Triangle Congruence Proofs
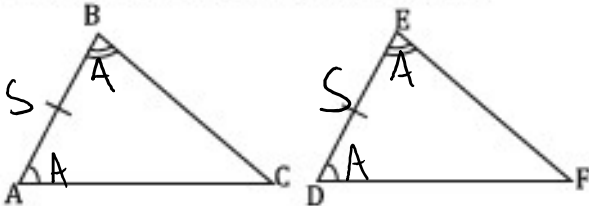Complete the following proofs. If marked with a star* complete the proof as a paragraph proof.
322Name_____**Key**_____

For these fill in any missing statements or reasons.

1.

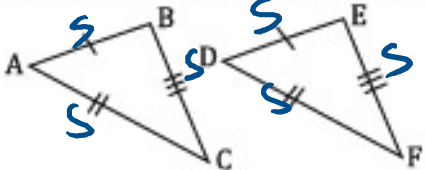Given: $\overline{AB}\cong\overline{DE}$, $\angle B\cong\angle E$, and $\angle A\cong\angle D$

Prove: $\triangle ABC\cong\triangle DBC$

Statements	Reasons
1. $\overline{AB}\cong\overline{DE}$	1. Given
2. $\angle B\cong\angle E$	2. Given
3. $\angle A\cong\angle D$	3. Given
4. $\triangle ABC\cong\triangle DEF$	4. ASA

2. Given: $\overline{PQ}\cong\overline{RS}$, and $\angle PQS\cong\angle RSQ$

Prove: $\triangle ABC\cong\triangle DBC$

Statements	Reasons
1. $\overline{PQ}\cong\overline{RS}$	1. Given
2. $\angle PQS\cong\angle RSQ$	2. Given
3. $\overline{QS}\cong\overline{QS}$	3. Reflexive Prop.
4. $\triangle PQS\cong\triangle RSQ$	4. SAS

3.
Given: $\overline{AB}\cong\overline{DE}$, $\overline{AC}\cong\overline{DF}$, and $\overline{BC}\cong\overline{EF}$
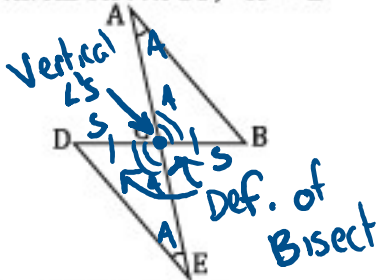

Prove: $\triangle ABC\cong\triangle DEF$

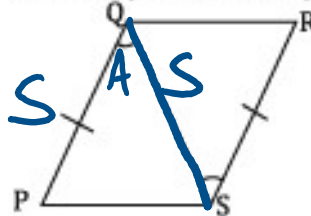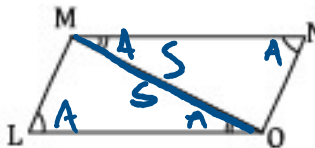| Statements	Reasons
1. $\overline{AB}\cong\overline{DE}$	1. Given
2. $\overline{AC}\cong\overline{DF}$	2. Given
3. $\overline{BC}\cong\overline{EF}$	3. Given
4. $\triangle ABC\cong\triangle DEF$	4. SSS

4. Given: $\angle L\cong\angle N$, $\angle LOM\cong\angle NMO$

Prove: $\triangle LMO\cong\triangle NOM$

Statements	Reasons
1. $\angle L\cong\angle N$	1. Given
2. $\angle LOM\cong\angle NMO$	2. Given
3. $\overline{MO}\cong\overline{OM}$	3. Reflexive Property
4. $\triangle LMO\cong\triangle NOM$	4. AAS

5.

Given: $\overline{AE}$ bisects $\overline{BD}$, $\angle A\cong\angle E$

Vertical $\angle$'s
Def. of Bisect

Prove: $\triangle ABC\cong\triangle EDC$

Statements	Reasons
1. $\angle A\cong\angle E$	1. Given
2. $\overline{AE}$ bisects $\overline{BD}$	2. Given
3. $\overline{BC}\cong\overline{DC}$	3. Definition of Bisect
4. $\angle ACB\cong\angle DCE$	4. Vert. $\angle$'s Thm.
5. $\triangle ABC\cong\triangle EDC$	5. AAS

6.
Given: $\overline{PQ}\parallel\overline{ST}$, $\overline{PR}\cong\overline{TR}$

Alt. Int. $\angle$'s Thm.
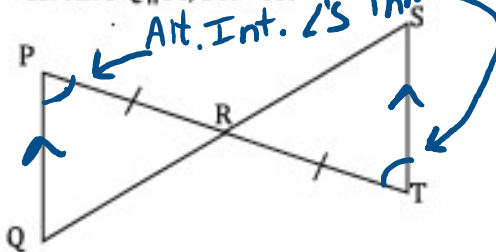
Prove: $\triangle PQR\cong\triangle TSR$

