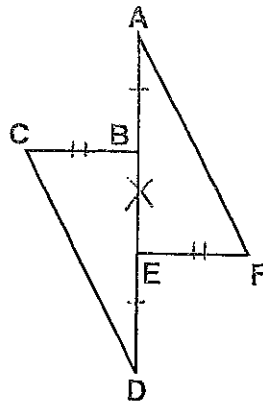
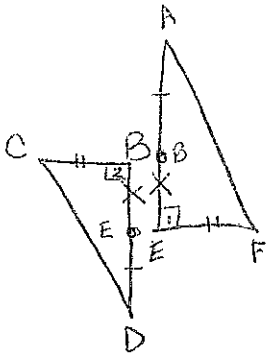


Name: _____

Topic: Proofs with the Addition Postulate

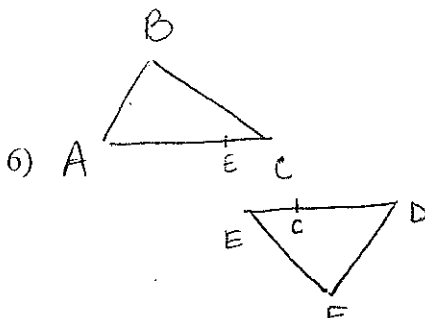
5)



Given: $\overline{AB} \cong \overline{ED}$ ✓
 $\overline{FE} \cong \overline{CB}$ ✓
 $\overline{FE} \perp \overline{AD}$ ✓
 $\overline{CB} \perp \overline{AD}$ ✓

Prove: $\triangle AEF \cong \triangle CBD$

statements	Reasons
① $\overline{AB} \cong \overline{ED}$	① given
② $\overline{BE} \cong \overline{BE}$	② Reflexive
full side ③ $\overline{AE} \cong \overline{BD}$	③ Addition
full side ④ $\overline{FE} \cong \overline{CB}$	④ given
⑤ $\overline{FE} \perp \overline{AD}$ $\overline{CB} \perp \overline{AD}$	⑤ given
⑥ $\angle 1$ is a right \angle $\angle 2$ is a right \angle	⑥ \perp lines form right \angle 's
angle ⑦ $\angle 1 \cong \angle 2$	⑦ All right \angle 's are \cong
⑧ $\triangle AEF \cong \triangle CBD$	⑧ SAS \cong SAS

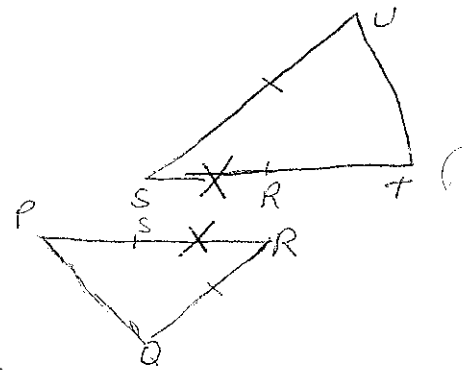
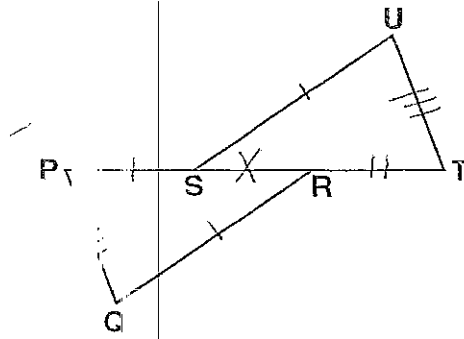


Given: $\angle A \cong \angle D$ ✓
 $\overline{AE} \cong \overline{CD}$ ✓
 $\angle ACB \cong \angle DCF$

Prove: $\triangle ABC \cong \triangle DFE$

statements	Reasons
① $\angle A \cong \angle D$	① given
② $\overline{AE} \cong \overline{CD}$	② given
③ $\overline{EC} \cong \overline{EC}$	③ Reflexive
full side ④ $\overline{AC} \cong \overline{ED}$	④ Addition
⑤ $\angle ACB \cong \angle DCF$	⑤ given
⑥ $\triangle ABC \cong \triangle DFE$	⑥ ASA \cong ASA

7)



Given: $\overline{SU} \cong \overline{QR}$ ✓
 $\overline{PS} \cong \overline{RT}$ ✓
 $\overline{PR} \cong \overline{TR}$

