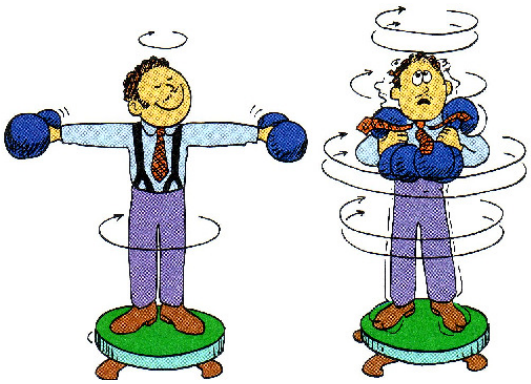
Chapter 11: Reading Guide and Problems Name_____Block___

Ch 11 (p 150-163)

1. What is another word for "turning force"? _____
2. When is a torque produced?
3. What kind of wrench will give you greater torque? Long or short?
4. According to rotational inertia, rotating objects tend to keep _____while nonrotating objects tend to stay linear.
5. Rotational inertia is sometimes called the _____ __ _____.
6. What is rotational inertia?
7. Like regular inertia, rotational inertia depends on the mass but it also depends on the _____of the mass.
8. What type of cylinder would roll with the greatest acceleration, if they had the same mass: a hollow one or solid one? (Circle one) and why?
9. Which one of your body axis's (there are 3) has the least rotational inertia?
10. What is the "inertia of rotation"? _____
11. There are 2 equations for angular momentum, list them below:
12. Angular momentum is always _____ for systems in rotation.
13. Why are galaxies spiral shaped?
14. What does the law of conservation of angular momentum state?
15. When the spinning man in the picture pulls his arms inward close to his body, what decreases?
16. When the spinning man in the picture pulls his arms inward close to his body, what increases?



Torque Practice Problems

Torque = force * lever arm $\tau = Fd$

1. F = 10 N, d= .4m τ= _____

2. F= 3N, d= _____, τ=12Nm

3. F=_____, d= 10m, τ= 4.8Nm

4. A water faucet is turned on when a force of 2N is exerted on the handle at a distance of .06m from the pivot point. What is the torque?

5. Ned tightens a bolt be exerting 6 N of force on his wrench at a distance of .4 m from the fulcrum - - how much torque did he apply?

Torques are often balanced (It may help to draw a picture)
Force X distance (on one side) = Force X distance (on the other). Distances are always to the pivot point.

6. If 200N Amy and 300N Sue both sit on opposite ends of a see-saw. Amy sits 2.5 meters from the center – where should Sue sit so they will be balanced? ($Fd_{amy} = Fd_{Sue}$)

7. A meter stick is supported by a knife edge at the 50 cm mark and has masses of .4 kg and .6 kg hanging from the 20 cm and 80 cm marks, respectively. Where should a third mass of 0.3 kg be hung to keep the stick balanced.