

- 1 A particle P of mass m is attached to one end of a light inextensible string of length a . The other end of the string is attached to a fixed point O on a smooth horizontal plane. The particle P moves in horizontal circles about O . The tension in the string is $4mg$.

Find, in terms of a and g , the time that P takes to make one complete revolution.

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- 2 A particle Q of mass m kg falls from rest under gravity. The motion of Q is resisted by a force of magnitude mkv N, where $v \text{ ms}^{-1}$ is the speed of Q at time t s and k is a positive constant.

Find an expression for v in terms of g , k and t .

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