1:

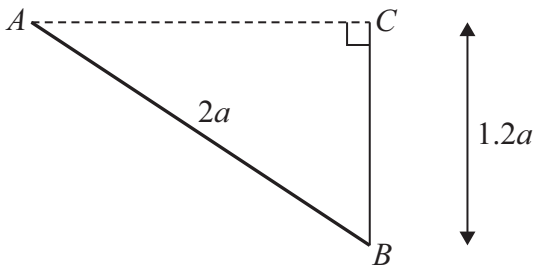


Figure 1

A uniform rod AB has mass m and length $2a$.
The end A is freely hinged to a fixed point.
A light elastic string has modulus of elasticity $2mg$ and natural length L.
One end of the elastic string is attached to the end B of the rod.
The other end of the elastic string is attached to a fixed point C, where AC is horizontal.
The rod rests in equilibrium with the elastic string taut and vertical and $BC = 1.2a$, as shown in Figure 1.

(a) Find, in terms of m and g, the tension in the elastic string.

(3)

(b) Find L in terms of a.

(4)

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Question 1 continued

(Total for Question 1 is 7 marks)