

Forces and Newton's laws – A2 Mathematics P2**1. [June/2022/Paper_7357/02/No.11](#)**

A moon vehicle has a mass of 212 kg and a length of 3 metres.

On the moon the vehicle has a weight of 345 N

Calculate a value for acceleration due to gravity on the moon.

Circle your answer.

[1 mark]

0.614 m s^{-2}

1.63 m s^{-2}

1.84 m s^{-2}

4.89 m s^{-2}

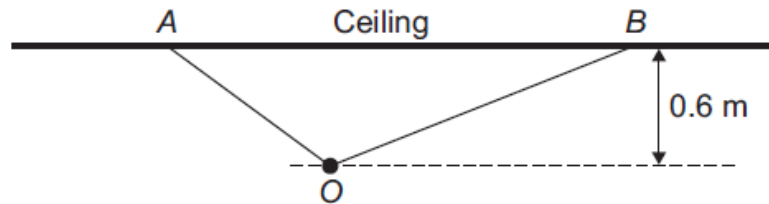
2. June/2022/Paper_7357/02/No.18

An object, O , of mass m kilograms is hanging from a ceiling by two light, inelastic strings of different lengths.

The shorter string, of length 0.8 metres, is fixed to the ceiling at A .

The longer string, of length 1.2 metres, is fixed to the ceiling at B .

This object hangs 0.6 metres directly below the ceiling as shown in the diagram.



- (a) Show that the tension in the shorter string is over 30% more than the tension in the longer string.

[4 marks]

(b) (i) The crate takes 3.8 seconds to reach the top of the ramp.

Find the distance OA .

[3 marks]

(b) (ii) Other than air resistance, state **one** assumption you have made about the crate in answering part (b)(i).

[1 mark]
