Section 4.1 - Congruent Polygons

Goals
- identify congruent figures and write congruence statements
- name corresponding parts of congruent figures

Congruent Polygons: same shape and same size

- Have corresponding __angles__ that are congruent
- Have corresponding __sides__ that are congruent
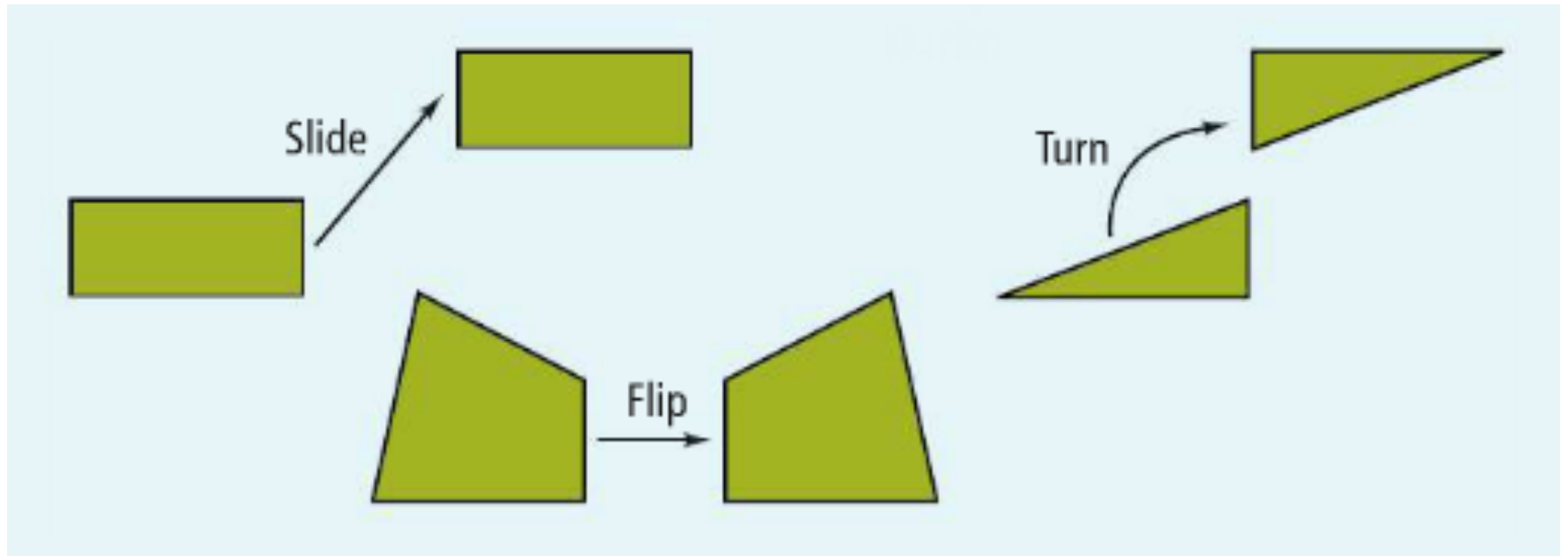
Congruence Statement:

- a statement saying that two figures are congruent
- corresponding angles must be lined up
  (name both shapes in the same order)

Write a congruence statement
for the quadrilaterals.

ABCD ~ EFGH

When two figures are congruent, you can flip, turn, or slide one so that it fits exactly on the other.

- The shapes do not have to have the same orientation to be congruent.

ΔABC ≅ ΔEFG

List the congruent corresponding parts.

Congruent Angles

$\angle A \cong \angle E$

$\angle B \cong \angle F$

$\angle C \cong \angle G$
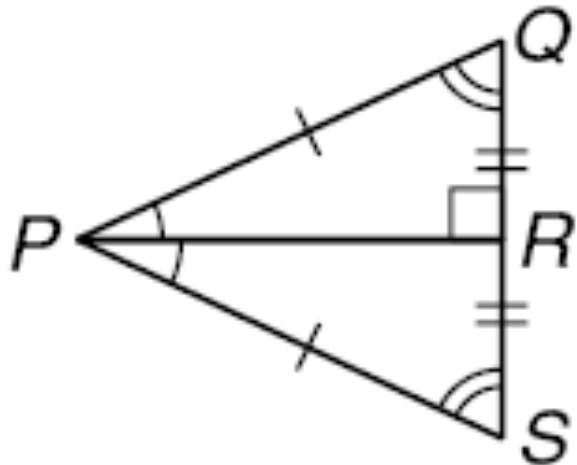
Congruent Sides

$\overline{AB} \cong \overline{EF}$

$\overline{BC} \cong \overline{FG}$

$\overline{AC} \cong \overline{EG}$

You don't need the diagram. The congruent sides and angles can be determined from the order of the congruence statement.

