

Transformations



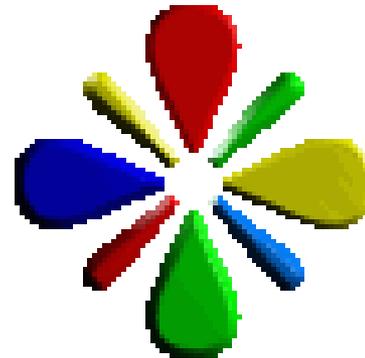
To transform something is to change it. In geometry, there are specific ways to describe how a figure is changed. The transformations you will learn about include:

- Translation

- Rotation

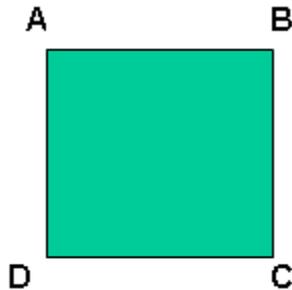
- Reflection

- Dilation

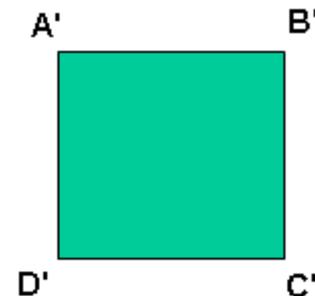


Renaming Transformations

It is common practice
to name shape
using capital letters:

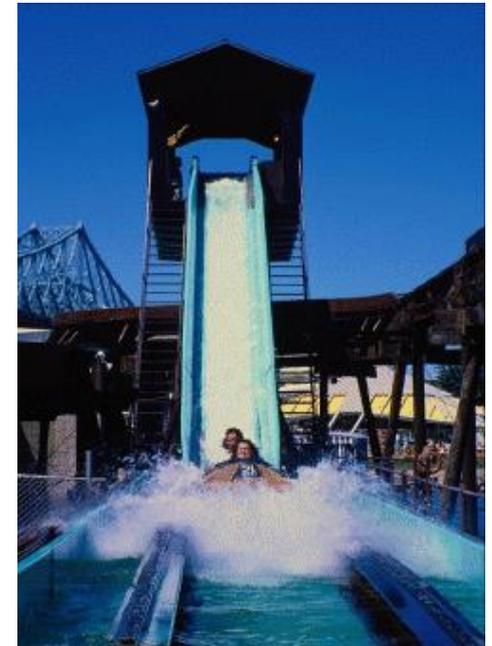
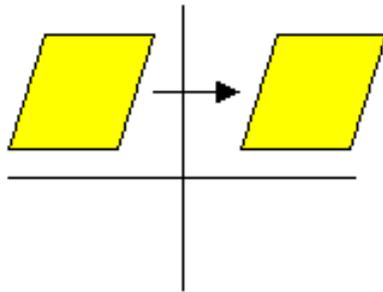


It is common practice
to name
transformed shapes
using the same
letters with a “prime”
symbol:



A **Translation** “slides” an object a fixed distance in a given direction. The original object and its translation have the, **same shape and size** and they **face in the same direction**

Translations are SLIDES.



A **rotation** is a transformation that turns a figure about a fixed point called the center of rotation. An object and its rotation are the

same shape and size

figures may be turned in different directions



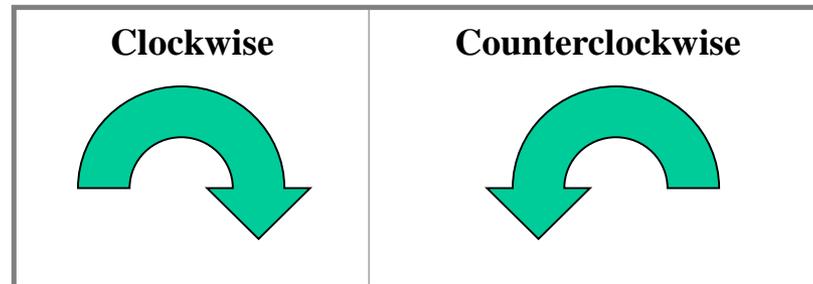
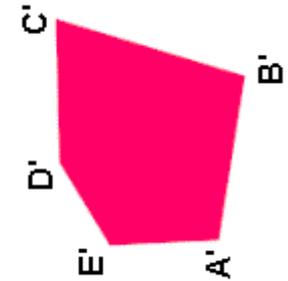
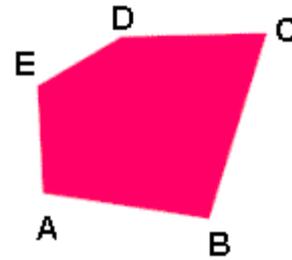
R•R

The concept of rotations can be seen in wallpaper designs, fabrics, and art work.

