

- 4 A cylindrical tube rolling down a slope of inclination  $\theta$  moves a distance  $L$  in time  $T$ . The equation relating these quantities is

$$L \left( 3 + \frac{a^2}{P} \right) = QT^2 \sin \theta$$

Where  $a$  is the internal radius of the tube and  $P$  and  $Q$  are constants.

Which line gives the correct units for  $P$  and  $Q$ ?

|          | $P$          | $Q$                        |
|----------|--------------|----------------------------|
| <b>A</b> | $\text{m}^2$ | $\text{m}^2 \text{s}^{-2}$ |
| <b>B</b> | $\text{m}^2$ | $\text{m s}^{-2}$          |
| <b>C</b> | $\text{m}^2$ | $\text{m}^3 \text{s}^{-2}$ |
| <b>D</b> | $\text{m}^3$ | $\text{m s}^{-2}$          |

**Space for working**