

5.1

Thursday, October 20, 2016 8:51 AM

Geo H
5.1 Indirect Proof

Name:

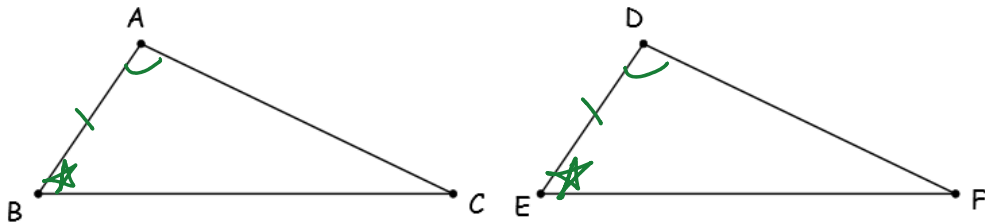
Example 1

The following occurs on the evening of October 26th, 2016.

- Given:
- You do 2 hours of homework
 - You spend 45 minutes eating dinner with the family
 - You watch television for $1\frac{1}{4}$ hours
 - You went to bed at 10pm.
 - The school day ended at 3pm.

Prove: You did not practice your favorite sport from 3:30-6:30p.

Example 2



Given: $\angle A \cong \angle D, \overline{AB} \cong \overline{DE}, \overline{AC} \not\cong \overline{DF}$

Prove: $\angle B \not\cong \angle E$

S	R
1. $\angle B \cong \angle E$	1. Assume
2. $\angle A \cong \angle D,$ $\overline{AB} \cong \overline{DE},$ $\overline{AC} \not\cong \overline{DF}$	2. Given
3. $\triangle ABC \cong \triangle DEF$	3. ASA
4. $\overline{AC} \cong \overline{DF}$	4. CPCTC

But wait! $\overline{AC} \not\cong \overline{DF}$ by the given. Therefore, our assumption is false. Conclude $\angle B \not\cong \angle E$.

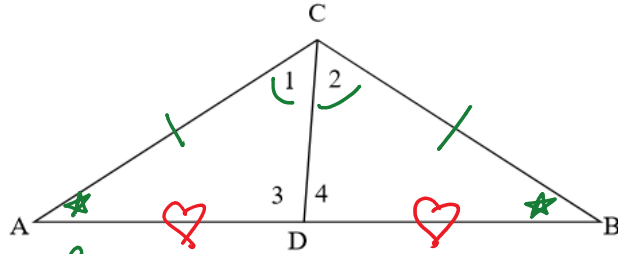
Example 3:

is false. Conclude $\angle B \neq \angle E$.

Example 3:

Given: $\overline{DC} \perp \overline{AB}$
 \overline{CD} bisects $\angle ACB$

Prove: $\triangle ABC$ is not Isosceles
 ($\triangle ABC$ is scalene)



- S**
- $\triangle ABC$ is isos
 - $\overline{DC} \perp \overline{AB}$,
 \overline{CD} bisects $\angle ACB$
 - $\overline{AC} \cong \overline{CB}$
 - $\angle A \cong \angle B$
 - $\triangle ACD \cong \triangle BCD$
 - $\angle 3 \cong \angle 4$
- Def. bis*

- R**
- Assume
 - Given
 - If isos $\rightarrow \triangle$
 - If $\triangle \rightarrow \triangle$
 - ASA
 - CCCTC

- $\angle ADB$ is a st. angle
- $\angle 3$ supp $\angle 4$
- $\angle 3, \angle 4$ are \perp
- $\overline{CD} \perp \overline{AB}$

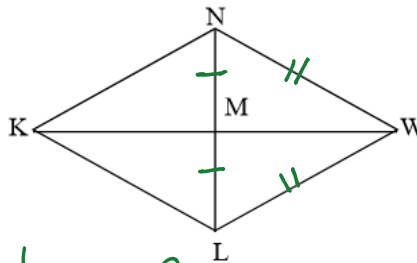
- Assumed
- If 2 angles form a st. angle \rightarrow supp
- If 2 angles are \cong supp $\rightarrow \perp$
- If $\perp \rightarrow \perp$

But wait! $\overline{CD} \perp \overline{AB}$ by the given.
 Therefore, our assumption is false.
 Conclude $\triangle ABC$ is not isosceles.

Example 4:

Given: M is the midpoint of \overline{NL}
 $\overline{KN} \cong \overline{KL}$

Prove: $\overline{NW} \cong \overline{LW}$



- S**
- $\overline{NW} \cong \overline{LW}$
 - M is the midpt of \overline{NL}
 - $\overline{KN} \cong \overline{KL}$
 $\overline{NM} \cong \overline{ML}$
 - $\overline{WM} \perp$ bis \overline{NL}

- R**
- Assume
 - Given
 - Def of midpt
 - If 2 pts are equidistant from the endpoints of a seg, then they form the \perp bis of the seg.

5. $\overline{KN} \cong \overline{KL}$

5. If a pt lies on the \perp bis, then it is equidistant from the

endpts of the seg.

But wait! $\overline{KT} \neq \overline{TL}$ by the given. Therefore, our assumption is false. Conclude $\overline{NW} \neq \overline{LW}$.