**London Taught Course Centre**

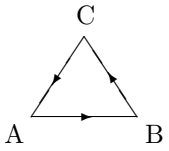
**2010 Examination**

# Algebraic Topology

*Answer both questions*

1. Explain why the simplicial homology of a $\Delta$-complex $K$ is independent of the particular subdivision used to compute it.

2. $ABC$ is a triangle. $AB$, $BC$, $CA$ are identified (glued) in the directions shown, the resulting space being called $Y$.
Give reasons why a) $Y$ is not a surface and b) it contains a Möbius band.
Find a way of expressing $Y$as a $\Delta$-complex, and find its simplicial homology groups.




*Luke Hodgkin, April 2010*