Prove: $\triangle PQR \cong \triangle STU$

Statements

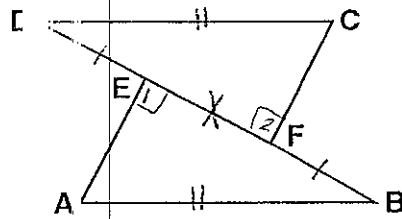
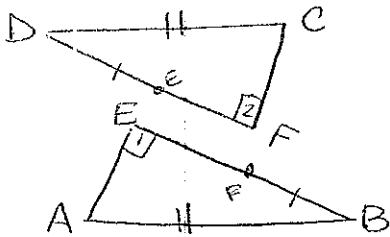
Reasons

- ① $\overline{SU} \cong \overline{QR}$
- ② $\overline{PS} \cong \overline{RT}$
- ③ $\overline{SR} \cong \overline{SR}$
- ④ $\overline{PR} \cong \overline{TR}$
- ⑤ $\overline{PQ} \cong \overline{TU}$
- ⑥ $\triangle PQR \cong \triangle STU$

- ① Given
- ② Given
- ③ Reflexive
- ④ Addition
- ⑤ Given
- ⑥ SSS \cong SSS

full side

8)



Given: $\overline{AE} \perp \overline{DB}$ ✓
 $\overline{CF} \perp \overline{DB}$ ✓
 $DE = FB$
 $DC = AB$

Prove: $\triangle ABE \cong \triangle CDF$

statements

Reasons

- ① $\overline{AE} \perp \overline{DB}$
- ② $\angle 1$ is a right \angle
- ③ $\overline{CF} \perp \overline{DB}$
- ④ $\angle 2$ is a right \angle
- ⑤ $\angle 1 \cong \angle 2$
- ⑥ $\overline{DE} \cong \overline{FB}$
- ⑦ $\overline{EF} \cong \overline{EF}$
- ⑧ $\overline{DF} \cong \overline{EB}$
- ⑨ $\overline{DC} \cong \overline{AB}$
- ⑩ $\triangle ABE$ and $\triangle CDF$ are right \triangle 's
- ⑪ $\triangle ABE \cong \triangle CDF$

- ① Given
- ② \perp lines form right \angle 's
- ③ Given
- ④ \perp lines form right \angle 's
- ⑤ All right \angle 's are \cong
- ⑥ Given
- ⑦ Reflexive
- ⑧ Addition
- ⑨ Given
- ⑩ Right \triangle 's have one right \angle
- ⑪ HL \cong HL

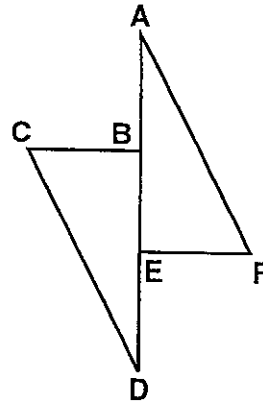
angle

full side

full side

Name: _____
 Topic: Proofs with the Addition Postulate

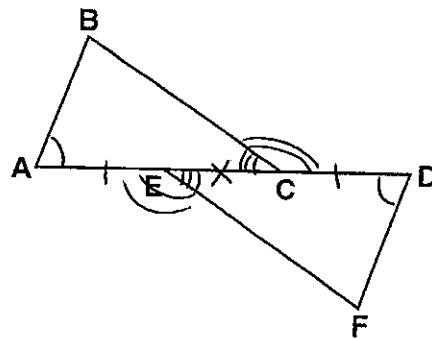
5)



Given: $\overline{AB} \cong \overline{ED}$
 $\overline{FE} \cong \overline{CB}$
 $\overline{FE} \perp \overline{AD}$
 $\overline{CB} \perp \overline{AD}$

Prove: $\triangle AEF \cong \triangle CBD$

6)

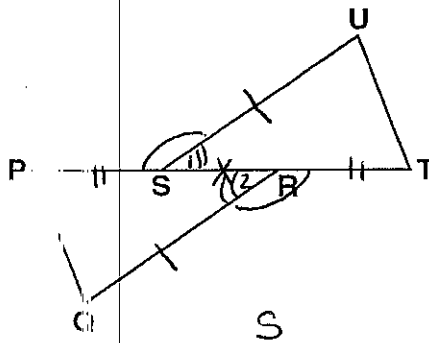


Given: $\angle A \cong \angle D$
 $\overline{AE} \cong \overline{DC}$
 $\angle AEF \cong \angle DCB$

