

GCSE Physics A (Gateway)
J249/04 Physics A P5-P8 and P9 (Higher Tier)

Question Set 16

1

A car on a roller coaster is stationary at the top of a slope.

The car has a weight of 6 500 N and a potential energy of 217 000 J.

(a) Calculate the cars height above the ground.

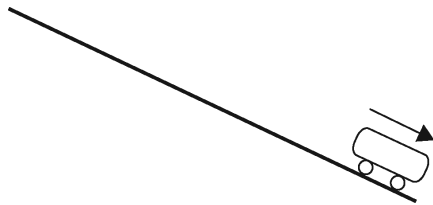
$$\text{Potential energy} = mgh \quad mg = 6500$$

$$\frac{217000}{6500} = h = 33.38461538$$
$$= 33.4 \text{ m}$$

(3sf) Answer = 33.4 m

[2]

(b) The diagram shows the roller coaster car moving down a slope.



The energy at the bottom of the slope is less than expected.

Suggest two ways to improve the efficiency of the roller coaster car.

- use lubrication on the slope's surface to reduce friction.
- Make the trolley slimmer to reduce air resistance on the trolley

[2]

Total Marks for Question Set 16: 4

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