

An Angle Bisector in a Right Triangle

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A **Proof Without Words** is a way to get students to speak without the teacher verbalising. It is important to get them to describe what they see and to scaffold their reasoning with leading questions if they have trouble moving to a conclusion.

Given a right triangle ABC ($\angle B = 90^\circ$) with $\angle A = 60^\circ$. Point M lies on BC so that $BM = 0.5 MC$ (Figure 1). Prove that AM is an angle bisector in triangle ABC .

Answer the following questions to reason why AM bisects angle A .

- What kind of triangle is ACA' ?
- How is the line CB related to the line AA' ?
- What is the point M called in relation to the triangle ACA' ?
- How is M related to the vertices of the triangle ACA' ?
- How is M related to the angles of the triangle ACA' ?
- Would this hold if angle A was not equal to 60 degrees?

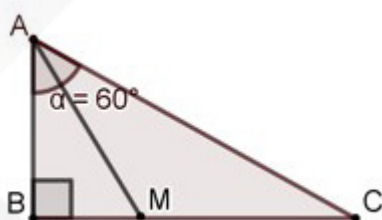


Figure 1

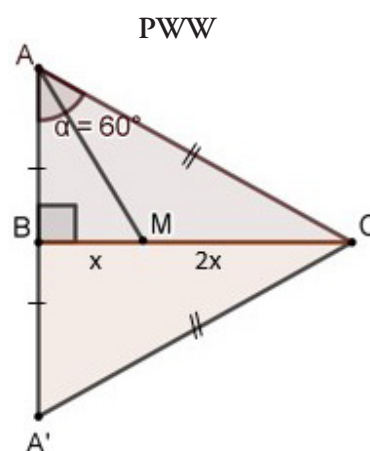


Figure 2

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