Geometry 4.7

Identify reflections, translations, and rotations

Verify congruence after a congruence transformation

preimage before

image after

reflection flip same s/s reverse orientation

translation slide, same s/s orientation

rotation turn, same s/s orientation

congruence transformation (isometry)

dilation → similar, diff size

activity: letters transformations

Quiz Fri. 4.5-4.6

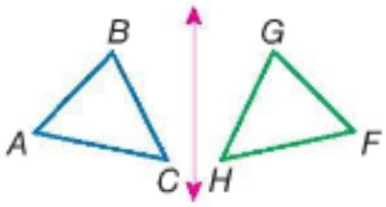
Reverses orientation

p. 296

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.

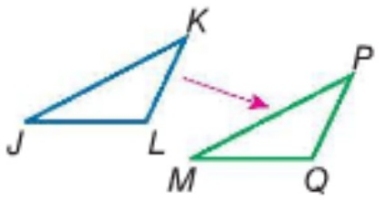
Example



$\triangle ABC \longrightarrow \triangle FGH$

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

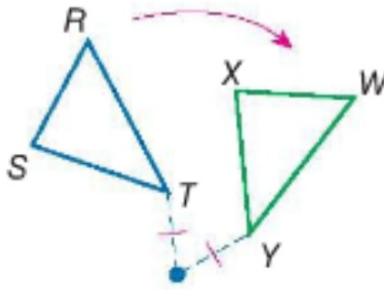
Example



$\triangle JKL \longrightarrow \triangle MPQ$

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. Each point of the original figure and its image are the same distance from the center.

Example



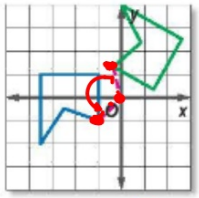
$\triangle RST \longrightarrow \triangle WXY$

Example 1 Identify Congruence Transformations

PT

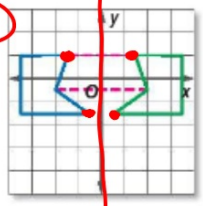
Identify the type of congruence transformation shown as a *reflection, translation,* or *rotation.*

a.



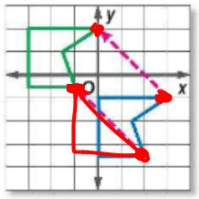
Rotation

b.



refl.

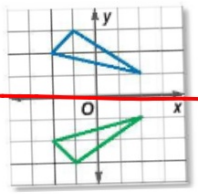
c.



↑ trans

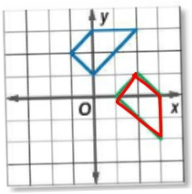
GuidedPractice

1A.



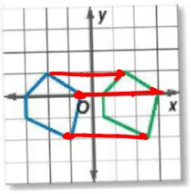
Refl

1B.



Rot.

1C.



Tr.

GuidedPractice

Identify the type of congruence transformation shown as a *reflection, translation,* or *rotation.*

2A.

Tr.

2B.

Ref!

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

Example 3 Verify Congruence after 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 ASA AAS

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

You have to PROVE it!

X (2, -8) A (2, 8)

Y (4, -2) B (6, 7)

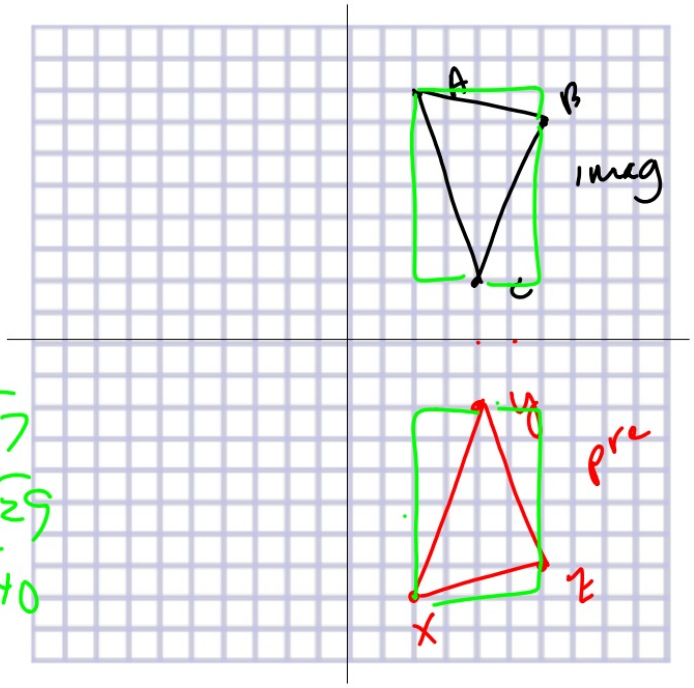
Z (6, -7) C (4, 2)

yes

X Y $6^2+2^2=\sqrt{40}$ A B $4^2+1^2=\sqrt{17}$

Y Z $2^2+5^2=\sqrt{29}$ B C $5^2+2^2=\sqrt{29}$

Z X $1^2+4^2=\sqrt{17}$ C A $6^2+2^2=\sqrt{40}$

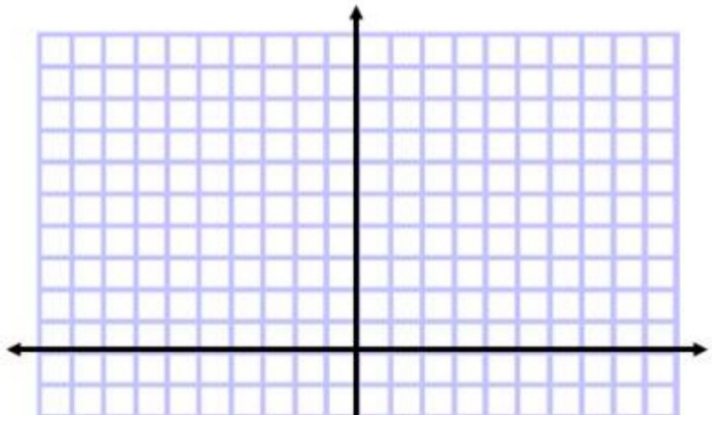


Whiteboards

GuidedPractice

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



p299

7-29 0 28

41-51 0