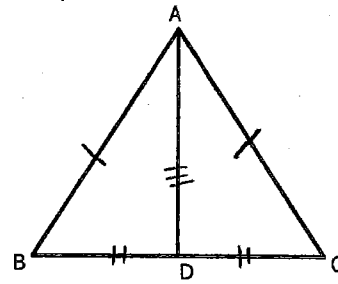


- 1.) **Given:** $\overline{AB} \cong \overline{AC}$, D is the midpoint of \overline{BC} .
Prove: $\triangle ABD \cong \triangle ACD$



Statements

Reasons

1. $\overline{AB} \cong \overline{AC}$

1. Given

2. D is the midpoint of \overline{BC}

2. Given

3. $\overline{BD} \cong \overline{CD}$

3. Def. of midpoint

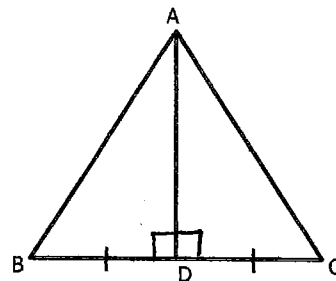
4. $\overline{AD} \cong \overline{AD}$

4. Reflexive prop

5. $\triangle ABD \cong \triangle ACD$

5. SSS

- 2.) **Given:** $\overline{AD} \perp \overline{BC}$, \overline{AD} bisects \overline{BC}
Prove: $\triangle ABD \cong \triangle ACD$



Statements

Reasons

1. \overline{AD} bisects \overline{BC}

1. Given

2. $\overline{BD} \cong \overline{DC}$

2. Def. of bisects

3. $\overline{AD} \perp \overline{BC}$

3. Given

4. $\angle ADC$ and $\angle ADB$ are right \angle 's

4. Def. of \perp

5. $\angle ADC \cong \angle ADB$

5. All right \angle s are \cong

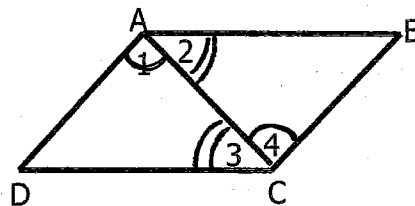
6. $\overline{AD} \cong \overline{AD}$

6. Reflexive property

7. $\triangle ABD \cong \triangle ACD$

7. SAS

- 3.) **Given:** $\angle 1 \cong \angle 4$, $\angle 2 \cong \angle 3$
Prove: $\triangle ADC \cong \triangle CBA$



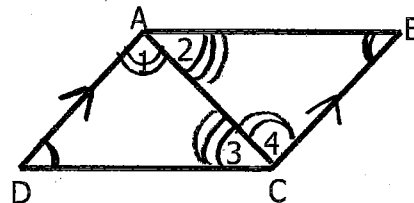
Statements

1. $\angle 1 \cong \angle 4$
2. $\angle 2 \cong \angle 3$
3. $\overline{AC} \cong \overline{AC}$
4. $\triangle ADC \cong \triangle CBA$

Reasons

1. Given
2. Given
3. Reflexive
4. ASA

- 4.) **Given:** $\overline{DA} \parallel \overline{BC}$, $\angle B \cong \angle D$
Prove: $\triangle ACD \cong \triangle CAB$



Statements

1. $\overline{DA} \parallel \overline{BC}$
2. $\angle 1 \cong \angle 4$, $\angle 2 \cong \angle 3$
3. $\angle B \cong \angle D$
4. $\overline{AC} \cong \overline{AC}$
5. $\triangle ACD \cong \triangle CAB$

Reasons

1. Given
2. $\parallel \Rightarrow$ alt. int. \angle 's \cong
3. Given
4. Reflexive
5. AAS or ASA

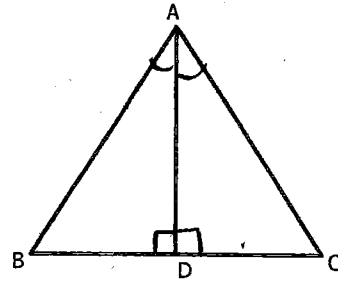
- 1.) **Given:** \overline{AD} bisects $\angle BAC$, $\overline{AD} \perp \overline{BC}$
Prove: $\triangle ABD \cong \triangle ACD$

