IB Physics
8.2 Group Quiz

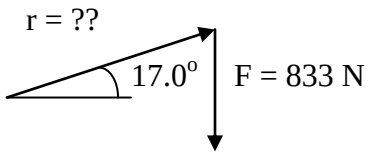
Name_____

Favorite Film Maker_____

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

I (about centers): cylinder = $^1/_2mr^2$, ring/point = mr^2, sphere = $^2/_5mr^2$, rod = $^1/_{12}mL^2$ (= $^1/_3mL^2$ about end)

1. A mechanic needs to exert 385 mN of torque. He weighs 833 N and he stands on the handle of his wrench that is making a 17.0^o angle above the horizontal. How far from the center must he stand? (Be careful what you use for the angle)



2. What is the acceleration of a flywheel with a moment of inertia of 0.145 kg m^2 if a torque of 2.80 mN acts on it?

3. A 0.680 m diameter flywheel has a moment of inertia of 0.243 kg m^2. What is the angular acceleration of the flywheel if you exert 4.50 N tangentially at the edge to speed it up?

4. A 0.210 m radius grinding disk is spinning at 1350 RPM. If it goes through 85.0 rotations being brought to rest by a 1.20 N frictional force applied tangentially at its edge, what is the moment of inertia of the disk?

5. A 4.30 m diameter (cylindrical) merry go round going 45.0 RPM stops in 37.0 rotations because of an 8.30 N force applied tangentially at the edge. What is the mass of the merry go round?