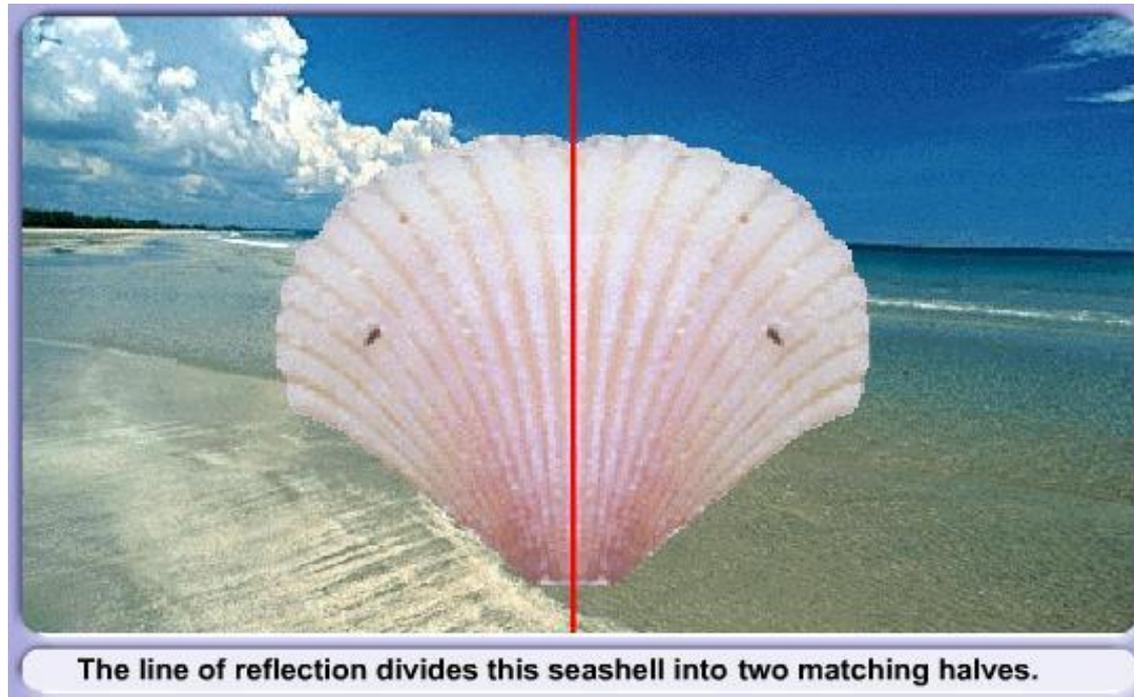


Rotations are URNS!!!

This rotation
is 90 degrees counterclockwise.



A **reflection** can be seen in water, in a mirror, in glass, or in a shiny surface. An object and its reflection have **same shape and size**, but the **figures face in opposite directions**. In a mirror, for example, right and left are switched.



The line of reflection divides this seashell into two matching halves.

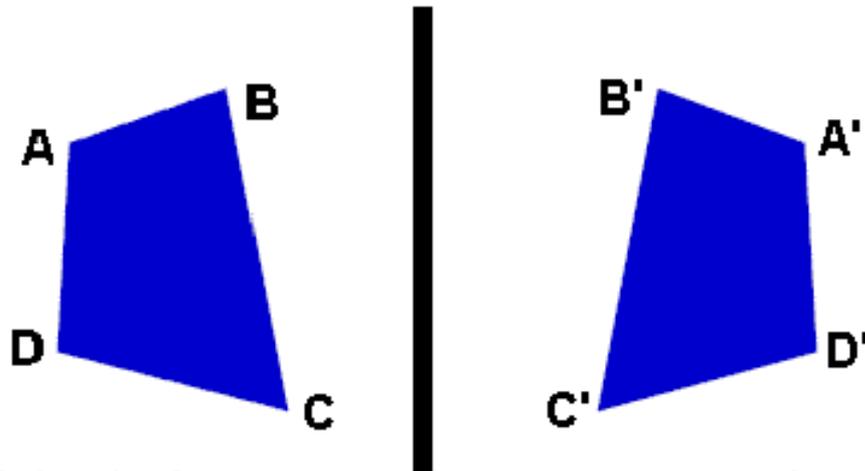


Line reflections are FLIPS!!!



