

Geometry 4.7

Identify reflections, translations, and rotations

Verify congruence after a congruence

transformation

preimage $\triangle ABC$

→ image $\triangle A'B'C'$

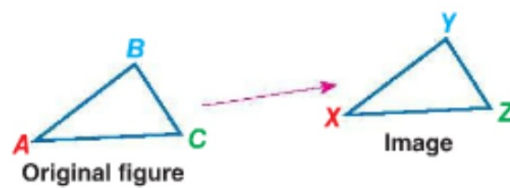
reflection

translation

rotation

congruence transformation (isometry)

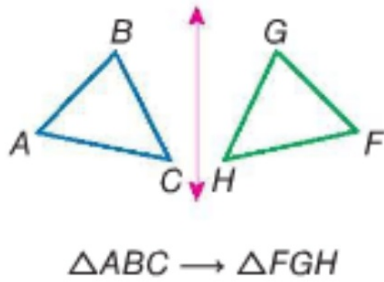
Quiz 4.5-4.6



KeyConcept Reflections, Translations, and Rotations

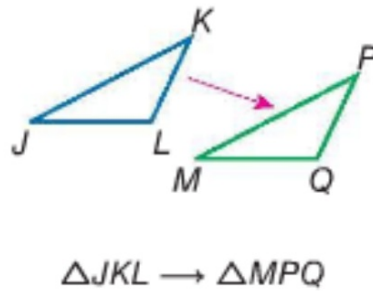
A **reflection** or *flip* is a transformation over a line called the *line of reflection*. Each point of the preimage and its image are the same distance from the line of reflection.

Example



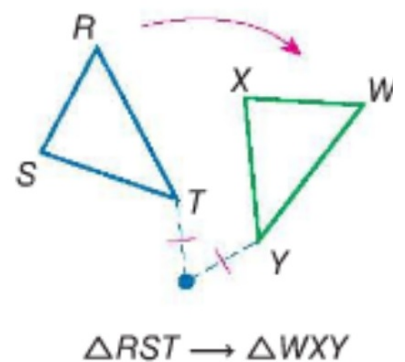
A **translation** or *slide* is a transformation that moves all points of the original figure the same distance in the same direction.

Example



A **rotation** or *turn* is a transformation around a fixed point called the *center of rotation*, through a specific angle, and in a specific direction.

Example



2 Verify Congruence You can verify that reflections, translations, and rotations of triangles produce congruent triangles using SSS.



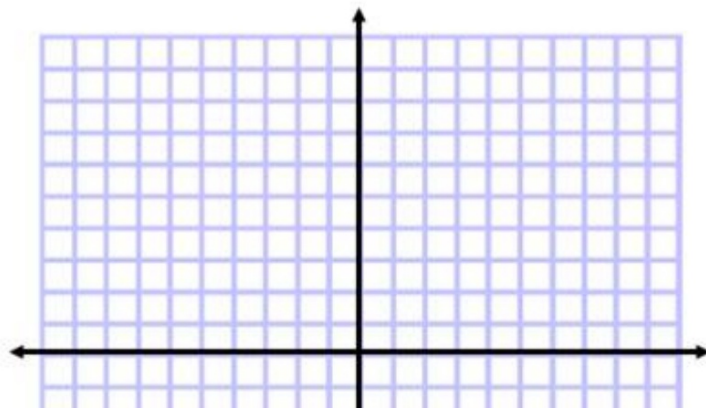
Example 3 Verify Congruence with a Transformation

Triangle XZY with vertices $X(2, -8)$, $Z(6, -7)$, and $Y(4, -2)$ is a transformation of $\triangle ABC$ with vertices $A(2, 8)$, $B(6, 7)$, and $C(4, 2)$. Graph the original figure and its image. Identify the transformation and verify that it is a congruence transformation.

Identify: eyeball

To verify: do the math...could use SSS, SAS, etc.

You have to PROVE it!

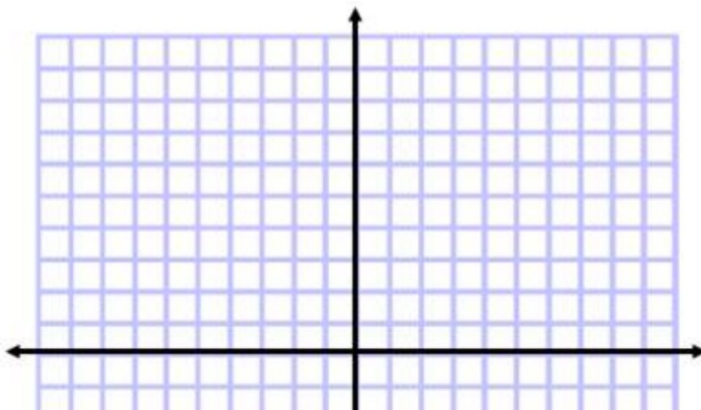


Whiteboards

Guided Practice

3. Triangle JKL with vertices $J(-2, 2)$, $K(-8, 5)$, and $L(-4, 6)$ is a transformation of $\triangle PQR$ with vertices $P(2, -2)$, $Q(8, -5)$, and $R(4, -6)$. Graph the original figure and its image. Identify the transformation and verify that it is a congruence transformation.

Identify: eyeball
Verify: Do the math



$\triangle ABC \xrightarrow{\text{refl.}} A'B'C' \xrightarrow{\text{trans.}} A''B''C''$

image