

12 Period and centripetal force – Part 2 —Answers

Answers

Work through these after trying the questions yourself.

12.1 The time for one full revolution.

12.2 $\omega = 2\pi/T$.

12.3 $\omega = 2\pi/T = 2\pi/4.0 \approx 1.6 \text{ rad s}^{-1}$.

12.4 Towards the centre of the circle.

12.5 $F = mv^2/r = 0.50 \times 2.0^2/0.40 = 5.0 \text{ N}$.

12.6 Friction between the tyres and the road.

12.7 The centripetal force needed is $F = mv^2/r$. With the same radius r and mass m , swinging faster raises v , and F depends on v^2 , so the force grows quickly —the string must pull harder to supply it.