The line (where a mirror may be placed) is called the **line of reflection**. The distance from a point to the line of reflection is the same as the distance from the point's image to the line of reflection.

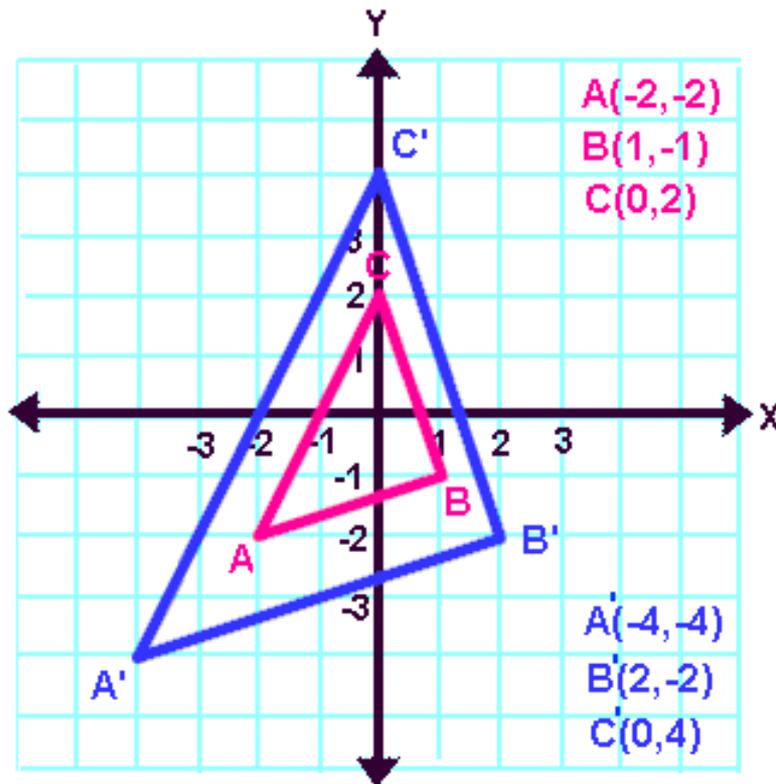
A reflection can be thought of as a "flipping" of an object over the line of reflection.



If you folded the two shapes together **line of reflection** the two shapes would overlap exactly!

