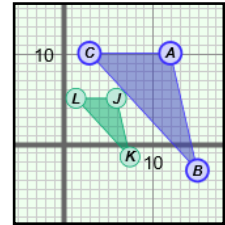# Vocabulary: Dilations

📖 Vocabulary

- <u>Dilation</u> – an enlargement or reduction of a figure.
  - o In the figure shown to the right, the preimage, Δ*ABC*, has been dilated by a scale factor of 0.5 to get the image, Δ*JKL*.
  - o A dilation preserves shape, but not necessarily size, so the preimage and image are similar.

- <u>Image</u> – a figure that has been transformed, compared to the original figure (the preimage).
  - o Transformations include resizing, reflecting, rotating, or translating a figure.

- <u>Matrix</u> – a rectangular array of numbers and/or variables.
  - o The matrix shown to the right has 2 rows and 3 columns, so it is a 2 × 3 matrix.
 - o Each number or variable in a matrix is called an *element*.

$$\begin{bmatrix} -5 & 16 & 7 \\ -8 & -4 & 10 \end{bmatrix}$$

- <u>Preimage</u> – the original figure, before being transformed.

- <u>Scalar</u> – a constant number that a matrix is multiplied by.
  - o The matrix shown to the right is being multiplied by the scalar 2.

$$2.0 \cdot \begin{bmatrix} A & B & C \\ 4 & -1 & 0 \\ 3 & 5 & -6 \end{bmatrix}$$

- <u>Scale factor</u> – the ratio of the lengths of the corresponding sides of two similar figures.
  - o For example, the sides of *EFGH* are twice as long as the sides of *ABCD*, so the ratio of the lengths of each pair of corresponding sides is 2.
  - o All dilations can be described by a scale factor.
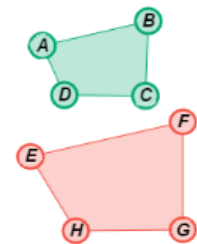
- <u>Transformation</u> – a change in the size, shape, direction, or position of a figure.
  - o Transformations that don't change the size or shape of images are *isometric*, and include reflections, rotations, and translations.
  - o Other transformations such as dilating (resizing) are not isometric.