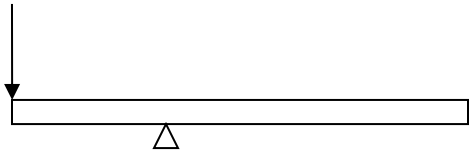
PH201 Postlab 8: Torque

1. If we get here in lab: Position a 25 cm 2" x 4" board on a white board and tip it until the block starts sliding or falling. Investigate at what angle the block is falling. There are various positions you can investigate. Carefully describe your observations and record the angle at which you see the block tipping or sliding. Explain what your observations using Free Body Diagrams, and Torque Diagrams. Prepare a white board presentation. If we did not get to this in lab do not work on this question but continue with the next problem.

2. Say your meter ruler weighs 110g, and has uniform density. If you place the pivot 1/3 of the length from the end, and push down at the shorter edge with 3.5N. What force (and what direction) should you apply to the opposite end?



3. You might see this question in the future or have seen this question before. It is a great question to test our understanding of the concepts of torque, and it applies to a relevant field of our life. Have you ever wondered how you can shift weight from your knees when you play with kids on the floor? Do your knees hurt when you do so? Well maybe physics can help.
   Tip: You can solve this question by looking at various pivot points. See examples 8.2 and 8.3 in the textbook.
   A woman weighing 600N does a pushup from her knees.
   a) What are the normal forces on each of her hands?
   b) What are the normal forces on each of her knees?