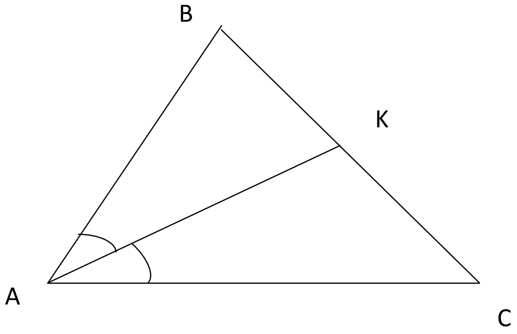
The internal bisector of angle of a triangle divides the opposite side internally in the ratio of sides containing the angle .Prove it.

Proof.



To prove $\frac{BK}{KC} = \frac{AB}{AC}$.

For ΔABK: $\frac{BK}{\sin \angle BAK} = \frac{AK}{\sin \angle B}$, (law of sines)

$\frac{BK}{\sin(\frac{1}{2}\angle BAC)} = \frac{AK}{\sin \angle B}, \sin(\frac{1}{2}\angle BAC) = \frac{BK \sin \angle B}{AK}$.

For ΔAKC: $\frac{KC}{\sin \angle KAC} = \frac{AK}{\sin \angle C}$, (law of sines)

$\frac{KC}{\sin(\frac{1}{2}\angle BAC)} = \frac{AK}{\sin \angle C}, \sin(\frac{1}{2}\angle BAC) = \frac{KC \sin \angle C}{AK}$.

So $\frac{BK \sin \angle B}{AK} = \frac{KC \sin \angle C}{AK}$ and $\frac{BK}{KC} = \frac{\sin \angle C}{\sin \angle B}$.

For ΔABC: $\frac{AB}{\sin \angle C} = \frac{AC}{\sin \angle B}$, (law of sines)

$\frac{AB}{AC} = \frac{\sin \angle C}{\sin \angle B}$.

Thus $\frac{BK}{KC} = \frac{\sin \angle C}{\sin \angle B}$ and $\frac{AB}{AC} = \frac{\sin \angle C}{\sin \angle B}$.

Therefore $\frac{BK}{KC} = \frac{AB}{AC}$

Answer.

Hypothesis is proved.