2:

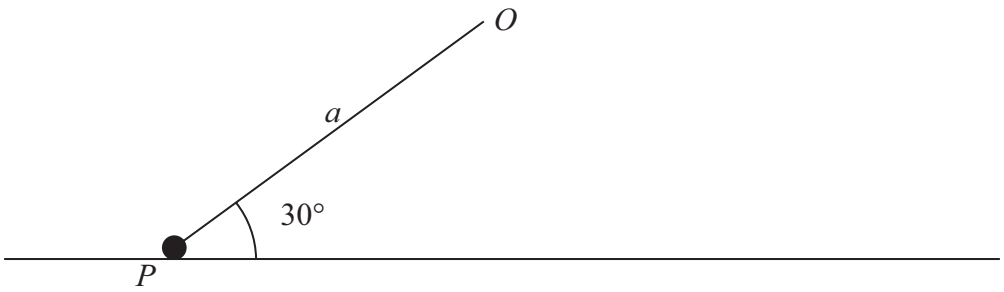


Figure 2

One end of a light inextensible string of length a is attached to a fixed point O which lies above a smooth horizontal table.
The other end is attached to a particle P of mass m.

The particle P moves on the table in a horizontal circle with constant angular speed $\sqrt{\frac{g}{2a}}$ and with the string taut.

The string makes a constant angle of 30° with the table, as shown in Figure 2.

Find, in terms of m and g, the magnitude of the force exerted on P by the table.

(7)

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Question 2 continued

(Total for Question 2 is 7 marks)