

A 980 kg car traveling at 20 m/s rounds a curve of radius 40 m. What is the friction force that must act on the car to keep it in its circular path?

Solution

Friction will supply the centripetal force needed to keep the car going in a circle, so

$$F_{friction} = \frac{mv^2}{r} = \frac{980 \times 20^2}{40} = 9800 \text{ N} = 9.8 \text{ kN}$$