Prove: $\triangle ABC \cong \triangle DFE$

S	R
① $\angle A \cong \angle D$	① Given
② $\overline{AE} \cong \overline{DC}$	② Given
③ $\overline{EC} \cong \overline{EC}$	③ Reflexive
④ $\overline{AE} \cong \overline{DC}$ + $\overline{EC} \cong \overline{EC}$ $\overline{AC} \cong \overline{DE}$	④ Addition Postulate
⑤ $\angle AEF \cong \angle DCB$	⑤ Given
⑥ $\angle AEF + \angle FED = 180$ $\angle DCB + \angle BCA = 180$	⑥ A straight \angle measures 180'
⑦ $\angle AEF + \angle FED = \angle DCB + \angle BCA$	⑦ Substitution
⑧ $\angle AEF + \angle FED = \angle DCB + \angle BCA$ - $\angle AEF$ - $\angle DCB$ $\angle FED = \angle BCA$	⑧ Subtraction Postulate
⑨ $\triangle ABC \cong \triangle DFE$	⑨ ASA \cong ASA

7)



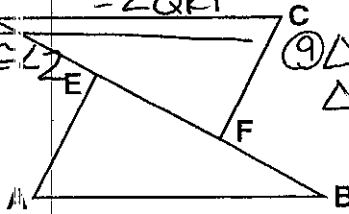
Given: $\overline{SU} \cong \overline{QR}$
 $\overline{PS} \cong \overline{RT}$
 $\angle PSU \cong \angle QRT$

Prove: $\triangle PQR \cong \triangle STU$

- ① $\overline{SU} \cong \overline{QR}$
- ② $\overline{PS} \cong \overline{RT}$
- ③ $\overline{SR} \cong \overline{SR}$
- ④ $\overline{PS} \cong \overline{RT}$
 $+ \overline{SR} \cong \overline{SR}$
 $\overline{PR} \cong \overline{TS}$
- ⑤ $\angle PSU \cong \angle QRT$
- ⑥ $\angle PSU + \angle 1 = 180$
 $\angle QRT + \angle 2 = 180$
- ⑦ $\angle PSU + \angle 1 \cong \angle QRT + \angle 2$
- ⑧ $\angle PSU + \angle 1 \cong \angle QRT + \angle 2$
 $- \angle PSU \quad - \angle QRT$
 $\angle 1 \cong \angle 2$

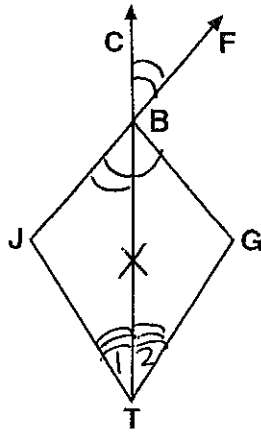
- ④ Given
- ② Given
- ③ Reflexive
- ④ Addition Postulate
- ⑤ Given
- ⑥ A straight \angle measures 180°
- ⑦ Substitution
- ⑧ Subtraction Postulate
- ⑨ $\triangle PQR \cong \triangle STU$
- ⑩ $ASA \cong ASA$

8)



Given: $\overline{AE} \perp \overline{DB}$
 $\overline{CF} \perp \overline{DB}$
 $DE = FB$
 $DC = AB$

