

## 4.6 Warm-Up:

Suppose that  $\triangle XYZ \cong \triangle RST$ . Complete each statement.

1.  $\overline{XY} \cong \underline{\quad ? \quad} \overline{RS}$                       2.  $\angle Z \cong \underline{\quad ? \quad} \angle T$

3.  $m\angle S = m\angle \underline{\quad ? \quad} Y$

4. If  $\angle A \cong \angle B$ ,  $m\angle A = (2x + 40)^\circ$ , and  $m\angle B = (3x - 10)^\circ$ , find  $x$ .

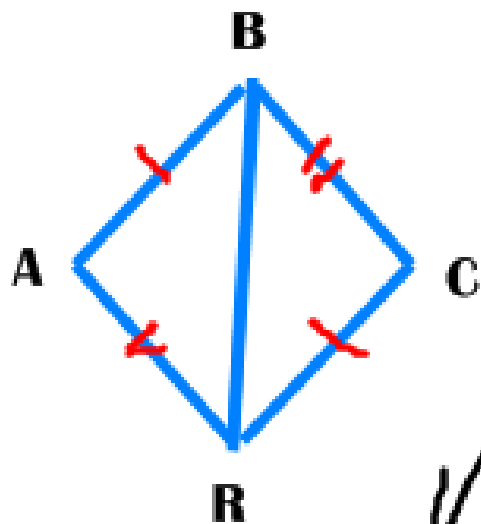
$$2x + 40 = 3x - 10$$

$$50 = x$$

Definition of congruent triangles:

Corresponding  
sides and angles  
are congruent

Explain how we can prove  $\angle A \cong \angle C$ .



$$\overline{AB} \cong \overline{CR}$$
$$\overline{BC} \cong \overline{AR}$$

given

$$\triangle ABR \cong \triangle CRB$$

SSS

$$\overline{BR} \cong \overline{BR}$$

reflexive

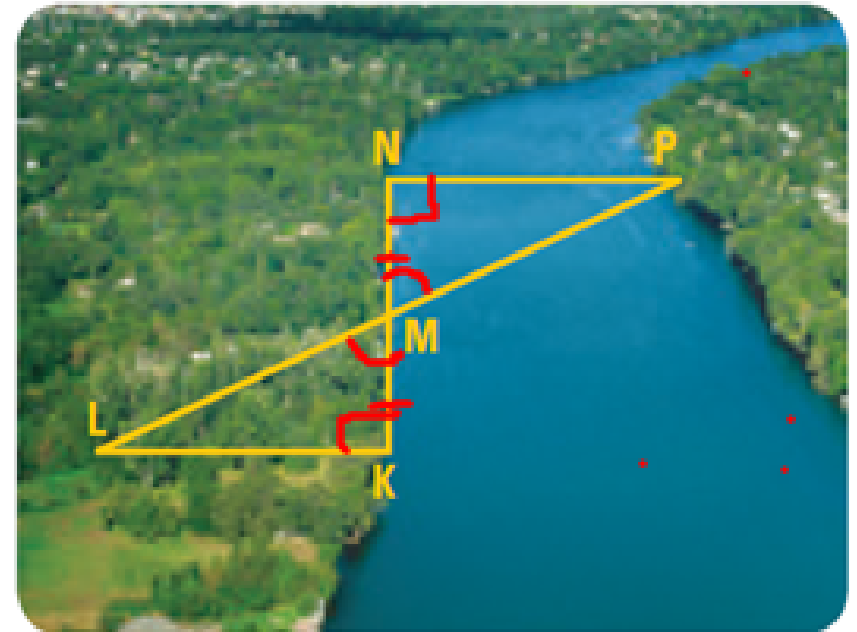
$$\angle A \cong \angle C$$

Corresponding parts  $\cong$   $\triangle$ 's

## Use congruent triangles for measurements.

**SURVEYING** Use the following method to find the distance across a river, from point  $N$  to point  $P$ .

- Place a stake at  $K$  on the near side so that  $\overline{NK} \perp \overline{NP}$ .
- Find  $M$ , the midpoint of  $\overline{NK}$ .
- Locate the point  $L$  so that  $\overline{NK} \perp \overline{KL}$  and  $L$ ,  $P$ , and  $M$  are collinear.