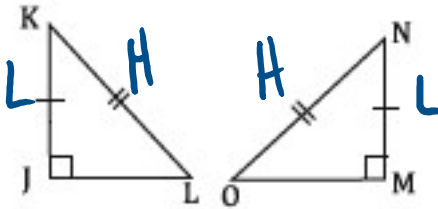| Statements	Reasons
1. $\overline{PR}\cong\overline{TR}$	1. Given
2. $\overline{PQ}\parallel\overline{ST}$	2. Given
3. $\angle P\cong\angle T$	3. Alt. Int. $\angle$'s Thm.
4. $\angle PRQ\cong\angle TRS$	4. Vertical $\angle$'s Thm
5. $\triangle PQR\cong\triangle TSR$	5. ASA

Triangle Congruence Proofs

19. Given: $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\angle B \cong \angle E$
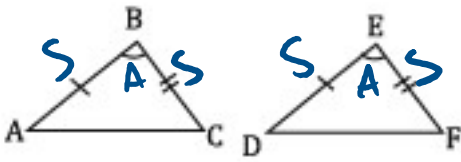
Prove: $\triangle ABC \cong \triangle DEF$

S	R
$\overline{AB} \cong \overline{DE}$	Given
$\overline{BC} \cong \overline{EF}$	Given
$\angle B \cong \angle E$	Given
$\triangle ABC \cong \triangle DEF$	SAS

20. Given: $\overline{PQ} \cong \overline{TU}$, $\angle P \cong \angle T$, and $\angle Q \cong \angle U$

Prove: $\triangle PQR \cong \triangle TUS$

S	R
$\overline{PQ} \cong \overline{TU}$	Given
$\angle P \cong \angle T$	Given
$\angle Q \cong \angle U$	Given
$\triangle PQR \cong \triangle TUS$	ASA

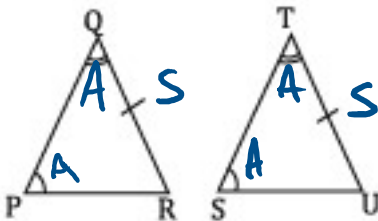**21.** Given: $\overline{JK} \cong \overline{MN}$, $\overline{KL} \cong \overline{NO}$

Prove: $\triangle JKL \cong \triangle MNO$

S	R
$\overline{JK} \cong \overline{MN}$	Given
$\overline{KL} \cong \overline{NO}$	Given
$\triangle JKL \cong \triangle MNO$	HL

22. Given: $\overline{AB} \cong \overline{DF}$, $\overline{BC} \cong \overline{DE}$, and $\overline{AC} \cong \overline{EF}$

Prove: $\triangle ABC \cong \triangle FDE$

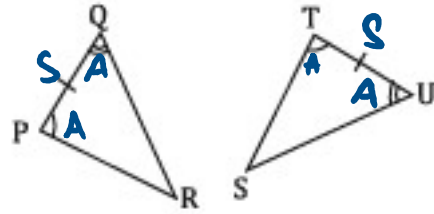| S	R
$\overline{AB} \cong \overline{DF}$	Given
$\overline{BC} \cong \overline{DE}$	Given
$\overline{AC} \cong \overline{EF}$	Given
$\triangle ABC \cong \triangle FDE$	SSS

23. *

Given: $\angle P \cong \angle S$, $\angle Q \cong \angle T$, and $\overline{QR} \cong \overline{TU}$

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

It is given that $\angle P \cong \angle S$, $\angle Q \cong \angle T$, and $\overline{QR} \cong \overline{TU}$. Thus, $\triangle PQR \cong \triangle STU$ by AAS
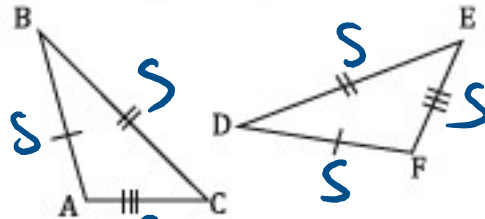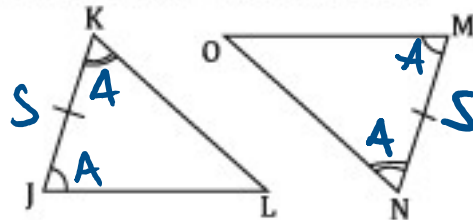
24.

Given: $\angle J \cong \angle M$, $\overline{JK} \cong \overline{MN}$ and $\angle K \cong \angle N$

Prove: $\triangle JKL \cong \triangle MNO$

S	R
$\angle J \cong \angle M$	Given
$\overline{JK} \cong \overline{MN}$	Given
$\angle K \cong \angle N$	Given
$\triangle JKL \cong \triangle MNO$	ASA