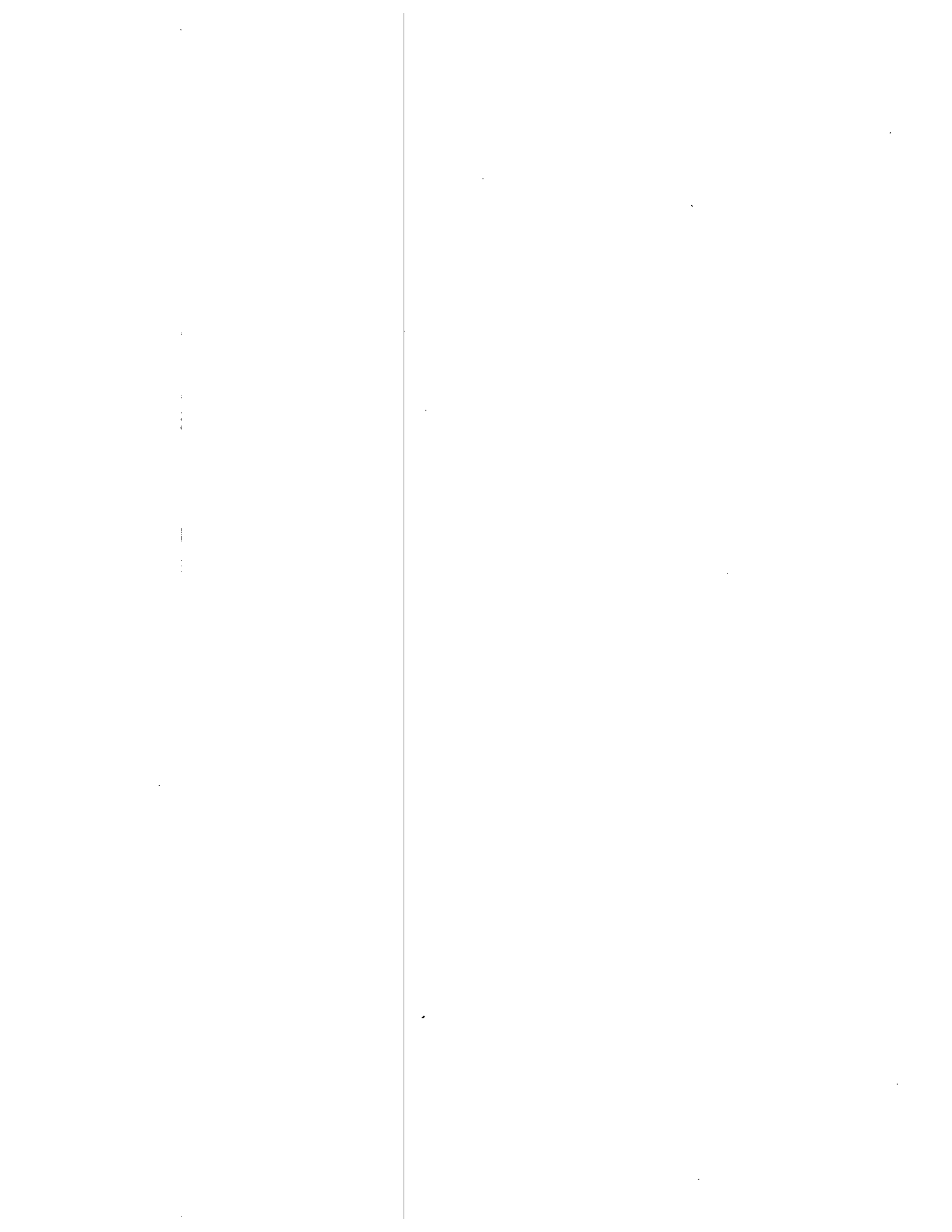
Prove: $\triangle ABE \cong \triangle CDF$



Given: $\angle CBF \cong \angle TBG$
 \overline{TB} bisects $\angle JTG$

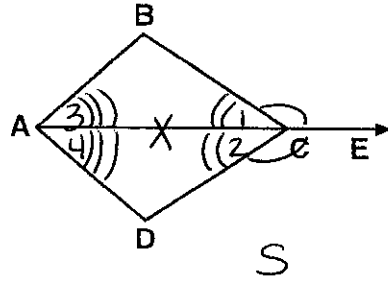
Prove: $\triangle BJT \cong \triangle BGT$

S	R
① $\angle CBF \cong \angle TBG$	① Given
② $\angle CBF \cong \angle TBJ$	② Intersecting lines form \cong vertical \angle s
③ $\angle TBG \cong \angle TBJ$	③ Transitive
④ \overline{TB} bisects $\angle JTG$	④ Given
⑤ $\angle 1 \cong \angle 2$	⑤ An \angle bisector divides an \angle into 2 \cong \angle s
⑥ $\overline{TB} \cong \overline{TB}$	⑥ Reflexive
⑦ $\triangle BJT \cong \triangle BGT$	⑦ ASA \cong ASA



Name: _____
 Topic: Proofs with the Subtraction Postulate

10)

