



Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Understand: Uniform Circular Motion ✓ Understand: Centripetal Acceleration ✓ Understand: Centripetal Force
- ✓ Understand: Period and Frequency



Section A • Concept Check

• BEGINNER

4 × 1 = 4

- 1 A car moves at 15 m/s around a curve of radius 30m. Find centripetal acceleration.

- 2 A 3 kg ball moves in a circle of radius 1.5m at 6 m/s. Find centripetal force.

- 3 An object has period 5s. Find its frequency.

- 4 An object has frequency 4 Hz. Find its period.



Section B • Problem Solving

• INTERMEDIATE

4 × 3 = 12

- 5 Find the angular velocity of an object with period 1 second.

- 6 A satellite orbits at radius 7000km with speed 7.5 km/s. Find its centripetal acceleration.

- 7 What provides the centripetal force for a car turning on a flat road?

- 8 What provides the centripetal force for the Moon orbiting the Earth?



Section C • Challenge

• CHALLENGE

2 × 2 = 4

- 9 If the radius of a circular path doubles while speed stays the same, how does centripetal acceleration change?

- 10 If speed doubles while radius stays the same, how does centripetal force change?



Reflection — the most useful thing I learned: _____

⌘ ANSWER KEY – FOLD OR CUT BEFORE HANDING OUT

1 = 7.5 m/s^2 2 = 36 N 3 = 0.2 Hz 4 = 0.25 s | 5 = $\omega = 2\pi/1 \approx 6.28 \text{ rad/s}$ 6 =
 $a_c = v^2/r = 56.25/7000 \approx 0.00804 \text{ km/s}^2$ 7 = Friction between the tires and the road 8 = Gravity | 9
= It is halved, since $a_c = v^2/r$ is inversely proportional to r 10 = It quadruples, since F_c is
proportional to v^2