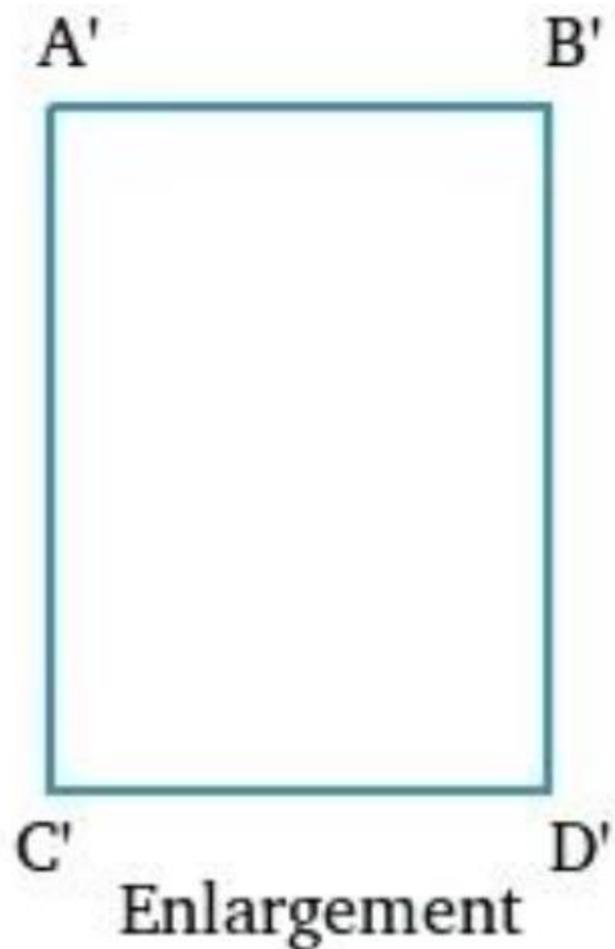
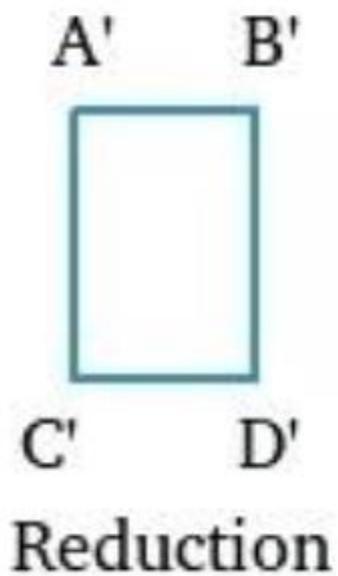
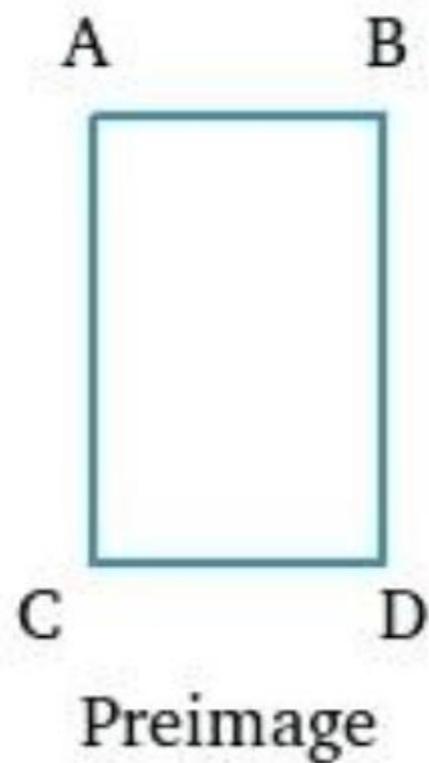
Dilations always involve a change in size.

Dilations



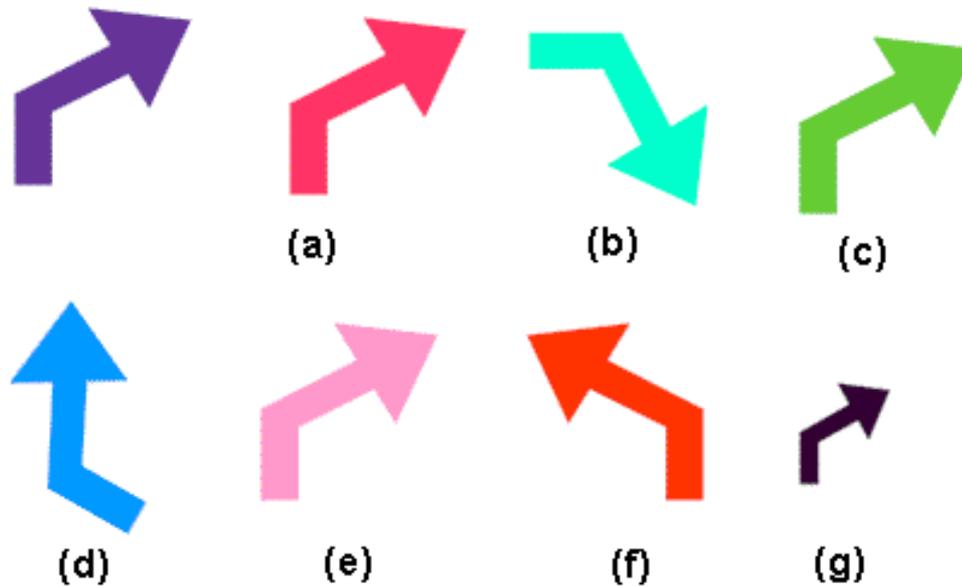
Notice how
EVERY
coordinate of the
original triangle
has been
multiplied by the
scale factor (x2).

Dilation



Which of the following lettered figures are translations of the shape of the **purple arrow**? Name **ALL** that apply.

Explain your thinking.

