

Solutionbank M1

Heinemann Modular Maths for Edexcel AS and A-level

4 Forces

Exercise E, Question 11

Question:

A mass of 10 kg is suspended by two light, inextensible strings. The angles between the strings and the vertical are 40° and 20° . Find the tensions in the strings.

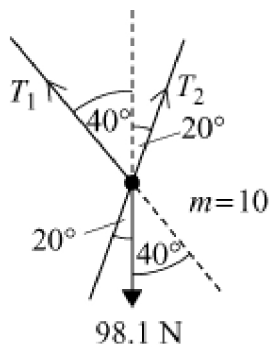
Solution:

Resolving perpendicular to T_2

$$\begin{aligned} T_1 \sin 60^\circ &= 98.1 \sin 20^\circ \\ T_1 &= \frac{98.1 \times \sin 20^\circ}{\sin 60^\circ} = 38.742\dots \\ T_1 &= 38.7 \text{ N (3 s.f.)} \end{aligned}$$

Resolving perpendicular to T_1

$$\begin{aligned} T_2 \sin 60^\circ &= 98.1 \sin 40^\circ \\ T_2 &= \frac{98.1 \times \sin 40^\circ}{\sin 60^\circ} = 72.812\dots \\ T_2 &= 72.8 \text{ N (3 s.f.)} \end{aligned}$$



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