

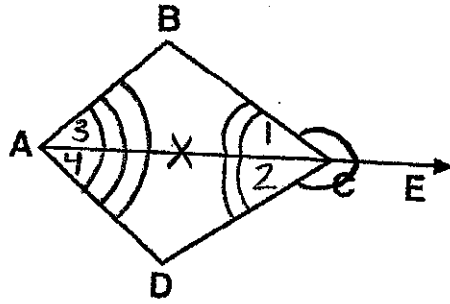
Name: _____

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Congruent Triangle Proofs Day 2

1.

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

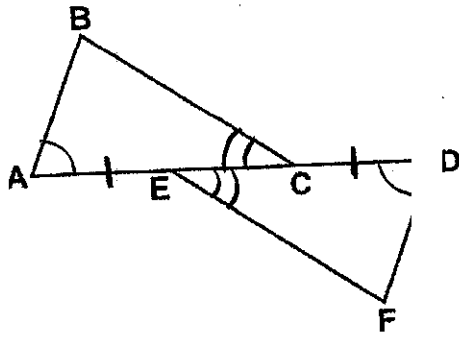


Prove: $\triangle ABC \cong \triangle ADC$

S	R
1. $\angle BCE \cong \angle DCE$	1. Given
2. $\angle 1 + \angle BCE = 180^\circ$ $\angle 2 + \angle DCE = 180^\circ$	2. supplementary angles (Linear pair) add up to 180°
3. $\angle 1 + \angle BCE = \angle 2 + \angle DCE$	3. substitution postulate
4. $\angle 1 + \angle BCE = \angle 2 + \angle DCE$ $\quad - \angle BCE \quad - \angle DCE$ <hr style="width: 50%; margin-left: 0;"/> $\angle 1 = \angle 2$	4. subtraction postulate
5. \overline{AC} bisects $\angle BAD$	5. Given
6. $\angle 3 \cong \angle 4$	6. An angle bisector divides an angle into 2 \cong angles.
7. $\overline{AC} \cong \overline{AC}$	7. Reflexive
8. $\triangle ABC \cong \triangle ADC$	8. ASA

2. Given: $\angle A \cong \angle D$, $\overline{AE} \cong \overline{CD}$, $\angle ACB \cong \angle DEF$

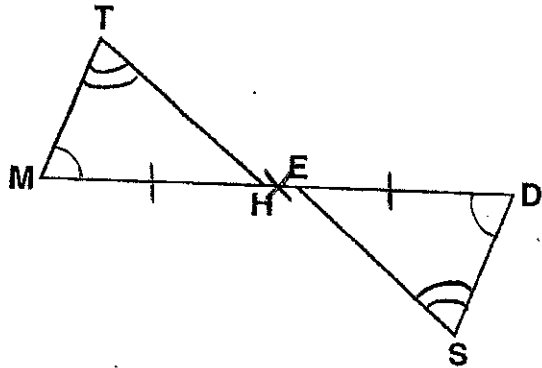
Prove: $\triangle ABC \cong \triangle DFE$



S	R
1. $\angle A \cong \angle D$	1. Given
2. $\overline{AE} \cong \overline{CD}$	2. Given
3. $\overline{EC} \cong \overline{EC}$	3. Reflexive
4. $\overline{AE} \cong \overline{CD}$ + $\overline{EC} \cong \overline{EC}$ <hr/> $\overline{AC} \cong \overline{ED}$	4. Addition postulate
5. $\angle ACB \cong \angle DEF$	5. Given
6. $\triangle ABC \cong \triangle DFE$	6. ASA

3. Given: $\angle M \cong \angle D$, $\overline{ME} \cong \overline{DH}$, $\angle T \cong \angle S$

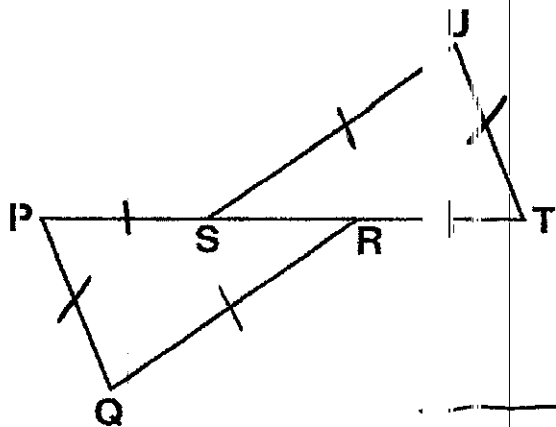
Prove: $\triangle TMH \cong \triangle SDE$



