



# WELCOME

## 6.4: Hinge Theorem

Last Night's HW: 6.2-3 Handout

Tonight's HW: 6.4 Handout

**QUIZ TODAY!!**

**Chapter 5/6 Test: Tuesday!**

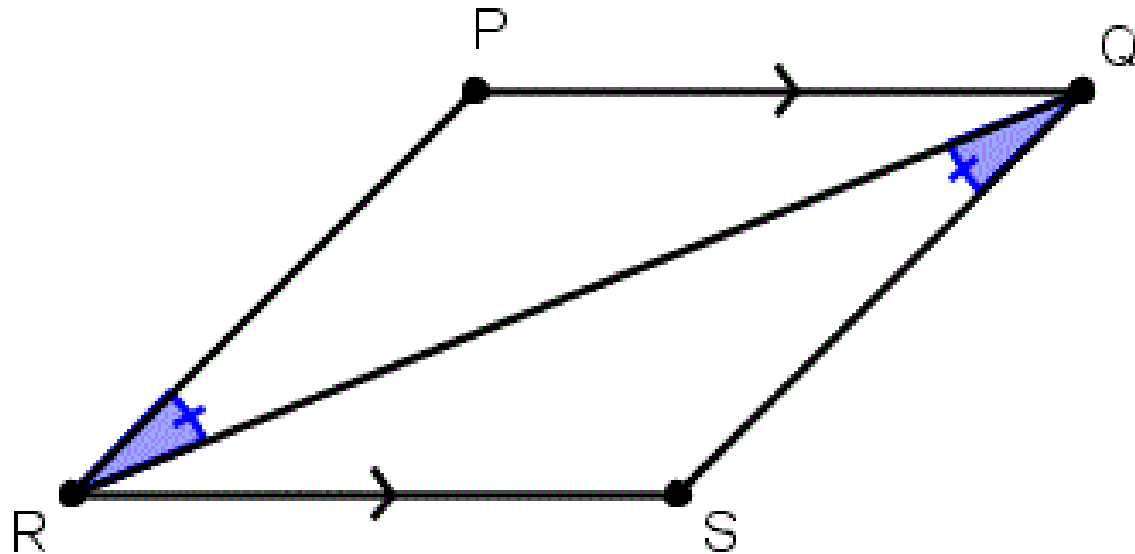
# Warm Up

Write a 2 Column Proof:

Given :  $\overline{PQ} \parallel \overline{RS}$

$\angle PRQ \cong \angle SQR$

Prove :  $\triangle PQR \cong \triangle SRQ$



# Quiz!

# Chapter 6 Section 4 Learning Target

I can write the inverse and contrapositive of a conditional statement.	6.4
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# Review:

## Inverse & Contrapositive

### Inverse:

Made by negating (making opposite) the **hypotheses** and **conclusion** of the Conditional.

### Conditional

If  $m\angle A = 30^\circ$ , then  $\angle A$  is acute

### Inverse

If  $m\angle A \neq 30^\circ$ , then  $\angle A$  isn't acute

### Contrapositive:

Made by negating (making opposite) the **hypotheses** and **conclusion** of the Converse.

