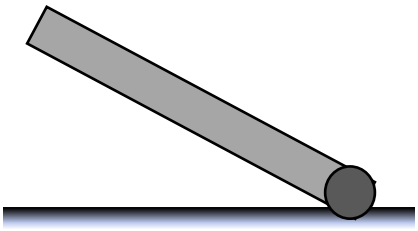
TORQUE DUE TO WEIGHT

● An object's weight ALWAYS acts on its _____ **(**_____ **).**

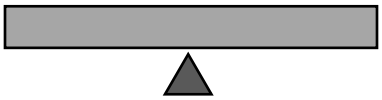
- If an object has _____ mass distribution**,** its _____ is on its geometric _____**.**

EXAMPLE**:** A 20 kg, 4 m long, cylindrical rod has one of its ends fixed to an axis that is mounted on the floor, as shown. The rod is adjusted to point 37**º** above the horizontal. Suppose you have mass 80 kg, and stand on the other end of the rod. Calculate the Net Torque that is produced on the rod, about its axis, due to TWO weight forces acting on it. You may assume the rod has uniform mass distribution and is fixed in place, so it does not move or rotate**.**



PRACTICE: NET TORQUE / KIDS ON A SEESAW

PRACTICE**:** Two kids play on a seesaw that has mass 20 kg, length 3 m, and its fulcrum at its mid-point. The seesaw is originally horizontal, when the kids sit at the edge of opposite ends **(m_{LEFT}** = 25 kg**, m_{RIGHT}** = 30 kg**).** Calculate the Net Torque from the 3 weights acting on the seesaw, immediately after the kids sit (simultaneously) on their respective places**.**



PRACTICE: NET TORQUE / HOLDING BARBELL

PRACTICE**:** A guy standing straight up stretches out his arm horizontally while holding a 60 lb (27.2 kg) barbell. His arm is 64 cm long and weighs 45 N. Calculate the Net Torque that the barbell and the weight of his arm produce about his shoulder. You may assume that his arm has uniform mass distribution**.**