

Congruence and Transformations

Lesson Objective INBAT identify congruent figures and describe congruence transformations

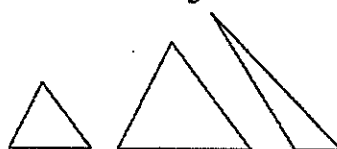
Congruent Figures: Two geometric figures are congruent figures if and only if there is a rigid motion or a composition of rigid motions that maps one of the figures onto the other.

Congruent



same size and shape

Not congruent



different sizes or shapes

****Remember, the rigid motions we discussed this chapter are:**

1. Rotation
2. Reflection
3. Translation

You can identify congruent figures in the coordinate plane by identifying the rigid motion or composition of rigid motions that maps one of the figures onto the other.

Example:

1. Identify any congruent figures in the coordinate plane. Explain.

quad. $ABCD \cong$ quad. $NPQR$: translation
 $(x, y) \rightarrow (x+2, y+6)$ OR $(x, y) \rightarrow (x-2, y-6)$
 $NPQR \rightarrow ABCD$ $ABCD \rightarrow NPQR$

$\triangle FGE \cong \triangle LMK$: reflection in x -axis

$\triangle JH \cong \triangle UST$: ① rotation 180° about the origin

Congruence Transformations

② reflection in $y=x$

Another name for a rigid motion or a combination of rigid motions is a congruence transformation because the PREIMAGE and IMAGE are *congruent*.

Example:

2. Describe a congruence transformation that maps quadrilateral $ABCD$ ($ABCD$) to quadrilateral $EFGH$ ($EFGH$).

① reflect in x -axis
 $(x, y) \rightarrow (x, -y)$

② reflect in y -axis
 $(x, y) \rightarrow (-x, y)$

