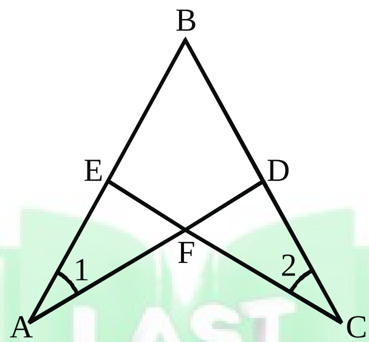
Q.1 In the given figure **(K.B)**

$\angle 1 \cong \angle 2$ and $\overline{AB} \cong \overline{CB}$

Prove that

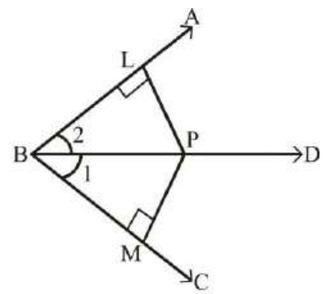
$\Delta ABD \cong \Delta CBE$



Proof

Statements	Reasons
In $\Delta ABD \leftrightarrow \Delta CBE$	
$\overline{AB} \cong \overline{CB}$	Given
$\angle BAD \cong \angle BCE$	Given $\angle 1 \cong \angle 2$
$\angle ABD \cong \angle CBE$	Common
$\Delta ABD \cong \Delta CBE$	S.A.A ≅ S.A.A

Q.2 From a point on the bisector of an angle, perpendiculars are drawn to the arms of the angle. Prove that these perpendiculars are equal in measure. (K.B)



Given

$\overline{BD}$ is bisector of $\angle ABC$. P is point on $\overline{BD}$ and $\overline{PL}$ and $\overline{PM}$ are perpendicular to $\overline{AB}$ and $\overline{CB}$ respectively.

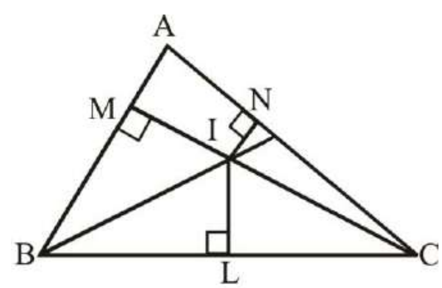
To prove

$\overline{PL} \cong \overline{PM}$

Proof

Statements	Reasons
In $\Delta BLP \leftrightarrow \Delta BMP$	
$\overline{BP} \cong \overline{BP}$	Common
$\angle BLP \cong \angle BMP$	Each is right angle (given)
$\angle LBP \cong \angle MBP$	Given $\overline{BD}$ is bisector of angle B
$\therefore \Delta BLP \cong \Delta BMP$	S.A.A ≅ S.A.A
So $\overline{PL} \cong \overline{PM}$	Corresponding sides of congruent triangles

Q.3 In a triangle ABC, the bisectors of $\angle B$ and $\angle C$ meet in a point I. Prove that I is equidistant from the three sides of ΔABC. (K.B)



Given

In ΔABC, the bisectors of $\angle B$ and $\angle C$ meet at I and $\overline{IL}$, $\overline{IM}$, and $\overline{IN}$ are perpendiculars to the three sides of ΔABC.

To prove

$\overline{IL} \cong \overline{IM} \cong \overline{IN}$

Proof

Statements	Reasons
In $\Delta ILB \leftrightarrow \Delta IMB$	
$\overline{BI} \cong \overline{BI}$	Common
$\angle IBL \cong \angle IBM$	Given BI is bisector of $\angle B$
$\angle ILB \cong \angle IMB$	Given each angle is rights angles
$\Delta ILB \cong \Delta IMB$	S.A.A ≅ S.A.A

$\therefore$ $\overline{IL} \cong \overline{IM}$ ______ (i)	Corresponding sides of ≅ Δ's
Similarly	
ΔILC ≅ ΔINC	
So $\overline{IL} \cong \overline{IN}$ ______ (ii)	Corresponding sides of ≅ Δs
from (i) and (ii)	
$\overline{IL} \cong \overline{IM} \cong \overline{IN}$	
$\therefore$ I is equidistant from the three sides of ΔABC.	

Theorem 10.1.2 **(A.B)**

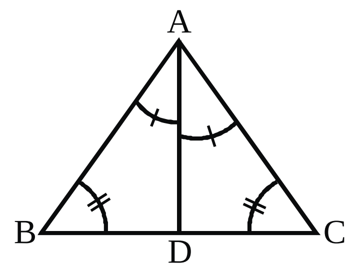
If two angles of a triangle are congruent then the sides opposite to them are also congruent.

Given

In ΔABC, ∠B ≅ ∠C

To prove

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



Construction

Draw the bisector of ∠A, meeting $\overline{BC}$ at point D

Proof

Statements	Reasons
In ΔABD ↔ ΔACD	
$\overline{AD} \cong \overline{AD}$	Common
∠B ≅ ∠C	Given
∠BAD ≅ ∠CAD	Construction
ΔABD ≅ ΔACD	S.A.A ≅ S.A.A
Hence $\overline{AB} \cong \overline{AC}$	(Corresponding sides of congruent triangles)