Name _____

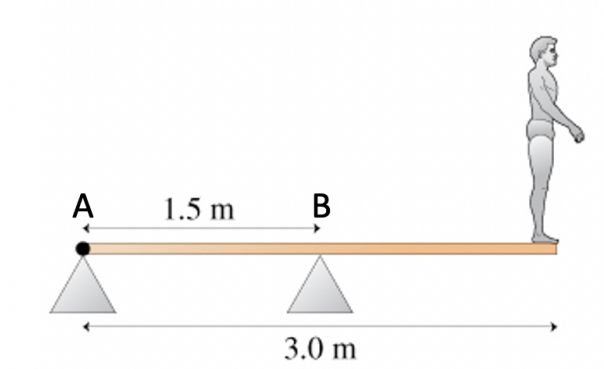
Static Equilibrium: Apply BOTH $F_{net} = 0$ and $\tau_{net} = 0$ to the object.

When in static equilibrium: can choose the axis of rotation to be at the location of forces you don't know

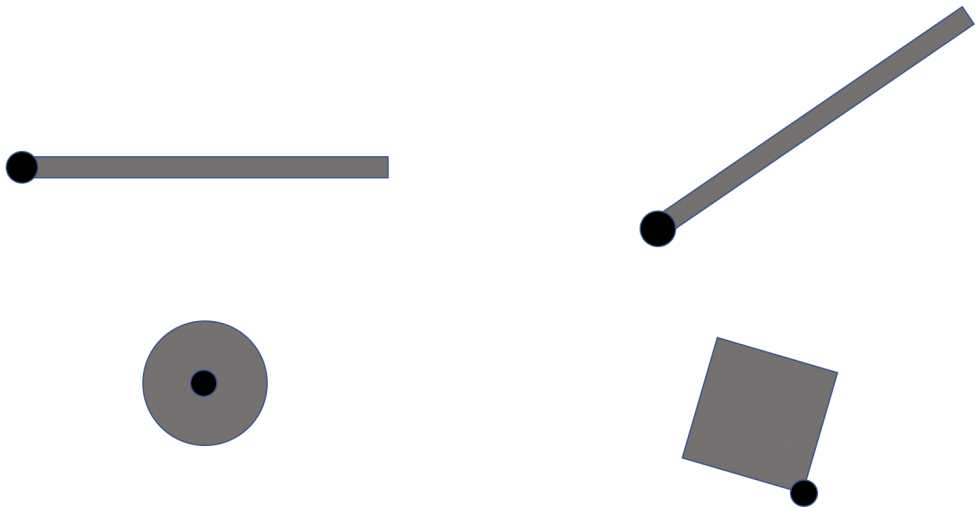
Center of Mass: Point where all mass of an object can be placed such that it behaves like a point obeying Newton's Laws

Center of Gravity: Place where Weight of the object itself is applied (usually at the center of the object: Center of Gravity is essentially at Center of Mass)

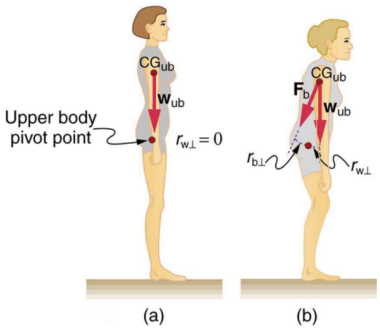
1. A Diver with a weight of 600N stands at the end of the diving board as shown. What is the force of the bolts acting on the board at point A? What is the force of the pivot on the board at point B?



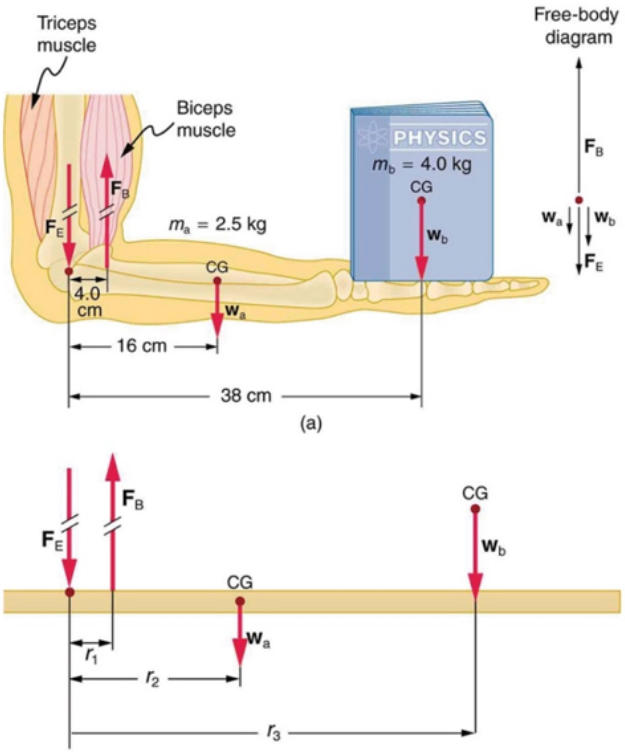
2. For each of the objects, the pivot point is shown. Draw the weight force of each of the objects and indicate whether the weight exerts a torque on the object and indicate the sign of the torque (+ or -).



3. How does the following picture describe why having good posture (standing upright) is important to reduce back pain?



4. Surprisingly, your muscles exert much greater forces within the body than your limbs apply to the outside world. Find the force that the bicep muscle exerts on the forearm. Compare it to the weight of the forearm plus the weight of the book.



Suppose the maximum force your bicep muscle can exert is 800N, can you pick up an object that weighs 800N? **A**:Yes, easily **B**:Yes, barely, **C**: No