



Given: $\angle 1 \cong \angle 3$; $\angle 4 \cong \angle 7$

$\triangle ALM$ is isosceles

Prove: $\triangle AMB \cong \triangle ALC$

$\angle 1 \cong \angle 3$; $\angle 4 \cong \angle 7$

$\triangle ALM$ is isosceles

GIVEN

$m\angle 1 = m\angle 3$; $m\angle 4 = m\angle 7$

Def. of \cong

$\overline{LA} \cong \overline{MA}$

Def. of isosceles

$m\angle 1 + m\angle 2 = m\angle BAM$

angle add. post.

$m\angle 3 + m\angle 2 = m\angle CAL$

angle add. post.

$m\angle 1 + m\angle 2 = m\angle CAL$

substitution

$m\angle BAM = m\angle CAL$

transitive

$\angle BAM \cong \angle CAL$

Def. of \cong

$m\angle 4 + m\angle 5 = 180^\circ$ $m\angle 6 + m\angle 7 = 180^\circ$ angle add. post.

$m\angle 4 + m\angle 5 = m\angle 7 + m\angle 6$

Substitution

$m\angle 4 + m\angle 5 = m\angle 4 + m\angle 6$

Substitution

$m\angle 5 = m\angle 6$

Subtraction

$\angle 5 \cong \angle 6$

Def. of \cong

$\triangle AMB \cong \triangle ALC$

ASA \cong Post.