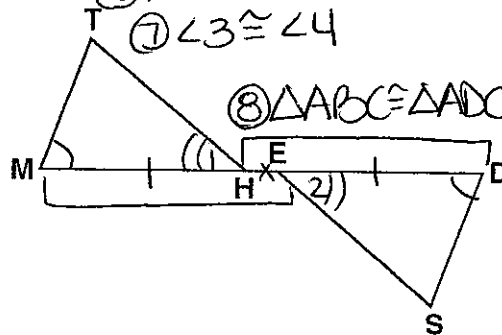


Given: $\angle BCE \cong \angle DCE$
 \overline{AC} bisects $\angle BAD$

Prove: $\triangle ABC \cong \triangle ADC$

$\begin{aligned} \textcircled{1} \angle BCE &\cong \angle DCE \\ \textcircled{2} \angle BCE + \angle 1 &= 180 \\ \angle DCE + \angle 2 &= 180 \\ \textcircled{3} \angle BCE + \angle 1 &\cong \angle DCE + \angle 2 \\ \textcircled{4} \angle BCE + \angle 1 &\cong \angle DCE + \angle 2 \\ &\underline{-\angle BCE \quad -\angle DCE} \\ &\angle 1 \cong \angle 2 \end{aligned}$	
--	--

$\begin{aligned} \textcircled{5} \overline{AC} &\cong \overline{AC} \\ \textcircled{6} \overline{AC} &\text{ bisects } \angle BAD \\ \textcircled{7} \angle 3 &\cong \angle 4 \end{aligned}$	
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11)

Given: $\angle M \cong \angle D$
 $\overline{ME} \cong \overline{HD}$
 $\angle THE \cong \angle SEH$

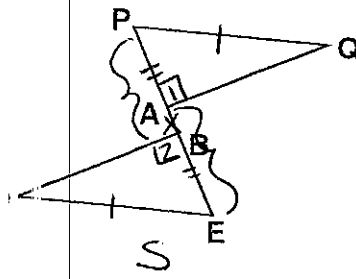
Prove: $\triangle TMH \cong \triangle SDE$

$\begin{aligned} \textcircled{1} \angle M &\cong \angle D \\ \textcircled{2} \overline{ME} &\cong \overline{DH} \\ \textcircled{3} \overline{HE} &\cong \overline{HE} \\ \textcircled{4} \overline{ME} &\cong \overline{DH} \\ &\underline{-\overline{HE} \cong \overline{HE}} \\ \overline{MH} &\cong \overline{DE} \\ \textcircled{5} \angle THE &\cong \angle SEH \\ \textcircled{6} \angle THE + \angle 1 &= 180 \\ \angle SEH + \angle 2 &= 180 \\ \textcircled{7} \angle THE + \angle 1 &\cong \angle SEH + \angle 2 \\ \textcircled{8} \angle THE + \angle 1 &\cong \angle SEH + \angle 2 \\ &\underline{-\angle THE \quad -\angle SEH} \\ &\angle 1 \cong \angle 2 \end{aligned}$	
$\textcircled{9} \triangle TMH \cong \triangle SDE$	

	$\begin{aligned} \textcircled{1} &\text{ Given} \\ \textcircled{2} &\text{ A straight } \angle \text{ measures } 180^\circ \\ \textcircled{3} &\text{ Substitution} \\ \textcircled{4} &\text{ Subtraction Postulate} \\ \textcircled{5} &\text{ Reflexive} \\ \textcircled{6} &\text{ Given} \\ \textcircled{7} &\text{ An } \angle \text{ bisector divides an } \angle \text{ into 2 } \cong \angle \text{S} \\ \textcircled{8} &\text{ ASA } \cong \text{ ASA} \end{aligned}$
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	$\begin{aligned} \textcircled{1} &\text{ Given} \\ \textcircled{2} &\text{ Given} \\ \textcircled{3} &\text{ Reflexive} \\ \textcircled{4} &\text{ Subtraction Postulate} \\ \textcircled{5} &\text{ Given} \\ \textcircled{6} &\text{ A straight } \angle \text{ measures } 180^\circ \\ \textcircled{7} &\text{ Substitution} \\ \textcircled{8} &\text{ Subtraction Postulate} \\ \textcircled{9} &\text{ ASA } \cong \text{ ASA} \end{aligned}$
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12)



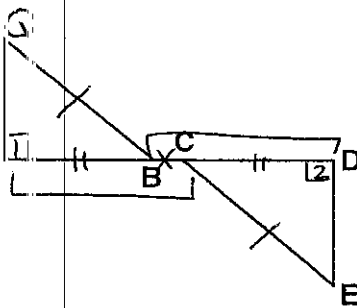
Given: $PQ = DE$
 $PB = AE$
 $QA \perp PE$
 $DB \perp PE$

