**IB Physics**

**8.2 Group Quiz**

Name

Holiday movie you watch every year with your family

**Show your work, and circle your answers and use sig figs to receive full credit.**

I (about centers): cylinder = 1/2mr2, ring/point = mr2, sphere = 2/5mr2, rod = 1/12mL2 (= 1/3mL2 about end)

1. Calculate the torque here (Be careful what you use for the angle)

r = 15.0 cm

F = 764 N (horizontal)

47.0o

2. What is the torque needed to accelerate a bicycle wheel with a moment of inertia of 0.248 kg m2 at 45.1 rad/s/s?

3. A 0.740 m diameter (different) bicycle wheel is a thin ring with a mass of 3.20 kg. If it is initially spinning at 54.0 rad/s, and stops after going around 67.2 times, what is the frictional torque acting?

4. A flywheel that is a 0.280 m diameter cylinder with a mass of 37.0 kg would require what torque to accelerate from rest to 4510 RPM in 2.10 seconds? What force must be exerted at the edge of the flywheel to effect this?

5. What tangential force is needed to accelerate a (cylindrical) 292 kg merry go round with a diameter of 3.80 m from rest to 1.80 rotations per second in 8.00 rotations?