S	R
1. $\angle M \cong \angle D$	1. Given
2. $\overline{ME} \cong \overline{DH}$	2. Given
3. $\overline{HE} \cong \overline{HE}$	3. Reflexive
4. $\overline{ME} \cong \overline{DH}$ $\underline{-\overline{HE} \cong \overline{HE}}$ $\overline{MH} \cong \overline{DE}$	4. Subtraction Postulate
5. $\angle T \cong \angle S$	5. Given
6. $\triangle TMH \cong \triangle SDE$	6. AAS

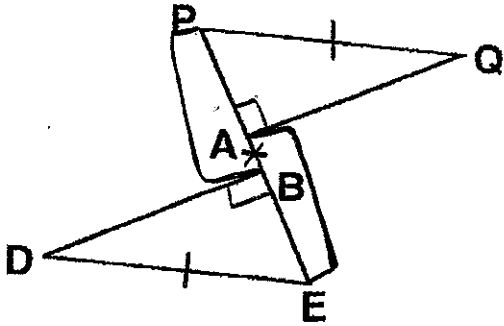
✓ 4. Given: $\overline{PQ} \cong \overline{UT}$, $\overline{PS} \cong \overline{TR}$, $\overline{QS} \cong \overline{US}$

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



1. $\overline{PQ} \cong \overline{UT}$	1. Given
2. $\overline{PS} \cong \overline{TR}$	2. Given
3. $\overline{RS} \cong \overline{SR}$	3. Reflexive
4. $\overline{PS} \cong \overline{TR}$ + $\overline{RS} \cong \overline{SR}$ $\overline{PR} \cong \overline{TS}$	4. Addition Postulate
5. $\overline{QS} \cong \overline{US}$	5. Given
6. $\triangle PQR \cong \triangle STU$	6. SSS

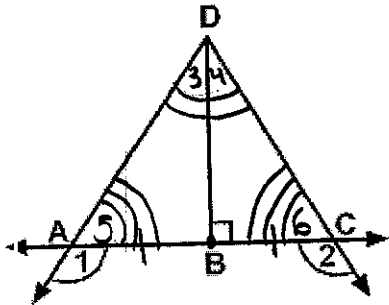
5. Given: $\overline{PB} \cong \overline{EA}$, $\overline{PQ} \cong \overline{DE}$, $\overline{PA} \perp \overline{AQ}$, $\overline{BE} \perp \overline{BD}$



S	R
1. $\overline{PB} \cong \overline{EA}$	1. Given
2. $\overline{PQ} \cong \overline{DE}$	2. Given
3. $\overline{AB} \cong \overline{AB}$	3. Reflexive
4. $\overline{PB} \cong \overline{EA}$ - $\overline{AB} \cong \overline{AB}$ <hr/> $\overline{PA} \cong \overline{EB}$	4. subtraction Postulate
5. $\overline{PA} \perp \overline{AQ}$ $\overline{BE} \perp \overline{BD}$	5. Given
6. $\sphericalangle A = 90^\circ$ $\sphericalangle B = 90^\circ$	6. \perp lines form right angles
7. $\sphericalangle A \cong \sphericalangle B$	7. All right \sphericalangle 's are \cong
8. $\triangle PAQ$ & $\triangle EBD$ are right \triangle	8. All right \triangle has 1 right \sphericalangle
9. $\triangle PAQ \cong \triangle EBD$	9. HL postulate

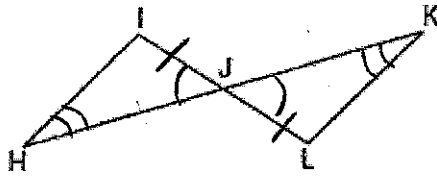
6. Given: B is the midpoint of \overline{AC} \overline{BD} bisects $\angle ADC$, $\angle 1 \cong \angle 2$

