



Unit 7 Review

1. Define **center of gravity**:
2. What is the rule for toppling?
3. Define **unstable equilibrium** and give an example:
4. Define **stable equilibrium** and give an example:
5. Define **neutral equilibrium** and give an example:
6. Define **torque**:
7. Define **lever arm**:
8. Why do large trucks with no power steering have large diameter steering wheels?
9. What is the metric unit for torque?
10. If a door knob were placed in the center of a door rather than at the edge, how much more force would be needed to produce the same torque for opening the door?
11. Define **rotational equilibrium**:
12. Be able to define: **Uniform Circular Motion, revolution, rotation, period, frequency, hertz, linear speed, rotational speed, centripetal force, centripetal acceleration, centrifugal force.**

Problems: (draw a graphic with each and show original equation)

13. A **20.0-kg** child wishes to balance on a seesaw with a child of **32.0 kg**. If the smaller child sits **3.2 m** from the pivot, where must the larger child sit?

14. You set up a solitary seesaw with the fulcrum at the 0.850 m mark of a “uniform” meter stick. You discover that a 205-kg mass balances the meter stick if it is placed 0.117m to the right of the fulcrum. How much does your meter stick weigh?

15. A seesaw is **5.00 m** long and is pivoted at its center. Mike weighs **625 N** and is sitting **1.00 m** from the right end. Where must Jimmy, weighing **450 N**, sit to balance the seesaw?

16. You put your favorite disc in you CD player. If it spins around once every 1.20×10^{-1} seconds...
a. What is its frequency (in Hz)?

b. What is its rotational speed (in RPMs)?



17. A popular trick is to swing a pail of water around in a vertical circle fast enough so that the water doesn't spill out when the pail is upside down. If your arm is 0.60 m long, what is the minimum speed with which you can swing the pail so that the water doesn't spill out at the top of the path?

18. A 35-g rubber ball is attached to a 0.93-m string. The ball is swung in a horizontal circle with a frequency of 0.85 Hz. Find the tension force exerted by the string on the ball

