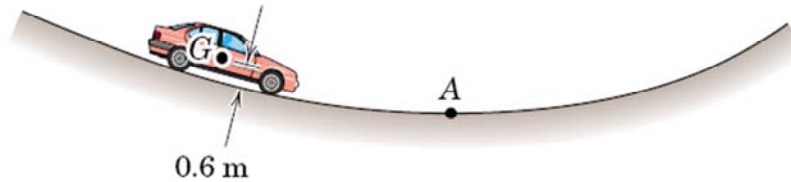


### Velocity and Acceleration: Exercise



A car passes through a dip in the road at  $A$  with constant **speed** ( $v$ ) giving it an **acceleration** ( $a$ ) equal to  $0.5g$ . The **radius of curvature** ( $\rho$ ) at  $A$  is  $100$  m and the distance from the road to the mass center  $G$  of the car is  $0.6$  m.

Determine the **speed** ( $v$ ) of the car.

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$$\begin{aligned} 2/104 \quad a &= a_n = v^2/\rho, \quad v = \sqrt{\rho a_n} = \sqrt{(100 - 0.6)0.5(9.81)} \\ &= 22.08 \text{ m/s} \\ \text{or } v &= 22.08(3.6) = \underline{79.5 \text{ km/h}} \end{aligned}$$