Prove: $\triangle ABD \cong \triangle CBD$



S	R
1. B is the mid-point of \overline{AC}	1. Given
2. $\overline{AB} \cong \overline{CB}$	2. A mid-point divides a segment into 2 \cong segments.
3. \overline{BD} bisects $\angle ADC$	3. Given
4. $\angle 3 \cong \angle 4$	4. An angle bisector divides an angle into 2 \cong angles
5. $\angle 1 \cong \angle 2$	5. Given
6. $\angle 1 + \angle 5 = 180$ $\angle 2 + \angle 6 = 180$	6. A linear pair are supplementary \angle 's that add up to 180°
7. $\angle 1 + \angle 5 = \angle 2 + \angle 6$	7. substitution
8. $\angle 1 + \angle 5 = \angle 2 + \angle 6$ $\underline{-\angle 1} \quad \underline{-\angle 2}$	8. subtraction postulate
9. $\triangle ABD \cong \triangle CBD$ $\angle 5 = \angle 6$	9. AAS

7. In the accompanying diagram, \overline{HK} bisects \overline{IL} and $\angle H \cong \angle K$.



What is the most direct method of proof that could be used to prove $\triangle HIJ \cong \triangle K LJ$?

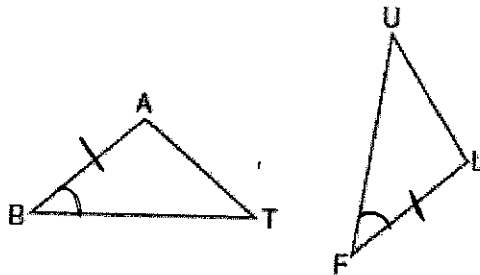
1) $HL \cong HL$

2) $SAS \cong SAS$

3) $AAS \cong AAS$

4) $ASA \cong ASA$

8. In the accompanying diagram of triangles BAT and FLU , $\angle B \cong \angle F$ and $\overline{BA} \cong \overline{FL}$.



Which statement is needed to prove $\triangle BAT \cong \triangle FLU$?

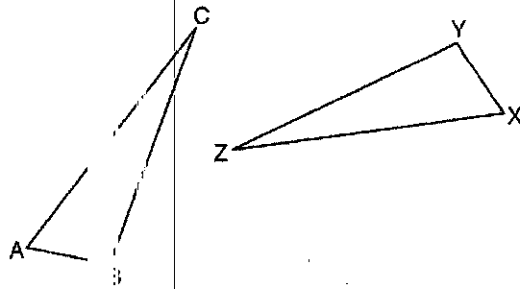
1) $\angle A \cong \angle L$

2) $\overline{AT} \cong \overline{LU}$

3) $\angle A \cong \angle U$

4) None of the above

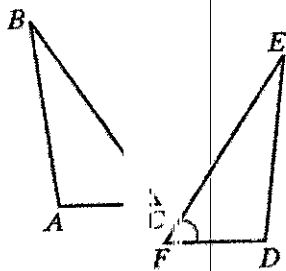
9.) In the diagram below, $\triangle ABC \cong \triangle XYZ$.



Which statement must be true?

- 1) $\angle C \cong \angle Y$
- 2) $\angle A \cong \angle X$
- 3) $\overline{AC} \cong \overline{YZ}$
- 4) $\overline{CB} \cong \overline{XZ}$

✓ 10.) Given: $\triangle BAC$ and $\triangle EDF$, $\angle C \cong \angle F$



Which additional piece of information is *not* sufficient to prove $\triangle BAC \cong \triangle EDF$?

(1) $\angle A \cong \angle D$ and $\overline{AC} \cong \overline{DF}$

(3) $\angle B \cong \angle E$ and $\overline{BC} \cong \overline{EF}$

(2) $\overline{BC} \cong \overline{EF}$ and $\overline{AB} \cong \overline{DE}$

(4) $\overline{BC} \cong \overline{EF}$ and $\overline{AC} \cong \overline{DF}$