Prove: $\angle D \cong \angle Q$

- ① $\overline{PQ} \cong \overline{DE}$
- ② $\overline{PB} \cong \overline{AE}$
- ③ $\overline{AB} \cong \overline{AB}$
- ④ $\overline{PA} \cong \overline{EB}$
 $-\overline{AB} \cong \overline{AB}$
 $\hline \overline{PA} \cong \overline{EB}$
- ⑤ $QA \perp PE, DB \perp PE$
- ⑥ $\angle 1$ & $\angle 2$ are right \angle s
- ⑦ $\angle 1 \cong \angle 2$
- ⑧ $\triangle PAQ$ & $\triangle EBD$ are right \triangle s
- ⑨ $\triangle PAQ \cong \triangle EBD$
- ⑩ $\angle D \cong \angle Q$

- ① Given
- ② Given
- ③ Reflexive
- ④ Subtraction Postulate
- ⑤ Given
- ⑥ \perp lines form right \angle s
- ⑦ All right \angle s are \cong
- ⑧ A right \triangle has 1 right \angle
- ⑨ HL \cong HL
- ⑩ CPCTC

13)



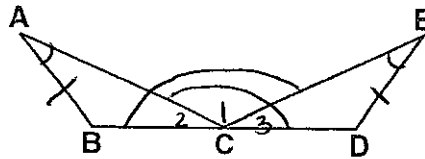
Given: $\overline{FB} \cong \overline{CE}$
 $\overline{AC} \cong \overline{BD}$
 $\overline{FA} \perp \overline{AD}$
 $\overline{DE} \perp \overline{AD}$

Prove: $\overline{AF} \cong \overline{DE}$

- ① $\overline{FB} \cong \overline{CE}$
- ② $\overline{AC} \cong \overline{BD}$
- ③ $\overline{BC} \cong \overline{BC}$
- ④ $\overline{AB} \cong \overline{CD}$
 $-\overline{BC} \cong \overline{BC}$
 $\hline \overline{AB} \cong \overline{CD}$
- ⑤ $FA \perp AD, DE \perp AD$
- ⑥ $\angle 1$ & $\angle 2$ are right \angle s
- ⑦ $\angle 1 \cong \angle 2$
- ⑧ $\triangle AFB$ & $\triangle CED$ are right \triangle s
- ⑨ $\triangle AFB \cong \triangle CED$
- ⑩ $\overline{AF} \cong \overline{DE}$

- ① Given
- ② Given
- ③ Reflexive
- ④ Subtraction Postulate
- ⑤ Given
- ⑥ \perp lines form right \angle s
- ⑦ All right \angle s are \cong
- ⑧ A right \triangle has 1 right \angle
- ⑨ HL \cong HL
- ⑩ CPCTC

14)

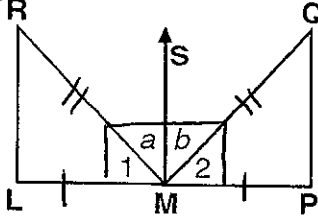


Given: $AB = DE$
 $\angle A \cong \angle E$
 $\angle ACD \cong \angle ECB$

Prove: $BC = CD$

S	R
① $\overline{AB} \cong \overline{ED}$	① Given
② $\angle A \cong \angle E$	② Given
③ $\angle ACD \cong \angle ECB$	③ Given
④ $\angle 1 \cong \angle 1$	④ Reflexive
⑤ $\angle ACD \cong \angle ECB$ $- \angle 1 \quad - \angle 1$ $\hline \angle 2 \cong \angle 3$	⑤ Subtraction Postulate
⑥ $\triangle ABC \cong \triangle EDC$	⑥ AAS \cong AAS
⑦ $\overline{BC} \cong \overline{DC}$	⑦ CPCTC

15)



Given: \overline{MS} is \perp bisector of \overline{LP}
 $RM = MQ$
 $\angle a \cong \angle b$

Prove: $\triangle RLM \cong \triangle QPM$

S	R
① \overline{MS} is \perp bisector of \overline{LP}	① Given
② $\angle SML$ & $\angle SMP$ are right \angle s	② \perp lines form right \angle s
③ $\angle SML \cong \angle SMP$	③ All right \angle s are \cong
④ $\overline{LM} \cong \overline{PM}$	④ A segment bisector divides a segment into 2 \cong segments
⑤ $\overline{RM} \cong \overline{QM}$	⑤ Given
⑥ $\angle a \cong \angle b$	⑥ Given
⑦ $\angle SML \cong \angle SMP$ $- \angle a \cong \angle b$ $\hline \angle 1 \cong \angle 2$	⑦ Subtraction Postulate
⑧ $\triangle RLM \cong \triangle QPM$	⑧ SAS \cong SAS

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