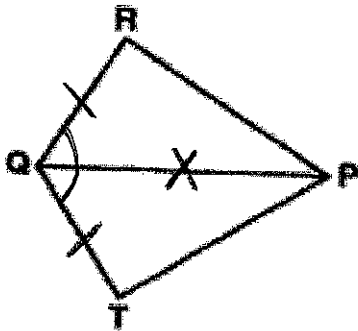


Name: _____

Date: 11/05

Congruent Triangle Proofs 1

1.

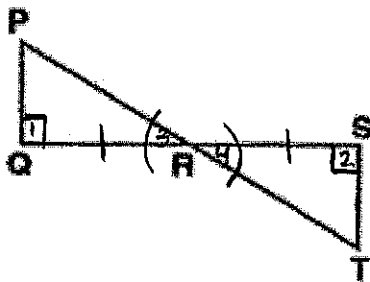


Given: $\overline{QR} \cong \overline{QT}$ ✓
 $\angle RQP \cong \angle TQP$ ✓

Prove: $\triangle QRP \cong \triangle QTP$

S	R
1. $\overline{QR} \cong \overline{QT}$	1. Given
2. $\angle RQP \cong \angle TQP$	2. Given
3. $\overline{QP} \cong \overline{QP}$	3. Reflexive
4. $\triangle QRP \cong \triangle QTP$	4. SAS

2.

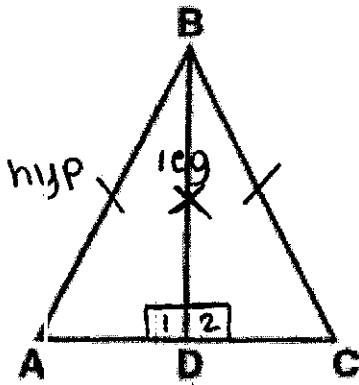


Given: \overline{PT} bisects \overline{QS}
 $\overline{PQ} \perp \overline{QS}$
 $\overline{TS} \perp \overline{QS}$

Prove: $\triangle PQR \cong \triangle RST$

S	R
1. \overline{PT} bisects \overline{QS}	1. Given
2. $\overline{QR} \cong \overline{RS}$	2. A segment bisector divides a segment into 2 \cong segments
3. $\overline{PQ} \perp \overline{QS}$ $\overline{TS} \perp \overline{QS}$	3. Given
4. $\angle PQR$ and $\angle TSR$ are right angles	4. \perp lines form right \angle 's
5. $\angle TSR \cong \angle PQR$	5. All right angle are \cong
6. $\angle 3 \cong \angle 4$	6. Intersecting lines form \cong vertical \angle 's
7. $\triangle PQR \cong \triangle RST$	7. ASA

3.

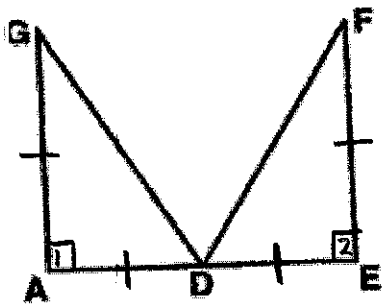


Given: $\overline{BD} \perp \overline{AC}$
 $\overline{AB} \cong \overline{BC}$

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

S	R
1. $\overline{BD} \perp \overline{AC}$	1. Given
2. $\angle 1 \cong \angle 2$ are right angles.	2. \perp lines form right angles
3. $\angle 1 \cong \angle 2$	3. All right angles are congruent
4. $\overline{AB} \cong \overline{CB}$	4. Given
5. $\overline{BD} \cong \overline{BD}$	5. Reflexive
6. $\triangle ABD$ and $\triangle CBD$ are right \triangle 's	6. A right \triangle has 1 right angle
7. $\triangle ABD \cong \triangle CBD$	7. HL

4.

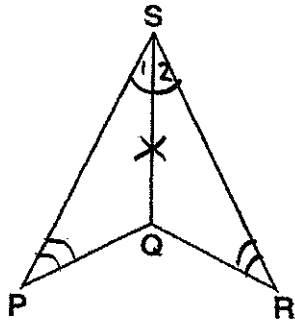


Given: $GA = FE$ ✓
 D is the midpoint of \overline{AE}
 $\overline{GA} \perp \overline{AE}$
 $\overline{FE} \perp \overline{AE}$

Prove: $\triangle DAG \cong \triangle DEF$

S	R
1. $GA = FE$	1. Given
2. D is the midpoint of \overline{AE}	2. Given
3. $\overline{AD} \cong \overline{ED}$	3. A midpoint divides a segment into 2 \cong segments.
4. $\overline{GA} \perp \overline{AE}$ $\overline{FE} \perp \overline{AE}$	4. Given
5. $\angle 1$ and $\angle 2$ are right \angle 's	5. \perp lines form right \angle 's
6. $\angle 1 \cong \angle 2$	6. All right angles are congruent
7. $\triangle DAG \cong \triangle DEF$	7. SAS

5.

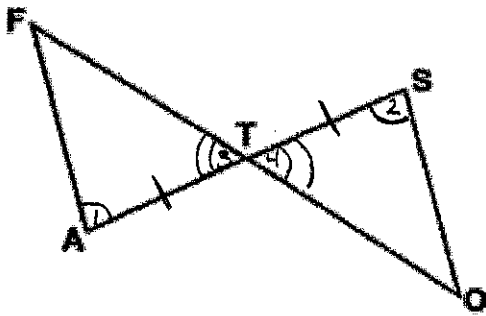


Given: \overline{SQ} bisects $\angle PSR$
 $\angle P \cong \angle R$

Prove: $\triangle PQS \cong \triangle QSR$

S	R
1. \overline{SQ} bisects $\angle PSR$	1. Given
2. $\angle 1 \cong \angle 2$	2. An \angle bisector divides an \angle into 2 \cong angles.
3. $\angle P \cong \angle R$	3. Given
4. $\overline{SQ} \cong \overline{SQ}$	4. Reflexive
5. $\triangle PQS \cong \triangle QSR$	5. AAS

6.