Use ASA to show

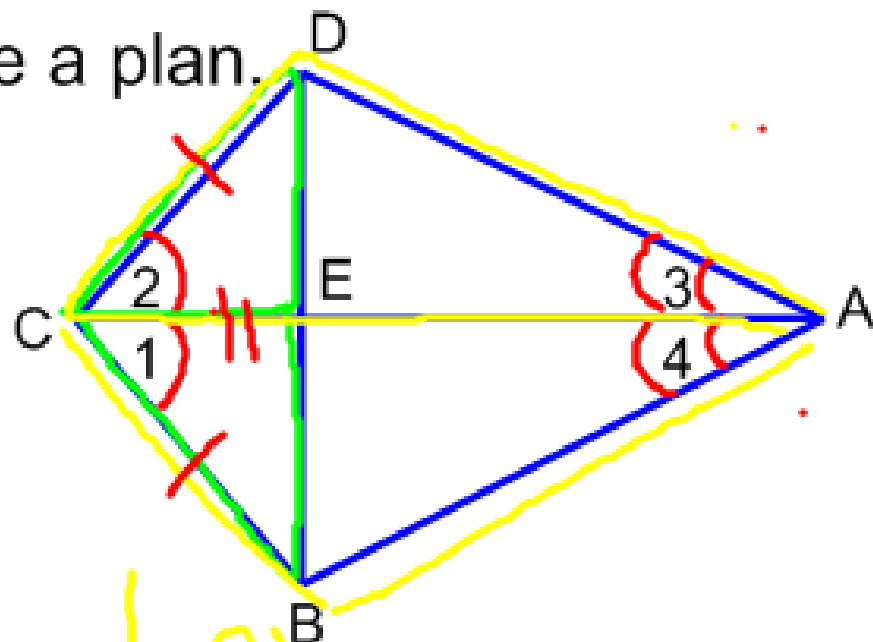
$$\triangle PNM \cong \triangle LKM.$$

Then  $\overline{NP} \cong \overline{KL}$  by corresponding parts  
of  $\cong \triangle$ 's. Measure  $KL$ .

Use congruent triangles. Write a plan.

Given:  $\angle 1 \cong \angle 2$ ,  $\angle 3 \cong \angle 4$

Prove:  $\triangle BCE \cong \triangle DCE$



1.  $\angle 1 \cong \angle 2$ ,  $\angle 3 \cong \angle 4$

2.  $\overline{CA} \cong \overline{CA}$

3.  $\triangle CDA \cong \triangle CBA$

4.  $\overline{BC} \cong \overline{DC}$

5.  $\overline{CE} \cong \overline{CE}$

6.  $\triangle BCE \cong \triangle DCE$

1. given

2. reflexive

3. ASA

4. Corr. Parts of  $\cong \Delta$ 's

5. reflexive

6. SAS

Use congruent triangles. Write a proof.

Given:  $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$

Prove:  $\triangle TRS \cong \triangle KCS$



1.  $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$
2.  $\angle 3$  supp to  $\angle 5$   
 $\angle 4$  supp to  $\angle 6$
3.  $\angle 5 \cong \angle 6$  ①
4.  $\overline{TK} \cong \overline{TK}$
5.  $\triangle CKT \cong \triangle RTK$
6.  $\overline{RT} \cong \overline{CK}$  ②
7.  $\angle TSR \cong \angle KSC$  ③

1. Given
2. Linear Pair Post.

3. Congruent Supplements Thm
4. Reflexive
5. AAS
6. Corr. parts of  $\cong \Delta$ 's
7. Vertical  $\angle$ 's  $\cong$  Thm

8.  $\triangle TRS \cong \triangle KCS$   
by AAS

Homework:

p. 259

#'s 2-8, 10, 11, 14-16,  
22, 23, 28, 29, 33, 35