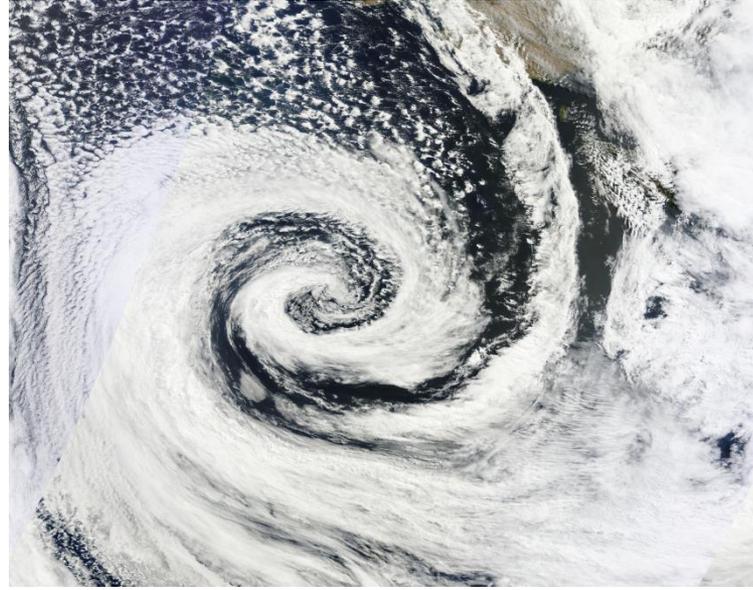


Letters a, c, and e are translations of the purple arrow.

Has each picture been rotated in a clockwise or counter-clockwise direction?

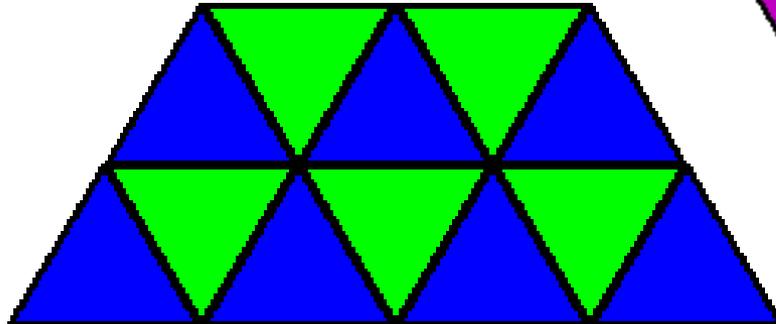
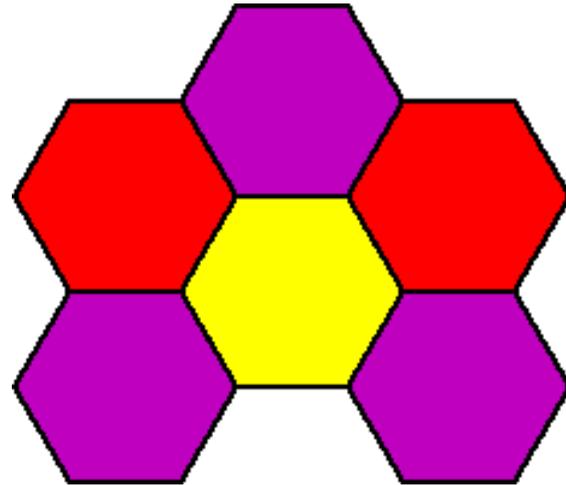
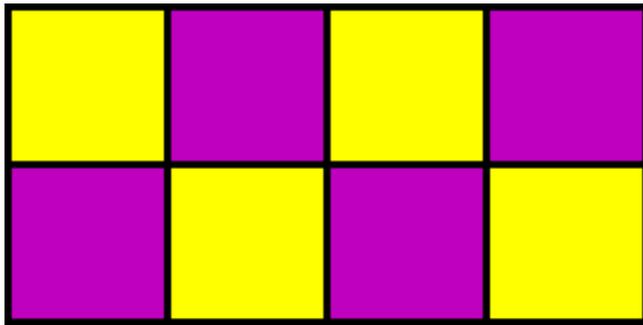


