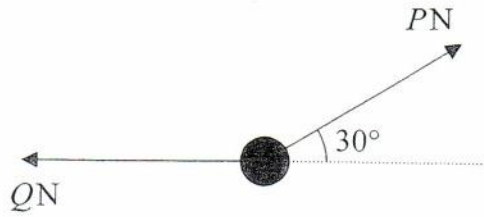


1.

Figure 1



A particle of weight  $24\text{ N}$  is held in equilibrium by two light inextensible strings. One string is horizontal. The other string is inclined at an angle of  $30^\circ$  to the horizontal, as shown in Figure 1. The tension in the horizontal string is  $Q$  newtons and the tension in the other string is  $P$  newtons. Find

(a) the value of  $P$ ,

(3)

(b) the value of  $Q$ .

(3)

3.

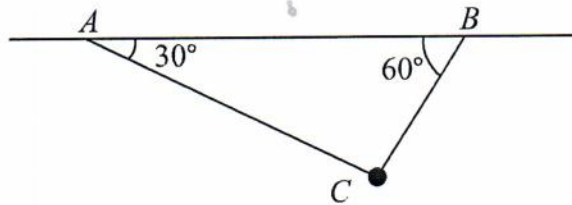


Figure 1

A particle of mass  $m$  kg is attached at  $C$  to two light inextensible strings  $AC$  and  $BC$ . The other ends of the strings are attached to fixed points  $A$  and  $B$  on a horizontal ceiling. The particle hangs in equilibrium with  $AC$  and  $BC$  inclined to the horizontal at  $30^\circ$  and  $60^\circ$  respectively, as shown in Figure 1.

Given that the tension in  $AC$  is 20 N, find

(a) the tension in  $BC$ , (4)

(b) the value of  $m$ . (4)

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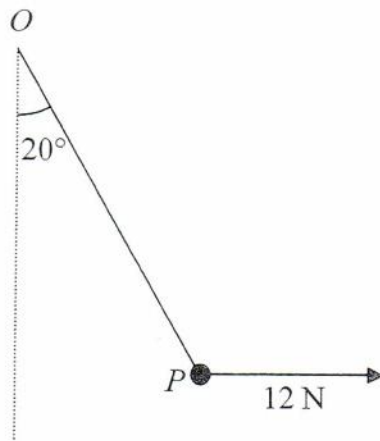
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1.

Figure 1



A particle  $P$  is attached to one end of a light inextensible string. The other end of the string is attached to a fixed point  $O$ . A horizontal force of magnitude  $12\text{ N}$  is applied to  $P$ . The particle  $P$  is in equilibrium with the string taut and  $OP$  making an angle of  $20^\circ$  with the downward vertical, as shown in Figure 1.

Find

(a) the tension in the string, (3)

(b) the weight of  $P$ . (4)

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3. A particle  $P$  of mass 2 kg is attached to one end of a light string, the other end of which is attached to a fixed point  $O$ . The particle is held in equilibrium, with  $OP$  at  $30^\circ$  to the downward vertical, by a force of magnitude  $F$  newtons. The force acts in the same vertical plane as the string and acts at an angle of  $30^\circ$  to the horizontal, as shown in Figure 3.

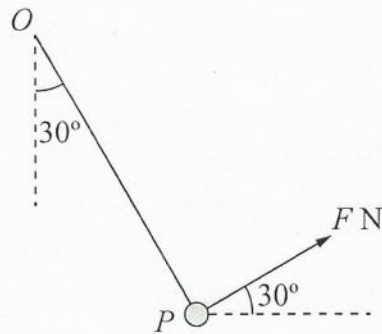


Figure 3

Find

- (i) the value of  $F$ ,
- (ii) the tension in the string.

(8)

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