


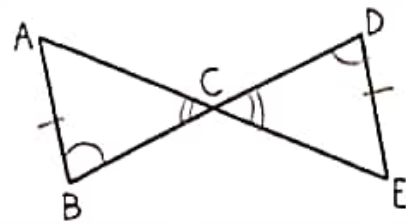
Tips for Writing Proofs

- Always mark what information you're given on the figure before starting the proof.
- Questions to ask before starting:
 - Which angles are congruent?
 - Do the triangles share any angles?
 - Do they share any sides?
- Start proof with Given statement, end proof with the Prove statement

Common Reasons and Definitions

- The Given: What information was given to you?
Always the first line of a proof
- Reflexive Property: Something is congruent to itself
 $\overline{AB} \cong \overline{AB}$
- Definition of Congruent Triangles/CPCTC: Corresponding Parts of Congruent triangles are congruent
- ASA, AAS, SAS, SSS: HL, Ways to prove triangles are congruent
- Angle Pair Properties: Alt Int, Alt ext, Corr, Consec. Int
 - Always state: If lines are parallel, then Alt. Int Angles are congruent
 - Or: If **insert angle pair here** are congruent, then lines are parallel
- Vertical Angles:  always congruent
- Definition of angle bisector: Line or segment that cuts an angle in half
- Definition of segment bisector: Line or segment that cuts a segment in half
- Definition of Perpendicular Lines (\perp): Lines intersect to create right angles
- All Right Angles are Congruent

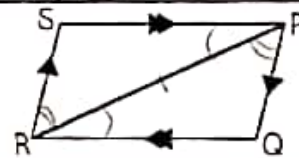
Congruent Triangles Proofs-More Examples



Given: $\overline{AB} \cong \overline{ED}$, $\angle B \cong \angle D$

Prove: $\angle A \cong \angle E$

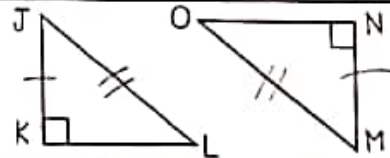
Statements	Reasons
1. $\overline{AB} \cong \overline{ED}$	1. Given
2. $\angle B \cong \angle D$	2. Given
3. $\angle ACB \cong \angle ECD$	3. Vertical Angles are congruent
4. $\triangle ABC \cong \triangle EDC$	4. AAS
5. $\angle A \cong \angle E$	5. CPCTC



Given: $\overline{PQ} \parallel \overline{RS}$, $\overline{SP} \parallel \overline{QR}$

Prove: $\triangle RSP \cong \triangle PQR$

Statements	Reasons
1. $\overline{PQ} \parallel \overline{RS}$	1. Given
2. $\overline{SP} \parallel \overline{QR}$	2. Given
3. $\angle RPS \cong \angle PRQ$ and $\angle PRS \cong \angle RPQ$	3. Alt. Int \angle s are congruent
4. $\overline{RP} \cong \overline{PR}$	4. Reflexive Property
5. $\triangle RSP \cong \triangle PQR$	5. ASA



Given: $\overline{JK} \cong \overline{MN}$, $\overline{JL} \cong \overline{MO}$

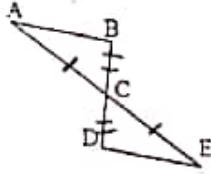
Prove: $\angle L \cong \angle O$

Statements	Reasons
1. $\overline{JK} \cong \overline{MN}$	1. Given
2. $\overline{JL} \cong \overline{MO}$	2. Given
3. $\triangle JKL \cong \triangle MNO$	3. HL
4. $\angle L \cong \angle O$	4. CPCTC

Name: _____ Date: _____ Per: _____

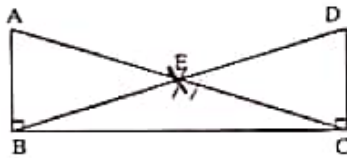
Proving Triangles Congruent (Notes)

1. Given: \overline{AE} and \overline{BD} Bisect each other
 Prove: $\triangle ACB \cong \triangle ECD$



Statements Reasons

\overline{AE} and \overline{BD} bisect each other	Given
$\overline{AC} \cong \overline{EC}$, $\overline{DC} \cong \overline{BC}$	Definition of bisect
$\angle ACB \cong \angle ECD$	Vertical
$\triangle ACB \cong \triangle ECD$	SAS

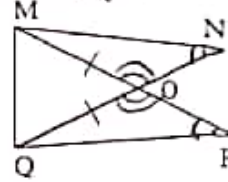


27. Given: $\overline{AB} \perp \overline{BC}$, $\overline{DC} \perp \overline{BC}$,
 $\overline{AC} \cong \overline{DB}$
 Prove: $\triangle ABC \cong \triangle DCB$

Statements Reasons

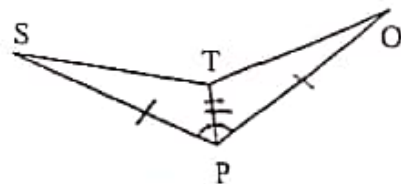
$\overline{AB} \perp \overline{BC}$, $\overline{DC} \perp \overline{BC}$, $\overline{AC} \cong \overline{DB}$	Given
$\overline{BC} \cong \overline{BC}$	Reflexive Property
$\angle ABC \cong \angle DCB$	All rt \angle s are \cong
$\triangle ABC \cong \triangle DCB$	HL

2. Given: $\angle N \cong \angle P$, $\overline{MO} \cong \overline{QO}$
 Prove: $\triangle MON \cong \triangle QOP$



Statements Reasons

$\angle N \cong \angle P$ $\overline{MO} \cong \overline{QO}$	Given
$\angle MON \cong \angle QOP$	Vertical Angles
$\triangle MON \cong \triangle QOP$	AAS



28. Given: $\angle SPT \cong \angle OPT$, $\overline{SP} \cong \overline{OP}$
 Prove: $\angle S \cong \angle O$

Statements Reasons

$\angle SPT \cong \angle OPT$ $\overline{SP} \cong \overline{OP}$	Given
$\overline{TP} \cong \overline{TP}$	Reflexive
$\triangle SPT \cong \triangle OPT$	SAS
$\angle S \cong \angle O$	CPCTC