

Chapter 4

Transformations



4.1 - Translations

4.2 - Reflections

4.3 - Rotations

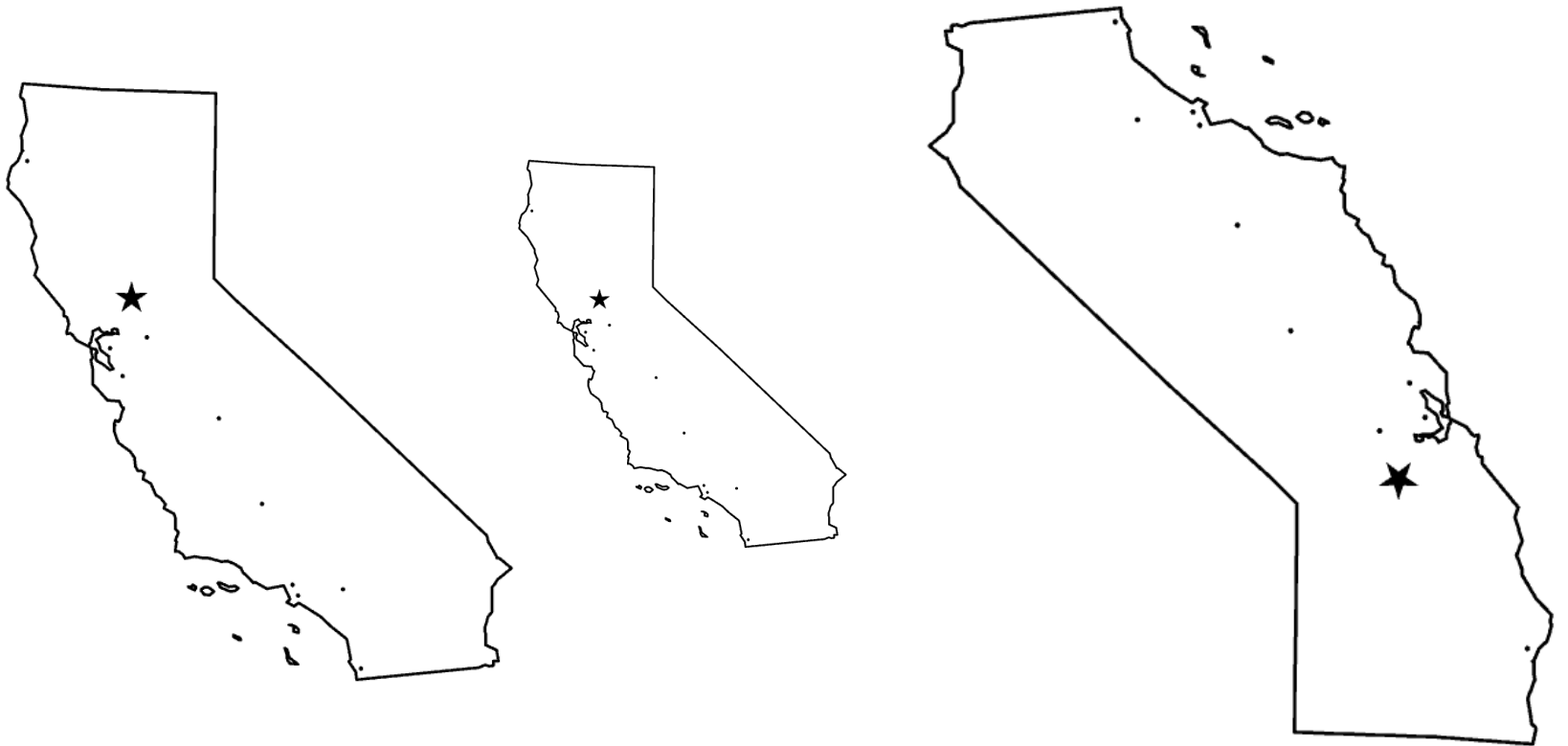
4.4 - Congruence and Transformations

4.5 - Dilations

4.6 - Similarity and Transformations

4.6 - Similarity and Transformations

