

Name: _____

Date: _____

Section C D F

Rotational Motion II

1. A drill starts from rest. After 3.8 s of constant angular acceleration, the drill turns at a rate of 2640 rad/s.
 - a. Find the drill's angular acceleration. (Your answer should be between 600 – 700 rad/s²)

 - b. Determine the angle through which the drill rotates during this period. (Your answer should be between 4000 – 7000 radians)

2. A potter's wheel moves from rest to an angular speed of 0.20 rev/s in 34.0 s. Assuming constant angular acceleration, what is its angular acceleration in rad/s²? (Your answer should be between 0.01 and 0.1 rad/s²)

3. The Emerald Suite, a revolving restaurant at the top of the Space Needle in Seattle, Washington, makes a complete turn once every hour. What is the tangential speed of a customer sitting 16.5 m from the restaurant's center? (Your answer should be between 0.01 and 0.1 m/s)

4. Find the centripetal accelerations of a point on the equator of Earth. (Your answer should be between .01 and .1 m/s^2)
- a. Find the centripetal accelerations of a point at the North Pole of Earth. (Your answer should be between 0 and 1.2 m/s^2)
5. A 12500 N car traveling at 59.0 km/h rounds a curve of radius 2.50×10^2 m.
- a. Find the centripetal acceleration of the car. (Your answer should be between 1.0 and 2.0 m/s^2)
- b. Find the force that maintains centripetal acceleration. (Your answer should be between 1000 – 1500 N)