Are the triangles conguent?

If the triangles are congruent, write a congruence statement.
If you cannot determine, explain why.

Yes. All three sets of corresponding angles are congruent. Two pairs of corresponding sides are marked congruent and the 3rd side is a side both triangles share, so it is congruent also.
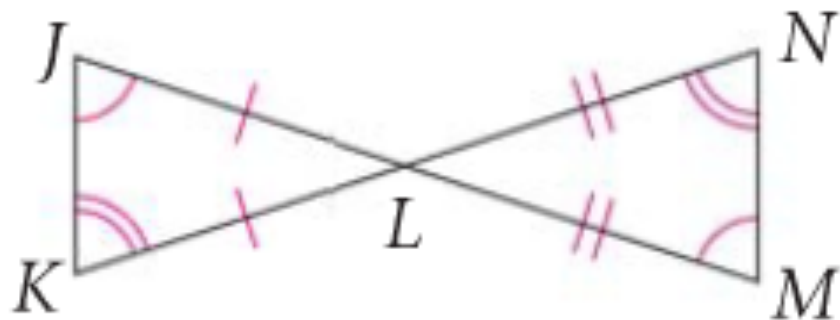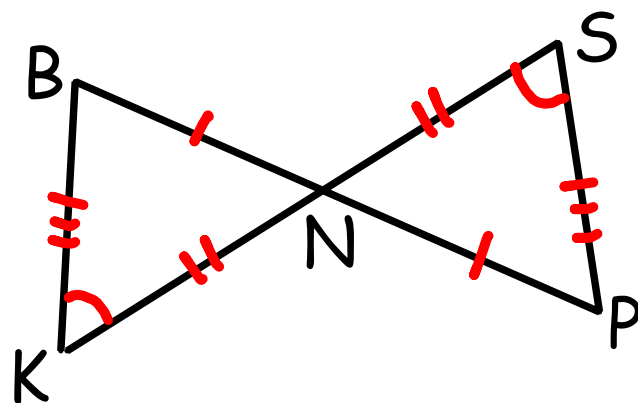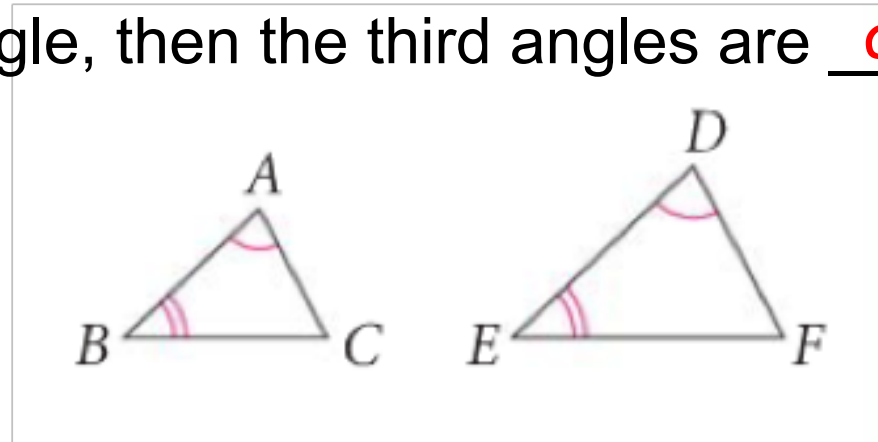

No. All three sets of corresponding angles are congruent (remember to count vertical angles), but none of the sets of corresponding sides are marked congruent.

A helpful theorem...