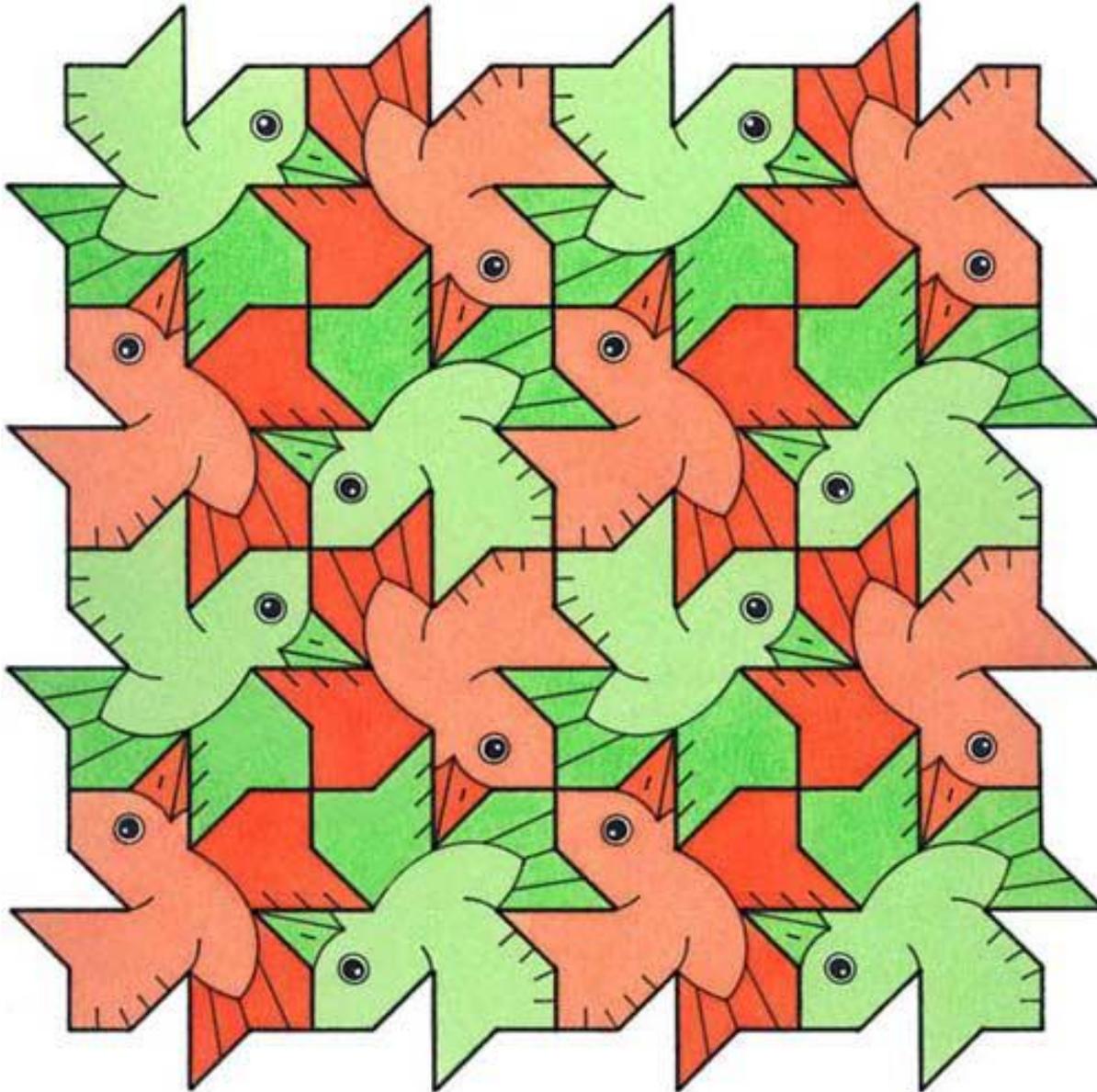
Clockwise



Counter-Clockwise

Basically, a **tessellation** to tile a floor (that goes on forever) with shapes so that there is no overlapping and no gaps.





What transformations
can you see in this
Escher print?

Some birds have
been translated
and some have
been rotated.

Transformations

Ex. 16.1 pg. 179-180,

no. 1-4

no. 9-10

Ex. 16. 2 pg. 181-182

no. 1, 5, 6, 7, 8

Ex. 16. 2 pg. 184

no. 2 a

no. 3. a

no. 7

Ex. 16. 4 pg. 187 no. 2, 3, 4, 5, 6a, 7a,

Ex. 16.5 pg. 188-189

1-2 and 4