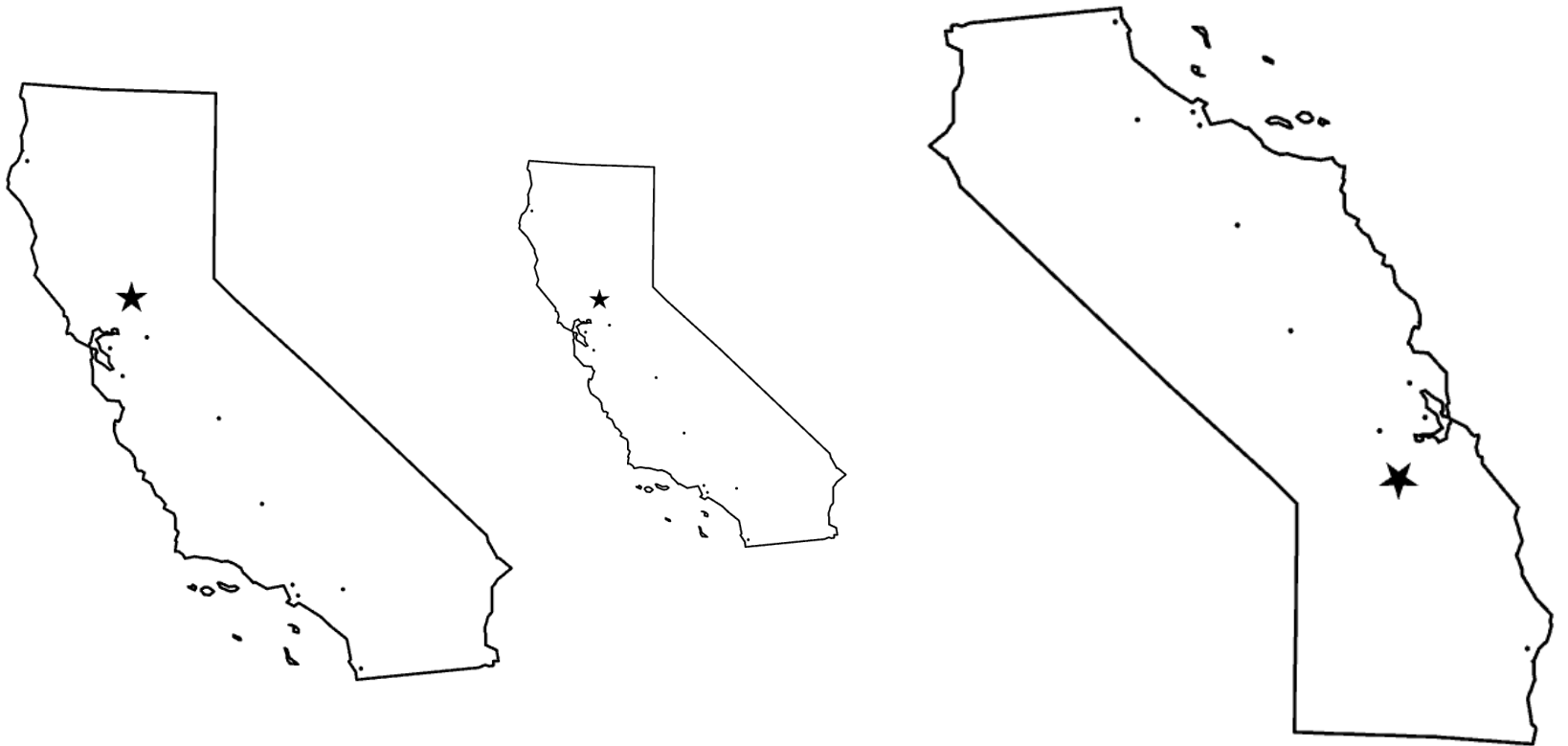
What can you say about these geometries?



4.6 - Similarity and Transformations

Similar Geometries

Two figures are **similar** when they have the same shape but not necessarily the same size.