Statements

1. \overline{AD} bisects $\angle BAC$
2. $\angle BAD \cong \angle CAD$
3. $\overline{AD} \perp \overline{BC}$
4. $\angle BDA$ & $\angle CDA$ are rt. \angle s
5. $\angle BDA \cong \angle CDA$
6. $\overline{AD} \cong \overline{AD}$
7. $\triangle ABD \cong \triangle ACD$

Reasons

1. Given
2. Def. of bisects
3. Given
4. def. \perp
5. all rt. \angle 's \cong
6. reflexive
7. ASA



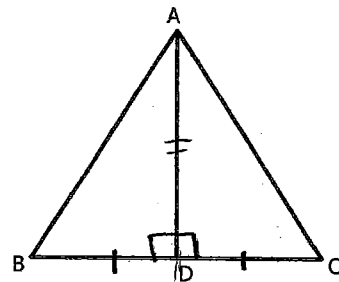
- 2.) **Given:** \overline{AD} bisects \overline{BC} , $\overline{AD} \perp \overline{BC}$
Prove: $\triangle ABD \cong \triangle ACD$

Statements

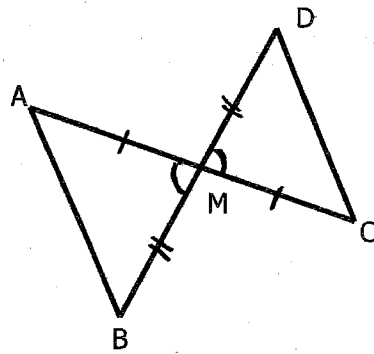
1. \overline{AD} bisects \overline{BC}
2. $\overline{DB} \cong \overline{DC}$
3. $\overline{AD} \perp \overline{BC}$
4. $\angle ADB$ & $\angle ADC$ are rt. \angle s
5. $\angle ADB \cong \angle ADC$
6. $\overline{AD} \cong \overline{AD}$
7. $\triangle ABD \cong \triangle ACD$

Reasons

1. Given
2. Def. of bisects
3. Given
4. Def. of \perp
5. All rt. \angle s \cong
6. reflexive
7. SAS



3.) **Given:** M is the midpoint of \overline{AC} and \overline{BD}
Prove: $\triangle AMB \cong \triangle CMD$



Statements

Reasons

1. M is the midpoint of \overline{AC}

1. Given

2. $\overline{AM} \cong \overline{CM}$

2. Def. of midpoint

3. $\overline{BM} \cong \overline{DM}$

3. Def. of midpoint

4. $\angle AMB \cong \angle CMD$

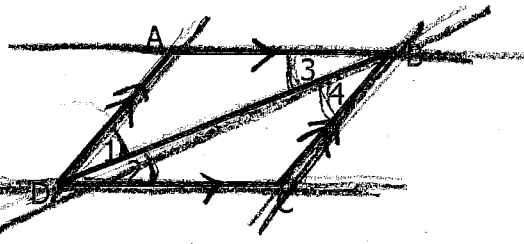
4. Vertical \angle s thm.

5. *(wavy line)*

6. $\triangle AMB \cong \triangle CMD$

6. SAS

4.) **Given:** $\overline{AB} \parallel \overline{DC}$, $\overline{AD} \parallel \overline{BC}$
Prove: $\triangle ABD \cong \triangle CDB$



Statements

Reasons

1. $\overline{AB} \parallel \overline{DC}$

1. Given

2. $\angle 3 \cong \angle 2$

2. $\parallel \Rightarrow$ alt. int. \angle 's \cong

3. $\overline{AD} \parallel \overline{BC}$

3. Given

4. $\angle 1 \cong \angle 4$

4. $\parallel \Rightarrow$ alt. int. \angle 's \cong

5. $\overline{DB} \cong \overline{DB}$

5. Reflexive prop.

6. $\triangle ABD \cong \triangle CDB$

6. ASA