

## Chapter 7 XtraWrk – Rotational Motion

- 7.1) a) What's the angular speed of the Earth?  
b) How is this rotation related to the shape of the planet?
- 7.2) A wheel has a diameter of 8.2 m. How far does a point on the edge of the wheel travel as the wheel rotates through
- a)  $30^\circ$ ?  
b) 30 radians?  
c) 30 revolutions?
- 7.5) A drill is turned on and constantly angularly accelerates for 3.20 seconds, reaching a top speed of  $2.51 \times 10^4$  rev/min.
- a) What is the angular acceleration of the drill?  
b) What is the angular displacement of the drill?
- 7.7) A potter's wheel rotates at 0.06 rad/sec. The potter steps on the pedal and angularly accelerates the wheel at  $0.60 \text{ rad/s}^2$  until it reaches an angular speed of 2.2 rad/s.
- a) What is the angular displacement of the wheel during this acceleration?  
b) How will the net angular displacement change if the angular velocity quantities are doubled?
- 7.9) A helicopter has two rotors in order to allow it to fly: a large (7.6-m diameter) top rotor and a smaller (1.02-m diameter) tail rotor. The main rotor spins at 450 rev/min, whereas the tail rotor spins at 4138 rev/min.
- a) On which rotor would the speed of a point on the tip of the rotor be moving faster?  
b) Are either rotors moving close to the speed of sound (343 m/s at sea level)?