### Converse

If  $\angle A$  is acute, then  $m\angle A = 30^\circ$

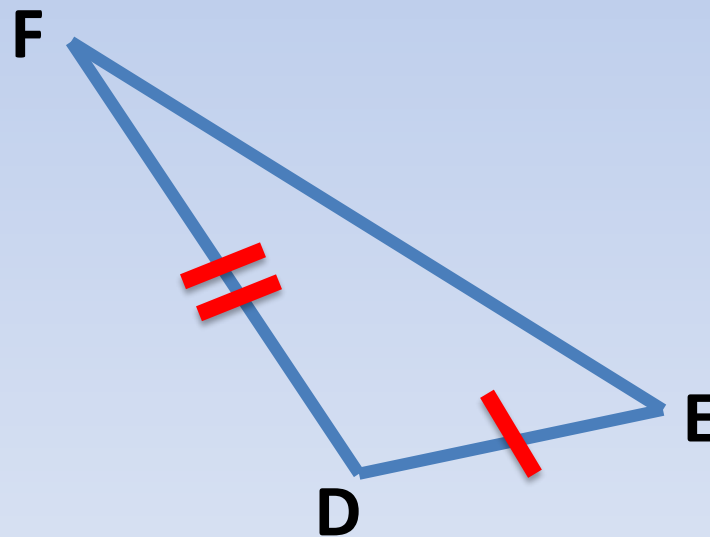
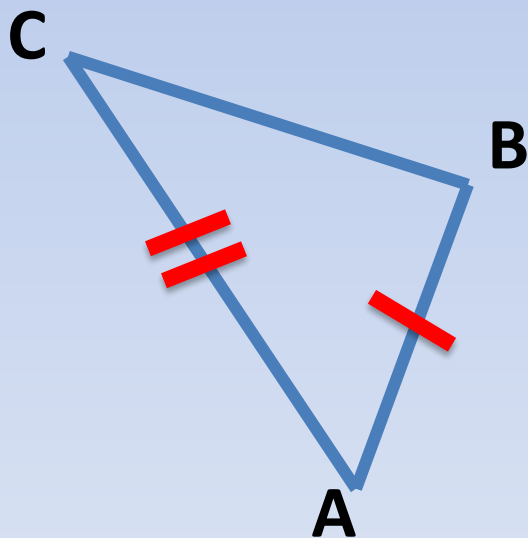
### Contrapositive

If  $\angle A$  isn't acute, then  $m\angle A \neq 30^\circ$

# Hinge Theorem

Given two sides of a  $\Delta$  are  $\cong$  to two sides of another  $\Delta$ ...

The angle between is greater in one triangle IFF the side opposite is greater in that triangle as well.

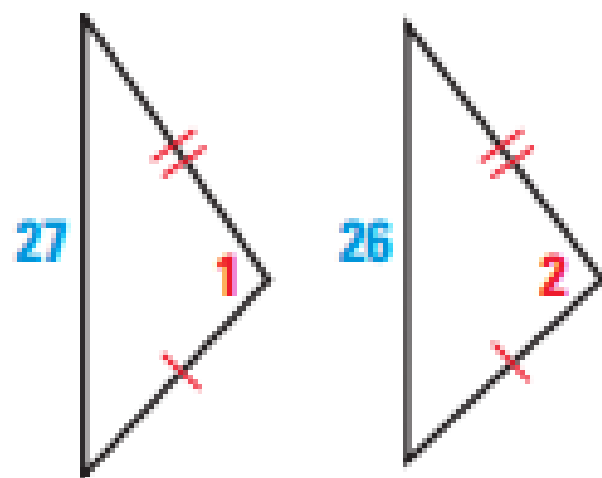


$$\overline{EF} > \overline{BC} \quad \text{IFF} \quad \angle D > \angle A$$

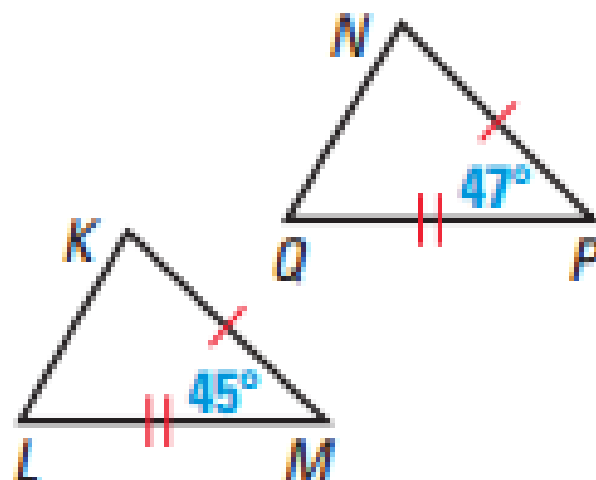
# Examples:

In Exercises 3–5, complete with  $<$ ,  $>$ , or  $=$ .

