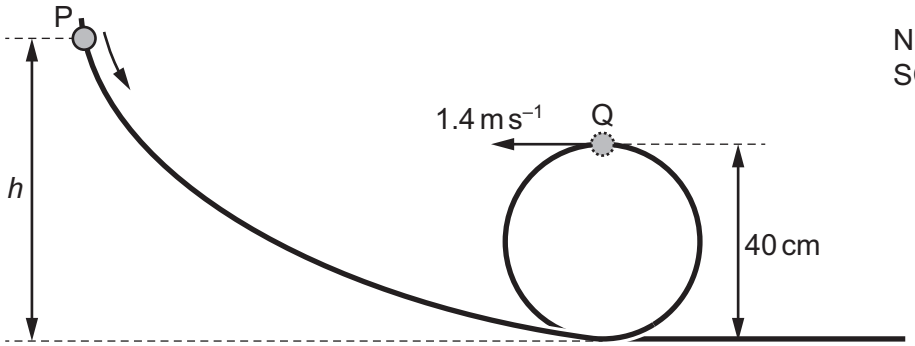
**16** A bead is released from rest at point P and slides along a wire, as shown.




The track loops around and forms a vertical circle of diameter 40 cm. At point Q, the bead has a speed of 1.4 m s$^{-1}$.

Air resistance and friction on the wire are negligible.

What is the height *h* from which the bead is released?

**A** 0.30 m **B** 0.40 m **C** 0.50 m **D** 0.60 m

**17** A small diesel engine uses a volume of $1.5 \times 10^4$ cm$^3$ of fuel per hour to produce a useful power output of 40 kW. It may be assumed that 34 kJ of energy is transferred to the engine when it uses 1.0 cm$^3$ of fuel.

What is the rate of transfer from the engine of energy that is wasted?

**A** 102 kW **B** 142 kW **C** 182 kW **D** 470 kW