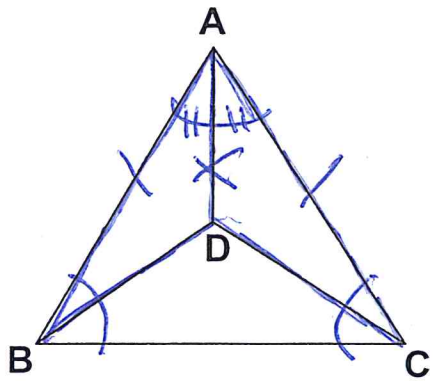


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Geometry

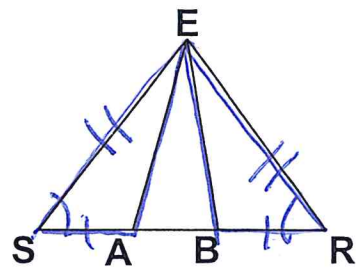
## Isosceles Triangle Theorem

1. Given:  $\angle ABC \cong \angle ACB$ ,  $\overline{AD}$  bisects  $\angle BAC$   
Prove:  $\overline{BD} \cong \overline{DC}$



- | Statements                             | Reasons  |
|--|--|
| ① $\angle ABC \cong \angle ACB$        | ① given  |
| ② $\overline{AB} \cong \overline{AC}$  | ② Isosceles Triangle Theorem                     |
| ③ $\overline{AD}$ bisects $\angle BAC$ | ③ given  |
| ④ $\angle BAD \cong \angle CAD$        | ④ An angle bisector creates two congruent angles |
| ⑤ $\overline{AD} \cong \overline{AD}$  | ⑤ Reflexive Property                             |
| ⑥ $\triangle ADB \cong \triangle ADC$  | ⑥ SAS  |
| ⑦ $\overline{BD} \cong \overline{DC}$  | ⑦ CPCTC  |

2. Given:  $\overline{SA} \cong \overline{BR}$ ,  $\overline{ES} \cong \overline{ER}$   
Prove:  $\triangle SEA \cong \triangle REB$



- | Statements                            | Reasons                      |
|---------------------------------------|------------------------------|
| ① $\overline{SA} \cong \overline{BR}$ | ① given                      |
| ② $\overline{ES} \cong \overline{ER}$ | ② given                      |
| ③ $\angle ESA \cong \angle ERB$       | ③ Isosceles Triangle Theorem |
| ④ $\triangle SEA \cong \triangle REB$ | ④ SAS                        |

3. Given: Isosceles triangle ABC with  $\overline{CA} \cong \overline{CB}$ , M is the midpoint of  $\overline{AB}$ ,  $\overline{AD} \cong \overline{BE}$

Prove:  $\overline{MD} \cong \overline{ME}$

Statements	Reasons
① $\overline{CA} \cong \overline{CB}$	① given
② $\angle DAM \cong \angle EBM$	② Isosceles Triangle Theorem
③ M is the midpoint of $\overline{AB}$	③ given
④ $\overline{AM} \cong \overline{MB}$	④ A midpoint creates two congruent segments
⑤ $\overline{AD} \cong \overline{BE}$	⑤ given
⑥ $\triangle ADM \cong \triangle BEM$	⑥ SAS
⑦ $\overline{MD} \cong \overline{ME}$	⑦ CPCTC

4. Given:  $\overline{MN} \cong \overline{NT}$ ,  $\angle ROS \cong \angle RSO$ ,  $\angle ORM \cong \angle SRT$

Prove:  $\triangle MOR \cong \triangle TSR$

Statements	Reasons
① $\overline{MN} \cong \overline{NT}$	① given
② $\angle OMR \cong \angle STR$	② Isosceles Triangle Theorem
③ $\angle ROS \cong \angle RSO$	③ given
④ $\overline{OR} \cong \overline{SR}$	④ Isosceles Triangle Theorem
⑤ $\angle ORM \cong \angle SRT$	⑤ given
⑥ $\triangle MOR \cong \triangle TSR$	⑥ AAS