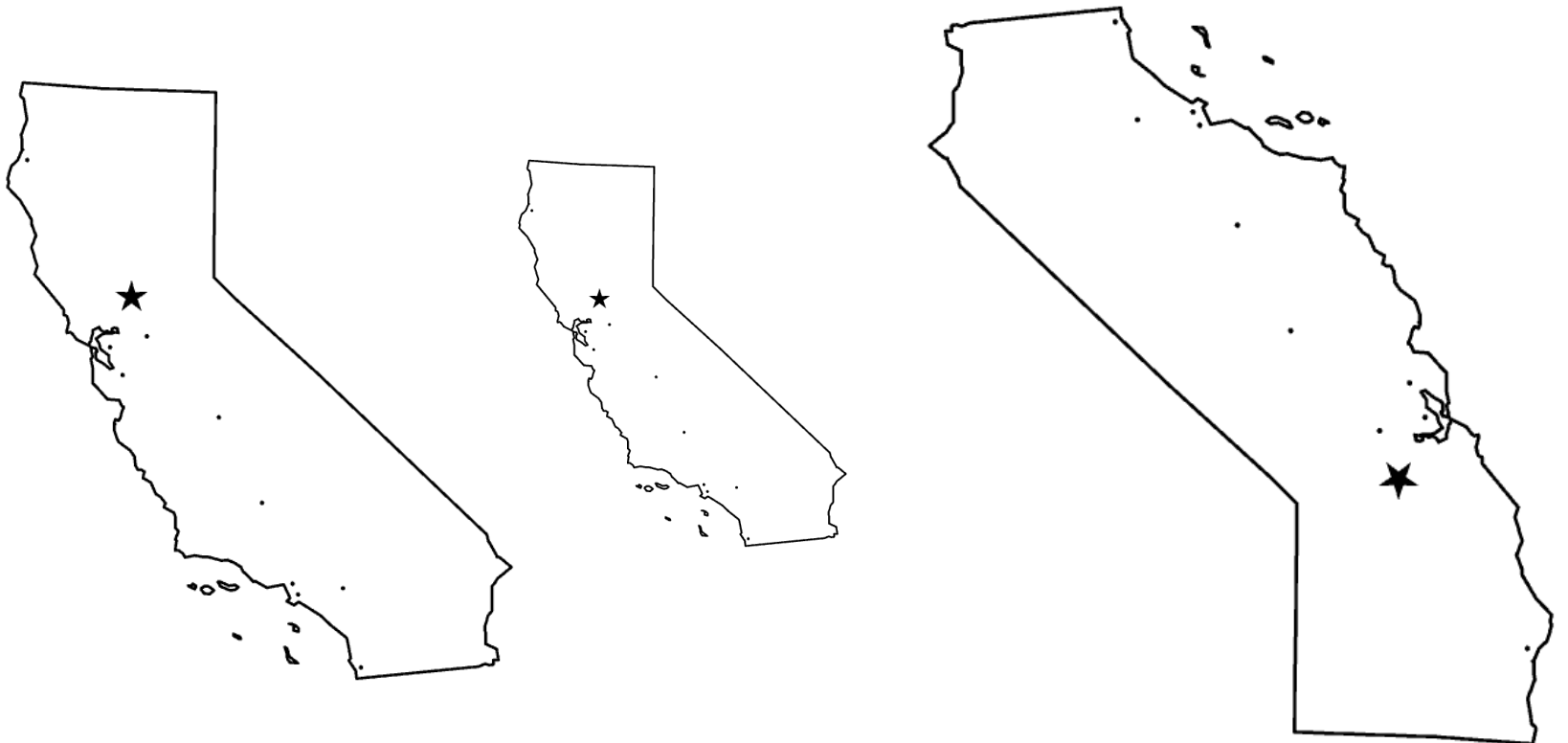
4.6 - Similarity and Transformations

Similar Geometries

Two figures are **similar** when they have the same shape but not necessarily the same size.

