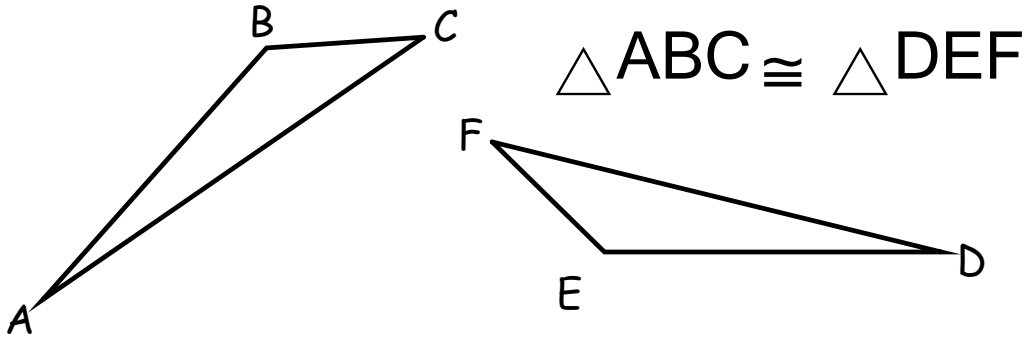


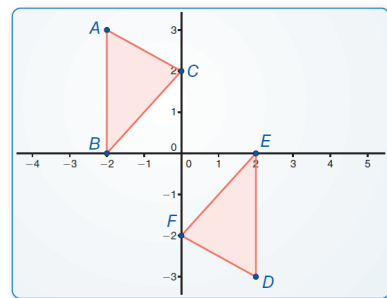
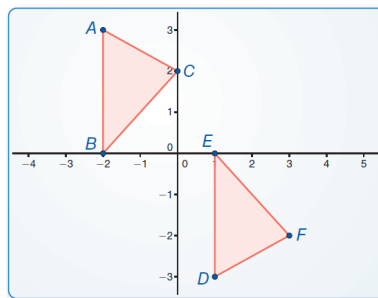
5.2: Congruent Polygons

Essential Question

Given two congruent triangles, how can you use rigid motions to map one triangle to the other triangle?



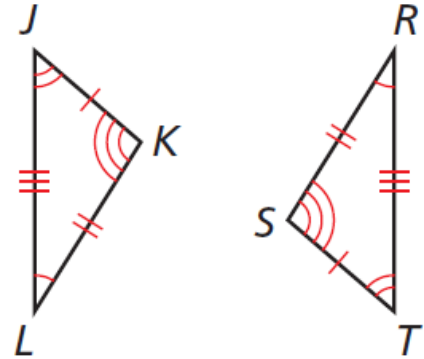
Work with a partner. Describe a composition of rigid motions that maps $\triangle ABC$ to $\triangle DEF$. Use dynamic geometry software to verify your answer.



Congruent Polygons: Two polygons with

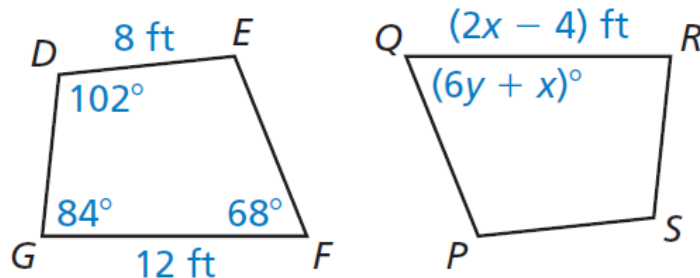
1. all corresponding angles congruent and
2. all corresponding sides congruent .

Write a congruence statement for the triangles. Identify all pairs of congruent corresponding parts.

Example

In the diagram, $DEFG \cong SPQR$

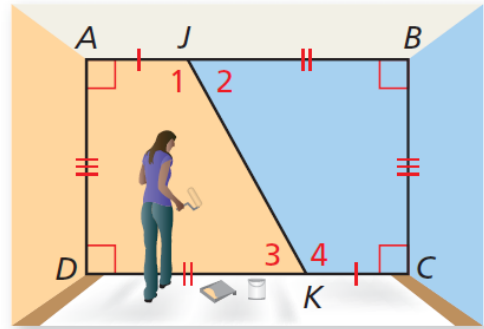
- a. Find the value of x .



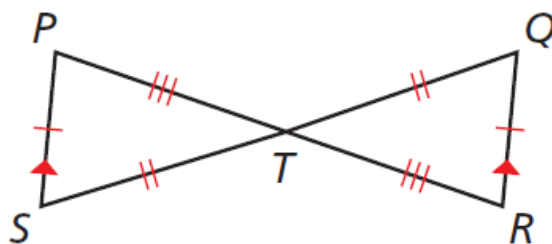
- b. Find the value of y .

Example

You divide the wall into orange and blue sections along \overline{JK} . Will the sections of the wall be the same size and shape? Explain.



3. In the diagram at the left, show that $\triangle PTS \cong \triangle RTQ$



Theorem

Theorem 5.3 Properties of Triangle Congruence

Triangle congruence is reflexive, symmetric, and transitive.

Reflexive For any triangle $\triangle ABC$, $\triangle ABC \cong \triangle ABC$.

Symmetric If $\triangle ABC \cong \triangle DEF$, then $\triangle DEF \cong \triangle ABC$.

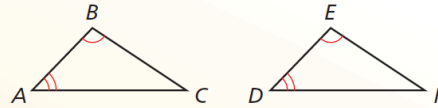
Transitive If $\triangle ABC \cong \triangle DEF$ and $\triangle DEF \cong \triangle JKL$, then $\triangle ABC \cong \triangle JKL$.

Proof BigIdeasMath.com

Theorem

Theorem 5.4 Third Angles Theorem

If two angles of one triangle are congruent to two angles of another triangle, then the third angles are also congruent.



Proof Ex. 19, p. 244

If $\angle A \cong \angle D$ and $\angle B \cong \angle E$, then $\angle C \cong \angle F$.

Use the information in the figure to prove

that $\triangle ACD \cong \triangle CAB$