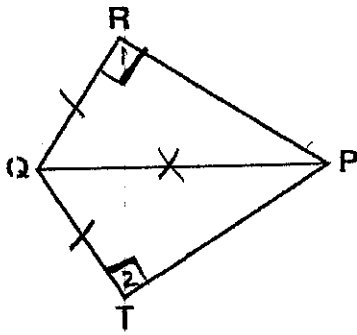


Given: \overline{FO} bisects \overline{AS}
 $\angle A \cong \angle S$

Prove: $\triangle FAT \cong \triangle OST$

S	R
1. \overline{FO} bisects \overline{AS}	1. Given
2. $\overline{AT} \cong \overline{ST}$	2. A segment bisector divides a segment into 2 \cong segments
3. $\angle A \cong \angle S$	3. Given
4. $\angle 3 \cong \angle 4$	4. Intersecting lines form \cong vertical angles.
5. $\triangle FAT \cong \triangle OST$	5. ASA

7.

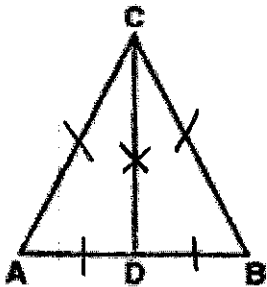


Given: $\overline{QR} \perp \overline{RP} \checkmark$
 $\overline{QT} \perp \overline{TP} \checkmark$
 $\overline{QR} \cong \overline{TP}$

Prove: $\triangle QRP \cong \triangle QTP$

S	R
1. $\overline{QR} \perp \overline{RP}$ $\overline{QT} \perp \overline{TP}$	1. Given
2. $\angle 1$ and $\angle 2$ are right \angle 's	2. \perp lines form right angles
3. $\angle 1 \cong \angle 2$	3. All right angles are congruent
4. $\overline{QR} \cong \overline{TP}$	4. Given
5. $\overline{QP} \cong \overline{QP}$	5. Reflexive
6. $\triangle QRP$ and $\triangle QTP$	6. A right \triangle has 1 right \angle
7. $\triangle QRP \cong \triangle QTP$	7. HL

8.



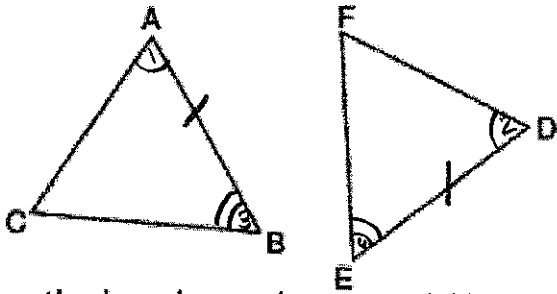
Given: $\overline{AC} \cong \overline{BC}$
 D is the midpoint of \overline{AB}

Prove: $\triangle ACD \cong \triangle BCD$

S	R
1. $\overline{AC} \cong \overline{CB}$	1. Given
2. D is the midpoint of \overline{AB}	2. Given
3. $\overline{AD} \cong \overline{BD}$	3. A midpoint divides a segment into 2 \cong segments
4. $\overline{CD} \cong \overline{CD}$	4. Reflexive
5. $\triangle ACD \cong \triangle BCD$	5. SSS

9.

In the diagram below of $\triangle ABC$ and $\triangle DEF$ below, $\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$, and $\angle B \cong \angle E$.

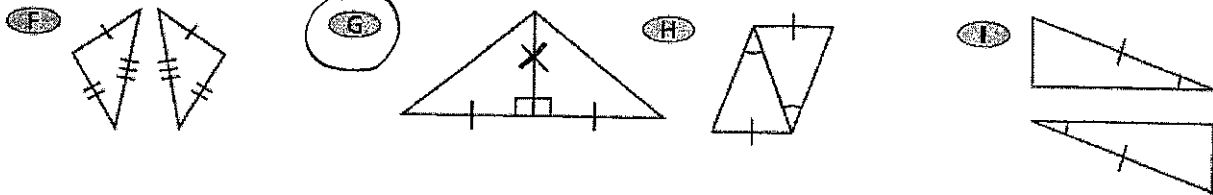


Which method can be used to prove $\triangle ABC \cong \triangle DEF$?

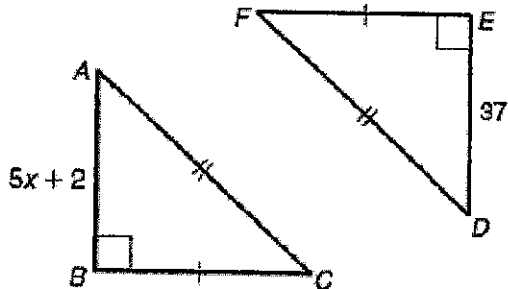
ASA

10.

Which pair of triangles can be proved congruent by SAS?



11.



What value of x would prove that $\triangle ABC \cong \triangle DEF$ by SSS?

$$\begin{array}{r}
 5x + 2 = 37 \\
 -2 \quad -2 \\
 \hline
 5x = 35 \\
 \frac{5}{5} \quad \frac{5}{5} \\
 \boxed{x = 7}
 \end{array}$$