Similarity Transformation

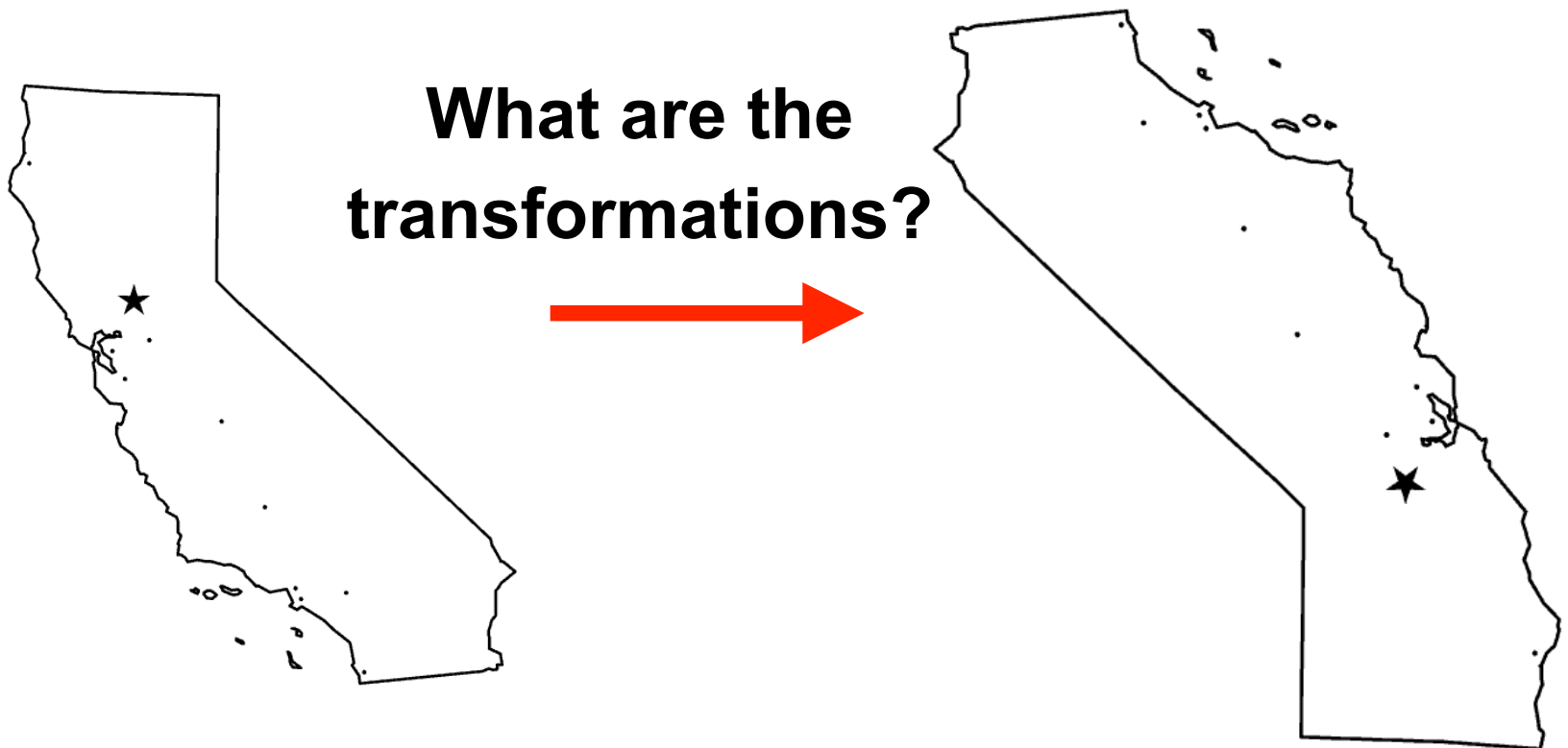
A dilation or a composition of rigid motions and dilations.



4.6 - Similarity and Transformations

Definition

Two geometric figures are **similar figures** if and only if there is a **similarity transformation** that maps one of the figures onto the other.



