Circular Motion

1. The propeller of a toy airplane rotates at 300 rpm. What is its frequency in hertz? What is the period? (5.00 Hz) (0.2 S)
2. How much time does it take for the tires of a race car to make one revolution if the car is travelling at 261.0 km/h and the wheels have a radius of 0.350 m? (0.0303 s)
3. You throw a Frisbee to your friend. The Frisbee has a diameter of 28.0 cm and makes one turn in 0.110 s. What is the centripetal acceleration at its outer edge? (457 m/s2)
4. An intake fan blade on a jet engine has a mass of 7.50 kg. As it spins, the middle of the blade has a speed of 365.9 m/s and is a distance of 73.7 cm from the axis of rotation. What is the centripetal force on the blade? (1.36 x 106 N)
5. Determine the maximum speed at which a 1500.0-kg car can round a curve that has the radius of 40.0 m, if the coefficient of static friction between the tires and the road is 0.60.
6. A space station shaped like a wheel could be used to create artificial gravity for astronauts living in space. The astronauts would work on the rim of the station as it spins. If the radius of the space station is 30.0 m, what would its frequency have to be to simulate the gravity of Earth? What is the period?