Chapter 7: Rotation, Conservation Laws

PRINT Name _____ Period _____

ALWAYS SHOW THE METHOD-- Hup, Two, Three, Four.

1. Compare the Centrifugal Effect and the Centripetal force.
2. Calculate the Centripetal Force when the Mass is 100.0Kg, the Radius is 5.00m, and the Speed is 40m/s. Ans: 32000 N.
3. What has Critical Velocity have to do with swinging? (Mythbusters). Find the Critical Velocity of a swing when the radius is 5.00m and g = 9.8m/s^2. Ans: 7m/s.
4. Explain why a small spinning carousel speeds up when physics students crawl out from the center.
5. From the Video, *Airplane on a Conveyer*, why does the plane take off from a conveyer moving at the same speed backwards?
6. Explain the Biggie that the Foucault Pendulum demonstrates.
7. Describe what happens to a Gyroscope when an unbalanced force is applied to it.
8. Find the Angular Displacement when the Arc Length is 5.0m and the Radius is 2.0m. Ans: 2.5 radians.
9. Calculate the Angular Speed when a mud ball turns through 25π radians, in 42 s. Ans: 0.60 πrad/sec.
10. A Goose races around a track at 10.0m/s. The radius is 60m. Find the Centripetal Acceleration. Ans: 1.7 m/s^2.
11. Two Brass Ducks of masses 10.0kg and 20.0kg are 2.00m apart from their centers. Using $G = 6.67 \times 10^{-11}$ nm^2/kg^2, Find the force between them. Ans: 5.34×10^{-8} N.
12. Using the Equations for an Orbit (Gravity balances Centrifugal "Force"), Show why the Mass of a Satellite does not affect the orbit.