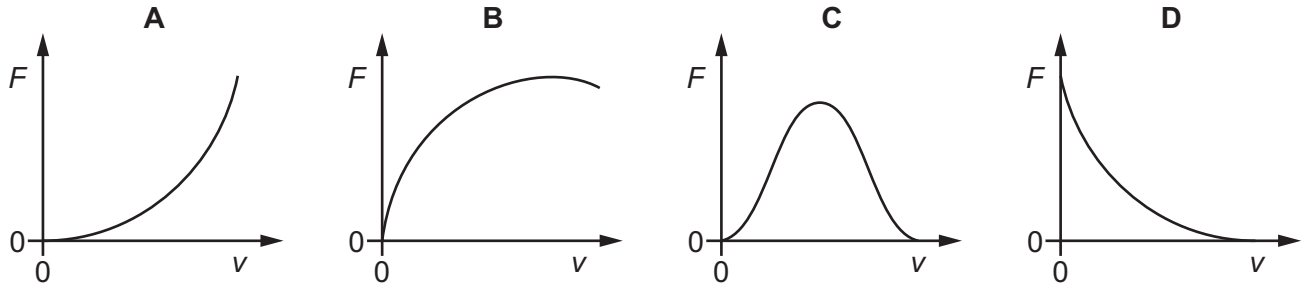
9 A small ball is held at the surface of liquid oil in a container. The ball is released from rest and falls through the oil. The ball has velocity v. A viscous (drag) force F acts on the ball.

Which graph could show the variation with v of F?



10 An object of mass m, moving at speed u along a frictionless horizontal surface, collides head-on with a stationary object of mass $4m$.

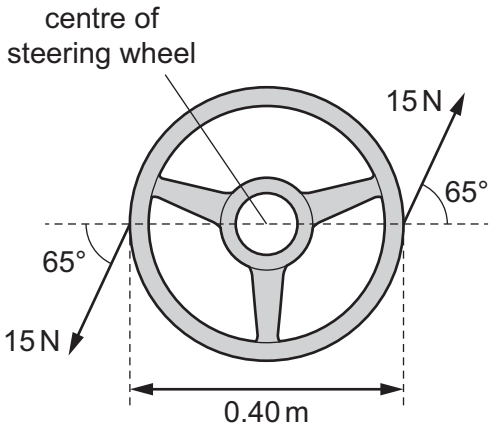
before the collision

After the collision, the object of mass m rebounds along its initial path with $\frac{1}{4}$ of its kinetic energy before the collision.

What is the speed of the object of mass $4m$ after the collision?

A $\frac{u}{8}$ **B** $\frac{3u}{16}$ **C** $\frac{5u}{16}$ **D** $\frac{3u}{8}$

11 The driver of a car applies two parallel forces to a steering wheel, as shown.



Each force has a magnitude of 15 N and acts in the direction shown. The steering wheel has a diameter of 0.40 m.

What is the torque exerted on the steering wheel?

A 1.3 N m **B** 2.5 N m **C** 2.7 N m **D** 5.4 N m