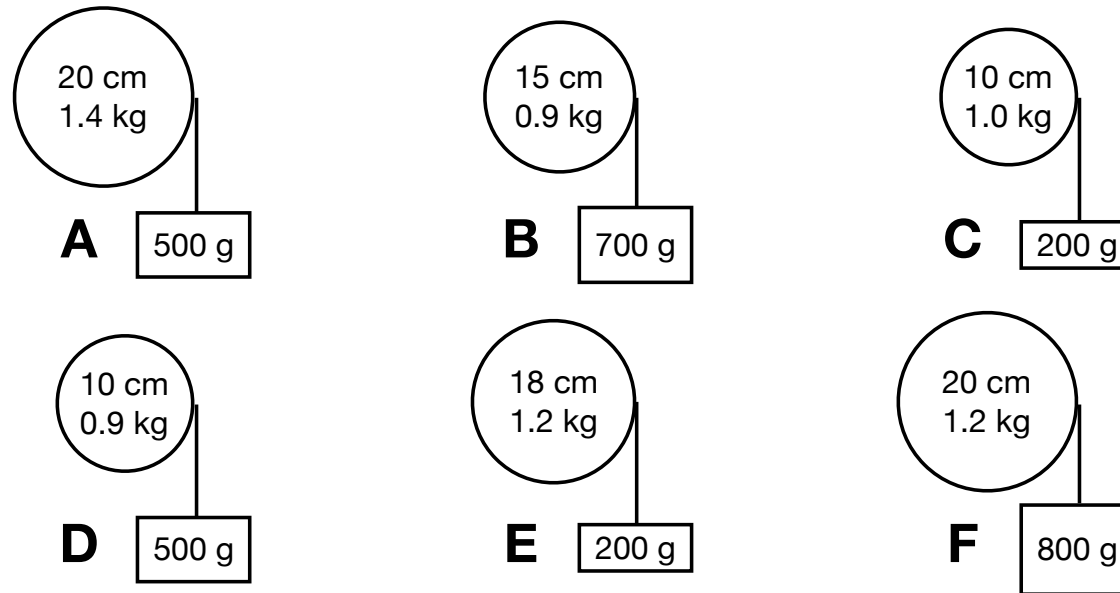


Ranking Task

Hanging Weights and Fixed Disks – Torque

Shown below are six situations where vertically oriented circular disks have strings wrapped around them. The other ends of the strings are attached to hanging masses. The radii of the disks, the masses of the disks, and the masses of the hanging masses all vary. The disks are fixed and are *not* free to rotate. Specific values of the variable are given in the figures.

Rank these situations, from greatest to least, on the basis of the magnitude of the torque on the disks. That is, put first the situation where the disk has the greatest torque acting on it and put last the situation where the disk has the least torque acting on it.



Greatest 1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ Least

Or, all of these disks have the same torque acting on them.

Please carefully explain your reasoning.

How sure were you of your ranking? (1 → 10: 1 – basically guessed, 10 – very sure)

Giancoli, 3rd. ed., p. 200

8-25. Calculate the net torque about the axle of the wheel shown in the figure. Assume that a friction torque of $0.30 \text{ N}\cdot\text{m}$ opposes the motion.

Ans. $1.2 \text{ N}\cdot\text{m}$ clockwise

