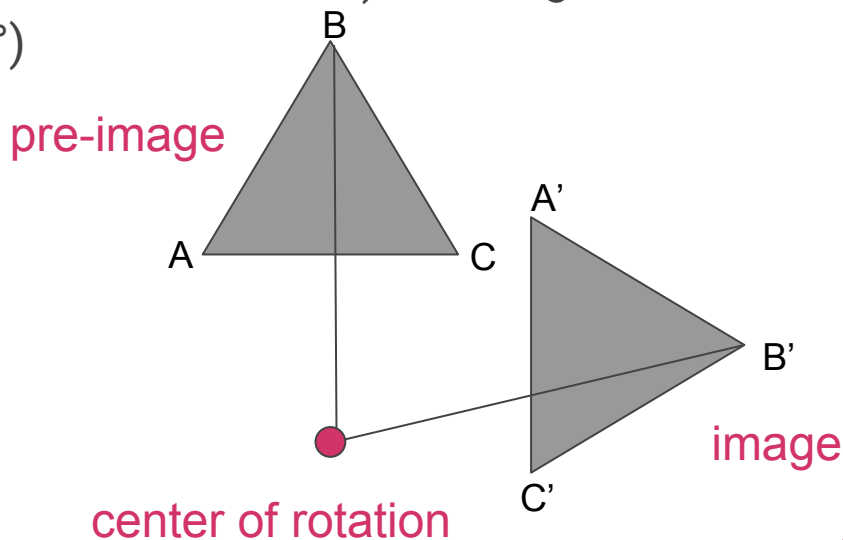
- A transformation where the pre-image and image are **congruent**
 - Two shapes are **congruent** if they are the exact same size; they have the same side lengths and the same angles



Rotation



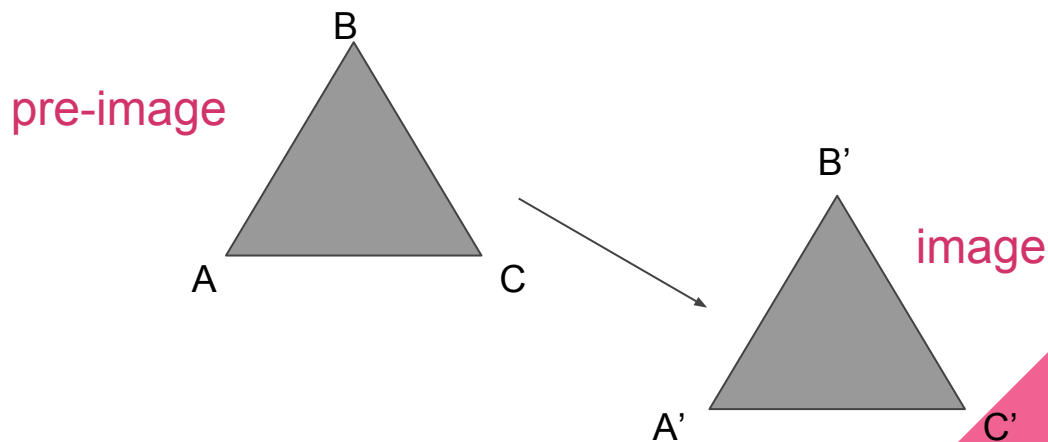
- A rotation turns an entire figure about a fixed point
- To rotate a figure you must choose a point of rotation, direction (either clockwise or counter clockwise), and angle of rotation (how far it will turn: 90° , 180° , 270°)



Translation



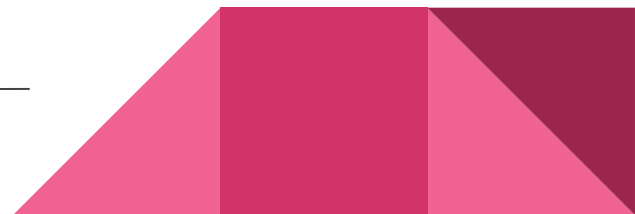
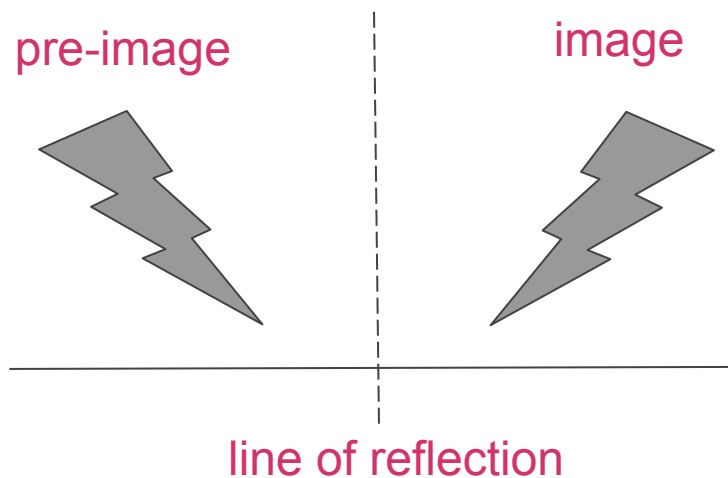
- A translation slides a figure horizontally (side-to-side), vertically (up or down), or both
- To translate a figure, you must describe which direction you will move it, and how far it will slide



Reflection



- A reflection flips a figure across a line to form a mirror image
- The mirror line is called a **line of reflection**
- If you were to fold along the line of reflection, the pre-image and image would coincide (lie directly on top of each other)



Dilation

- A dilation produces an image that is the same shape as the original, but is a different size
- A dilation stretches or shrinks the original figure by a **scale factor**
- **Scale factor:** The ratio that describes how two lengths are related
- If a scale factor is:
 - Greater than 1, it enlarges a shape (makes it bigger)
 - Between 0 and 1 reduces a shape (makes it smaller)
 - Is equal to 1 then the two shapes are congruent