Third Angle Theorem
If two angles of one triangle are congruent to two angles of another triangle, then the third angles are __also congruent__.
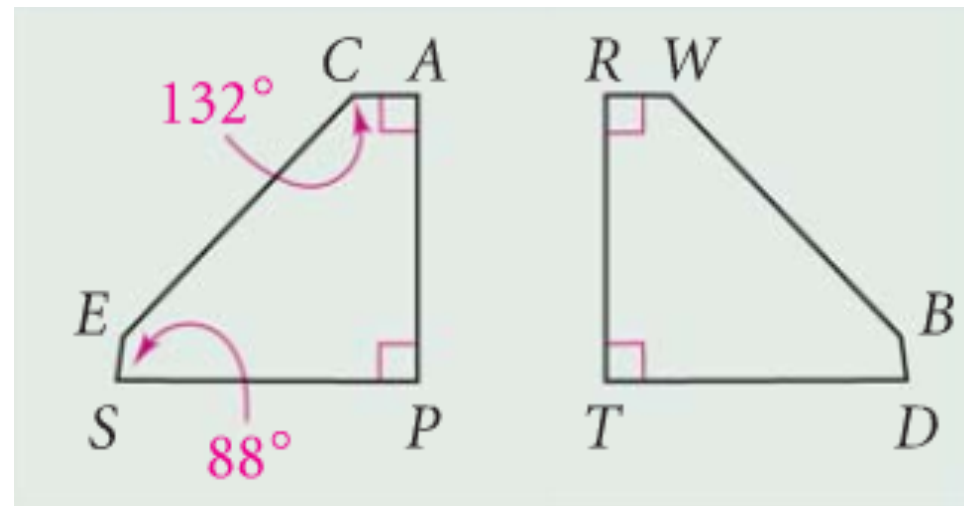

Are these triangles congruent?

Yes. All three sets of corresponding sides are marked congruent. Angles S and K are marked congruent. Angles BNK and SNP are congruent because they are vertical angles. So, angles B and P are congruent by the Third Angle Theorem

Using Congruent Parts
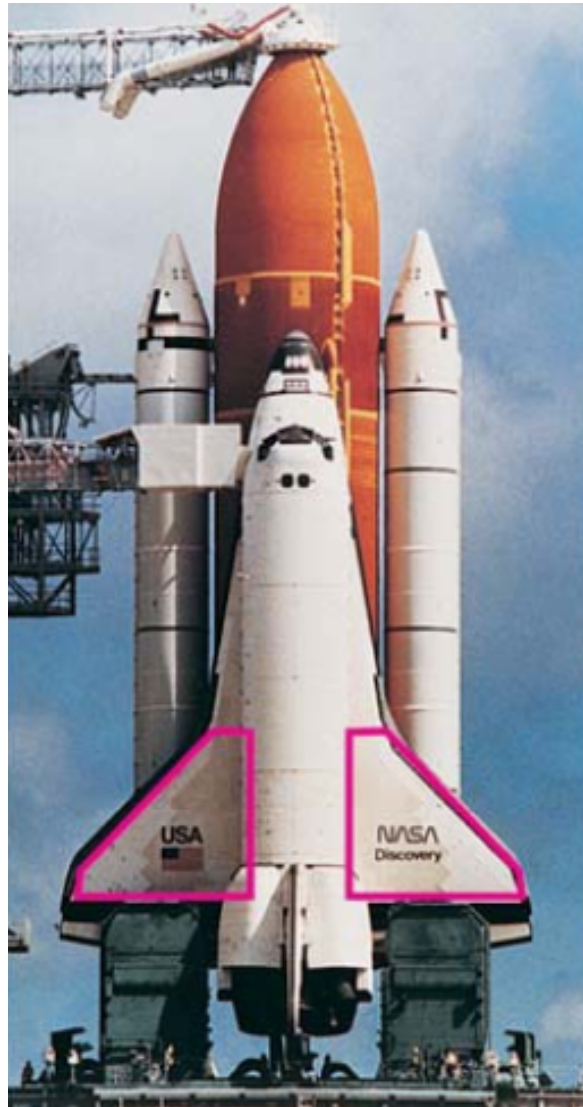
The wings on space shuttles and other types of aircraft must be congruent polygons.

$m\angle W = 132°$ because its congruent to $\angle C$

$m\angle D = 88°$ because its congruent to $\angle S$

Assignment:

Math XL

Concept 10 Assignment

- due by Thursday 11/7