4.6 - Similarity and Transformations

Perform a Similarity Transformation

Graph $\triangle ABC$ with vertices

$A(-4, 1)$, $B(-2, 2)$, and

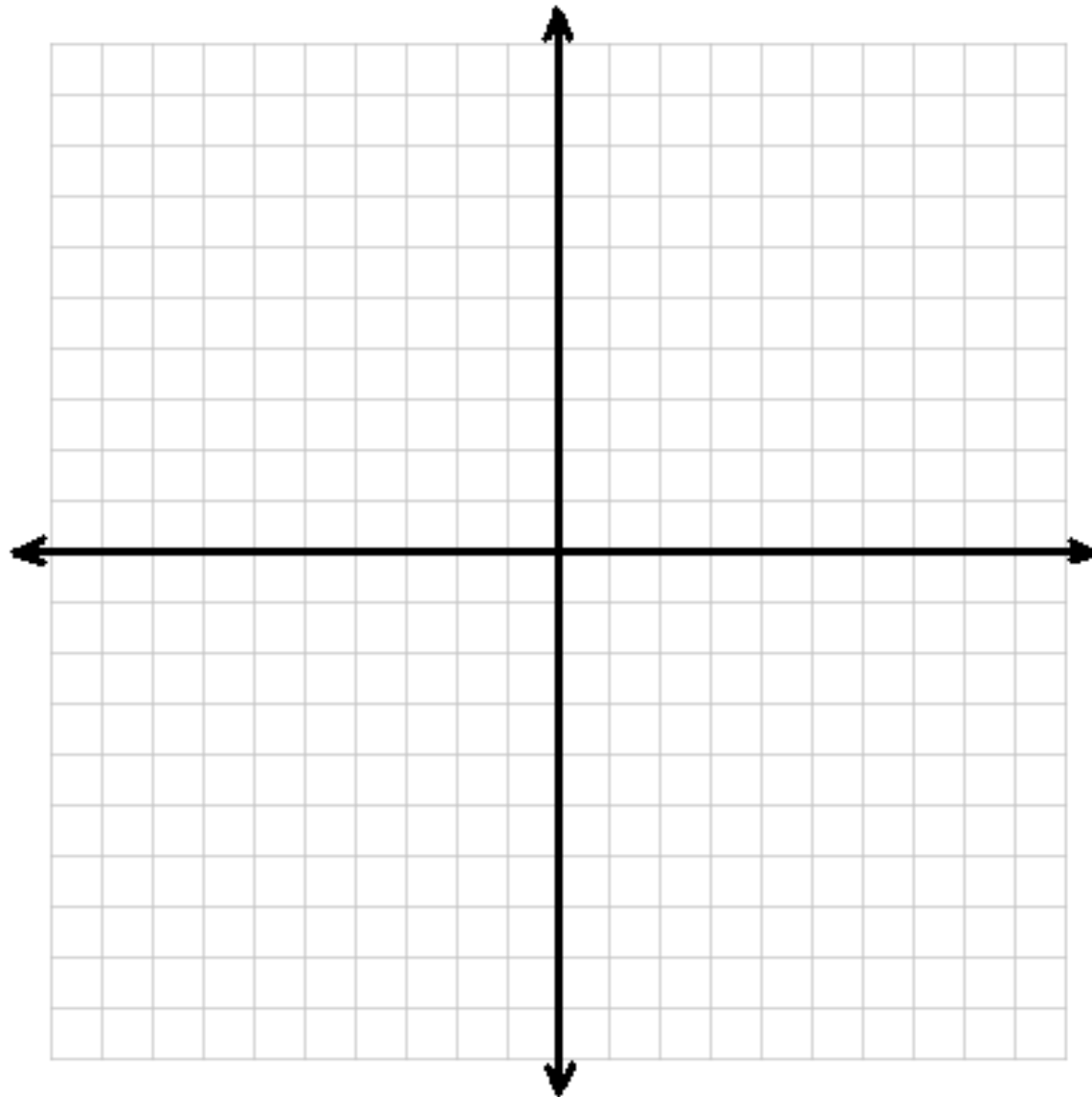
$C(-2, 1)$ and its image

after the similarity transformation.

