Name ____ Date _________

4.6 Practice A

In Exercises 1 and 2, graph $\triangle PQR$ with vertices $P(-1, 5)$, $Q(-4, 3)$, and $R(-2, 1)$ and its image after the similarity transformation.

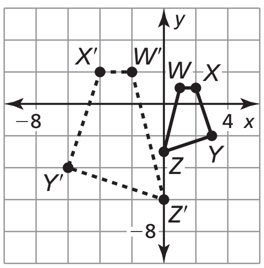
1. **Rotation:** 180° about the origin

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

2. **Dilation:** $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$

Reflection: in the x-axis

3. Describe a similarity transformation that maps the black preimage onto the dashed image.



In Exercises 4 and 5, determine whether the polygons with the given vertices are similar. Use transformations to explain your reasoning.

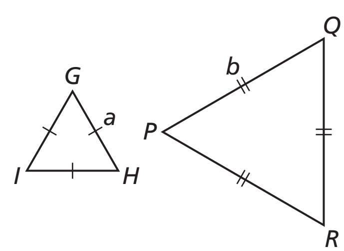
4. $A(-2, 5)$, $B(-2, 2)$, $C(-1, 2)$ and $D(3, 3)$, $E(3, 1)$, $F(2, 1)$

5. $J(-5, -3)$, $K(-3, -1)$, $L(-3, -5)$, $M(-5, -5)$ and $T(3, 3)$, $U(4, 3)$, $V(4, 2)$, $W(3, 1)$

6. Prove that the figures are similar.

Given Equilateral $\triangle GHI$ with side length a, equilateral $\triangle PQR$ with side length b

Prove $\triangle GHI$ is similar to $\triangle PQR$.



7. Your friend claims you can use a similarity transformation to turn a square into a rectangle. Is your friend correct? Explain your answer.

8. Is the composition of a dilation and a translation commutative? In other words, do you obtain the same image regardless of the order in which the transformations are performed? Justify your answer.

9. The image shown is known as a *Sierpinski triangle*. It is a common mathematical construct in the area of fractals. What can you say about the similarity transformations used to create the white triangles in this image?