

**14** A train of mass  $3.3 \times 10^6 \text{ kg}$  is moving at a constant speed up a slope inclined at an angle of  $0.64^\circ$  to the horizontal. The engine of the train is producing a useful output power of  $14 \text{ MW}$ .

Assume that there are no frictional forces opposing the motion of the train.

What is the speed of the train?

**A**  $0.43 \text{ ms}^{-1}$

**B**  $4.2 \text{ ms}^{-1}$

**C**  $39 \text{ ms}^{-1}$

**D**  $380 \text{ ms}^{-1}$

**15** A cannon ball of mass  $3.50 \text{ kg}$  is fired at a speed of  $22.0 \text{ ms}^{-1}$  from a gun on a ship at a height of