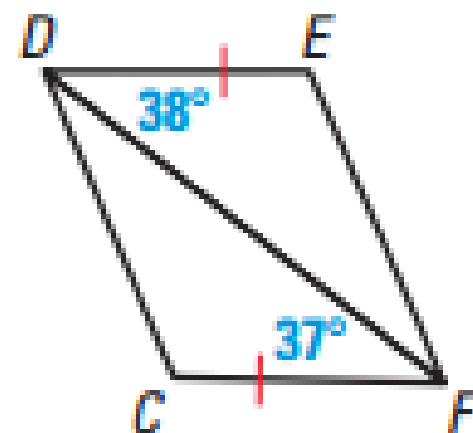
3.  $m\angle 1$  ?  $m\angle 2$



4.  $KL$  ?  $NQ$



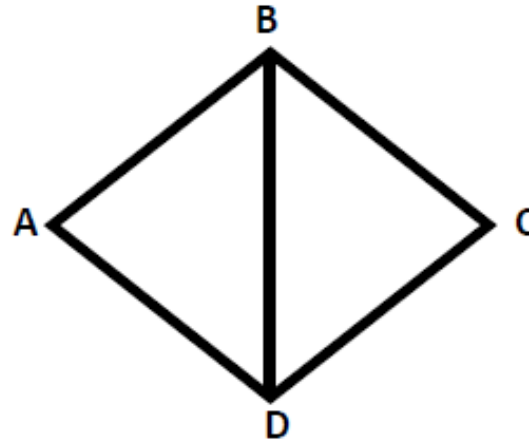
5.  $DC$  ?  $FE$



# Proof Practice #3

1)

Given:  $\overline{AB} \cong \overline{CB}$   
 $\overline{BD}$  bisects  $\angle ABC$



Prove:  $\overline{AD} \cong \overline{CD}$

Statement	Reason

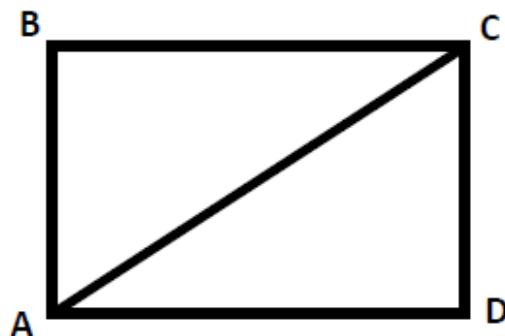


1)

Given:  $\overline{BA} \cong \overline{DC}$

**$\angle B$  &  $\angle D$  are Right  $\angle$ s**

**Prove:**  $\triangle BCA \cong \triangle DAC$



Statement	Reason
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1)

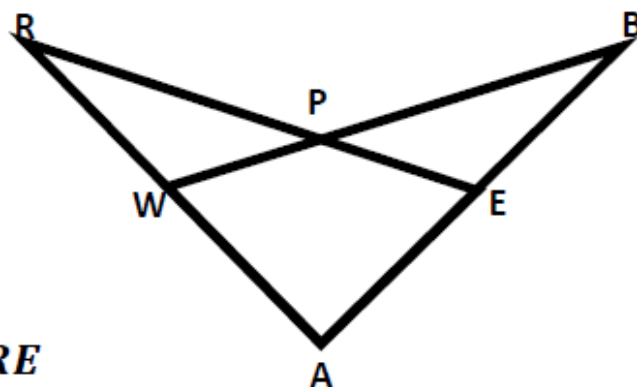
Given:

$$\overline{AW} \cong \overline{AE}$$

$$\angle B \cong \angle R$$

Prove:

$$\triangle ABW \cong \triangle ARE$$



Statement

Reason