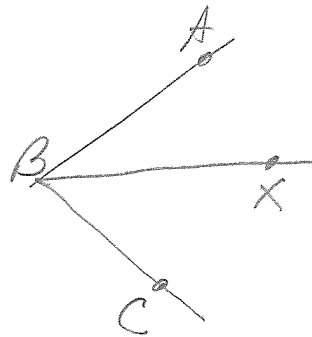


Angle bisector theorem

Given: \vec{BX} bisector of $\angle ABC$

Prove: $m\angle ABX = \frac{1}{2} m\angle ABC$

$m\angle XBC = \frac{1}{2} m\angle ABC$



① \vec{BX} bisects $\angle ABC \rightarrow$ ② $\angle ABX \cong \angle XBC \rightarrow$ ③ $m\angle ABX = m\angle XBC$ }
④ $m\angle ABX + m\angle XBC = m\angle ABC$ }

⑤ $m\angle ABX + m\angle ABX = m\angle ABC \rightarrow$ ⑥ $2m\angle ABX = m\angle ABC$

⑦ $m\angle ABX = \frac{1}{2} m\angle ABC$ }
⑧ $m\angle ABX = m\angle XBC$ } \rightarrow ⑨ $m\angle XBC = \frac{1}{2} m\angle ABC$

Reasons

- ① Given
- ② \angle bisector \div \angle into 2 \cong parts
- ③ \cong \angle s have = measures.
- ④ Angle addition postulate
- ⑤ Substitution
- ⑥ Simplification / Distributive Prop.
- ⑦ Division prop
- ⑧ \cong \angle s have = measures.
- ⑨ Substitution Prop.