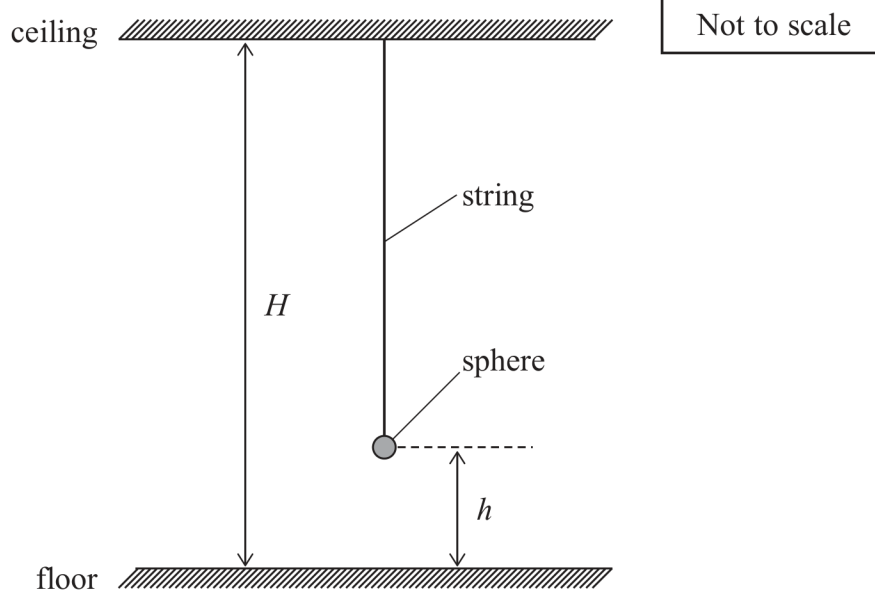


- 2 A student determined the height H of a high ceiling using a simple pendulum as shown.



The student displaced the sphere through a small angle, so that it oscillated. She determined the time period T when the centre of the sphere was a distance h from the floor.

- (a) Show that the relationship between T and h can be written as

$$T^2 = \frac{4\pi^2 H}{g} - \frac{4\pi^2 h}{g} \quad (2)$$



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(b) The student used a stopwatch to determine T .

Describe a method, using the pendulum, to obtain a value for H .

Your method should use a suitable graph.

(6)

(c) Explain how a video recording may improve the method.

(2)