Translation:

$$(x, y) \rightarrow (x + 5, y + 1)$$

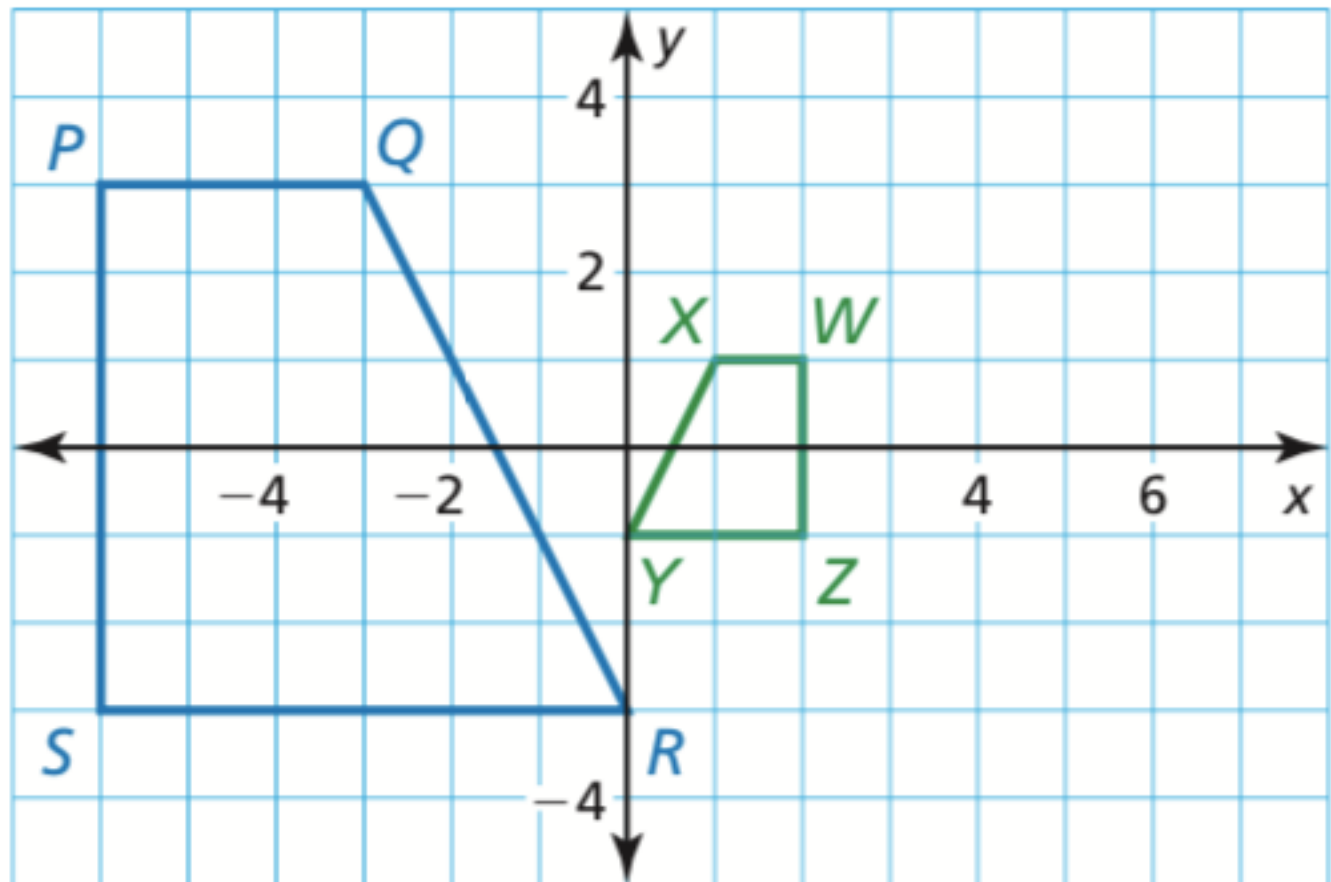
Dilation: $(x, y) \rightarrow (2x, 2y)$



4.6 - Similarity and Transformations

Describe a Similarity Transformation

Describe transformation(s) that maps trapezoid PQRS to trapezoid WXYZ.



4.6 - Similarity and Transformations

Prove two squares are similar

Given Square $ABCD$ with side length r ,
square $EFGH$ with side length s ,
 $\overline{AD} \parallel \overline{EH}$

Prove Square $ABCD$ is similar to
square $EFGH$.

