Planet Holloway **websheet 7.2**
Cp Physics Rotation and Gravity
You may print this out and write on it or work on your own paper.
Show all work.

1. Which has greater angular speed on average, the minute hand or the hour hand on a clock?

2. In order to allow for more passengers, a Ferris wheel has two concentric sets of cars hanging on it. Which set has greater angular speed, the inside or the outside?

3. Convert 2,400 rev/min into rad/s. Now convert that into degrees/sec.

4. A 0.2 m grinding wheel takes 4.6 seconds to speed up from 2 rad/sec to 25 rad/s. What is the wheels average angular acceleration? What is the wheels tangential acceleration at its edge? What is the wheel's centripetal acceleration at its edge at its final speed?

5. A rollercoaster loaded with passengers has a mass of 3,000 kg. At a low point in the track, the radius of curvature is 12 m and the rollercoaster has a tangential speed of 6 m/s. What is the angular speed of the car? What is the centripetal acceleration?

6. If in the problem above, a squirrel jumped on the track and the car had to stop suddenly, (in 0.6 seconds) what would be the angular acceleration?

Answers:

1. Minute hand
2. Outside set
3. 251.3 rad/s, 14,400 degrees/s
4. 5 rad/s/s, 1 m/s/s, 125 m/s/s
5. 0.5 rad/s, 3 m/s/s
6. 0.833 rad/s/s