A particle $Q$ of mass $m$ is attached to a fixed point $O$ by a light inextensible string of length $a$. The particle moves in complete vertical circles about $O$. The points $A$ and $B$ are on the path of $Q$ with $AB$ a diameter of the circle. $OA$ makes an angle of 60° with the downward vertical through $O$ and $OB$ makes an angle of 60° with the upward vertical through $O$. The speed of $Q$ when it is at $A$ is $2\sqrt{ag}$.

Given that $T_A$ and $T_B$ are the tensions in the string at $A$ and $B$ respectively, find the ratio $T_A : T_B$. [6]