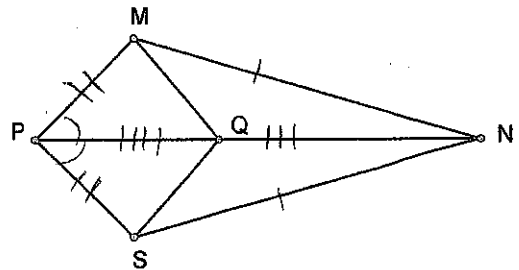


Name:  
Date:

4.1 Day 2 ~ Detour Proofs

1. Given:  $\overline{MN} \cong \overline{NS}$   
 $\overline{MP} \cong \overline{PS}$

Prove:  $\angle MQP \cong \angle SQP$



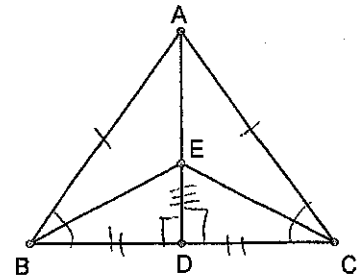
- S
- 
- ①  $\overline{MN} \cong \overline{NS}$   
②  $\overline{MP} \cong \overline{PS}$   
③  $\overline{PN} \cong \overline{PN}$   
④  $\triangle MPN \cong \triangle SPN$   
⑤  $\angle MPN \cong \angle SPN$   
⑥  $\overline{PQ} \cong \overline{PQ}$   
⑦  $\triangle MPQ \cong \triangle SPQ$   
⑧  $\angle MQP \cong \angle SQP$

P

- ① Given  
② Given  
③ Reflexive Prop.  
④ SSS  
⑤ CPCTC  
⑥ Reflexive Prop.  
⑦ SAS  
⑧ CPCTC

2. Given:  $\triangle ABC$  is isosceles with base  $\overline{BC}$   
 $\overline{AD} \perp \overline{BC}$

Prove:  $\overline{BE} \cong \overline{EC}$



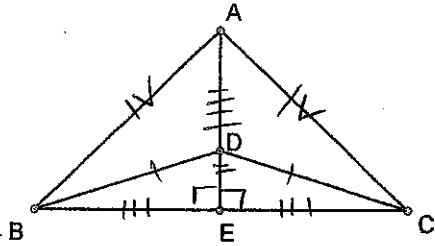
- S
- 
- ①  $\triangle ABC$  is isosceles  
w/ base  $\overline{BC}$   
②  $\overline{AD} \perp \overline{BC}$   
③  $\overline{AB} \cong \overline{AC}$   
④  $\angle ABC \cong \angle ACB$   
⑤  $\angle ADC \cong \angle ADB$   
⑥  $\triangle ABD \cong \triangle ACD$   
⑦  $\overline{BD} \cong \overline{DC}$   
⑧  $\overline{DE} \cong \overline{DE}$   
⑨  $\triangle BED \cong \triangle CED$   
⑩  $\overline{BE} \cong \overline{EC}$

P

- ① Given  
② Given  
③ Def. of Isosc.  
④ Def. of Isosc.  
⑤  $\perp$  lines form  $\cong 90^\circ$   $\angle$ 's  
⑥ AAS  
⑦ CPCTC  
⑧ Reflexive Prop.  
⑨ SAS  
⑩ CPCTC

3. Given:  $\overline{AE} \perp \overline{BC}$   
 $\overline{BD} \cong \overline{CD}$

Prove:  $\triangle ABC$  is isosceles



Statements

Reasons

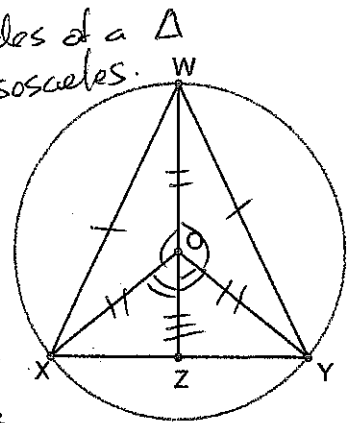
- ①  $\overline{AE} \perp \overline{BC}$
- ②  $\overline{BD} \cong \overline{CD}$
- ③  $\angle AEB$  &  $\angle AEC$  are  $90^\circ$  L's
- ④  $\angle DEB \cong \angle DEC$
- ⑤  $\overline{DE} \cong \overline{DE}$
- ⑥  $\triangle BDE \cong \triangle CDE$
- ⑦  $\overline{BE} \cong \overline{EC}$
- ⑧  $\overline{AE} \cong \overline{AE}$
- ⑨  $\triangle ABE \cong \triangle ACE$
- ⑩  $\overline{AB} \cong \overline{AC}$
- ⑪  $\triangle ABC$  is isosceles

- ① Given
- ② Given
- ③  $\perp$  lines form  $90^\circ$  L's
- ④ If 2 L's are  $90^\circ$ , then they are  $\cong$
- ⑤ Reflexive Property
- ⑥ HL
- ⑦ CPCTC
- ⑧ Reflexive Prop.
- ⑨ SAS
- ⑩ CPCTC
- ⑪ If at least 2 sides of a  $\triangle$  are  $\cong$ , the  $\triangle$  is isosceles.

4. Given:  $\odot O$

$\overline{WX} \cong \overline{WY}$

Prove:  $\overline{WZ}$  bisects  $\overline{XY}$



Statements

Reasons

- ①  $\odot O$
- ②  $\overline{WX} \cong \overline{WY}$
- ③  $\overline{OX} \cong \overline{OY}$
- ④  $\triangle WOX \cong \triangle WOY$
- ⑤  $\angle WOX \cong \angle WOY$
- ⑥  $\angle WOX + \angle XOZ$  are supp.
- ⑦  $\angle WOY$  supp. to  $\angle YOZ$
- ⑧  $\angle XOZ \cong \angle YOZ$
- ⑨  $\overline{OZ} \cong \overline{OZ}$
- ⑩  $\triangle OXZ \cong \triangle OYZ$
- ⑪  $\overline{XZ} \cong \overline{YZ}$
- ⑫  $\overline{WZ}$  bisects  $\overline{XY}$

- ① Given
- ② Given
- ③ All radii of a circle are  $\cong$ .
- ④ SSS
- ⑤ CPCTC
- ⑥ Sum to  $180^\circ$
- ⑦ Sum to  $180^\circ$
- ⑧ If 2 L's are supp to  $\cong$  L's, then they are  $\cong$
- ⑨ Reflexive Property
- ⑩ SAS
- ⑪ CPCTC
- ⑫ A bisector cuts a seg. into 2  $\cong$  segs.