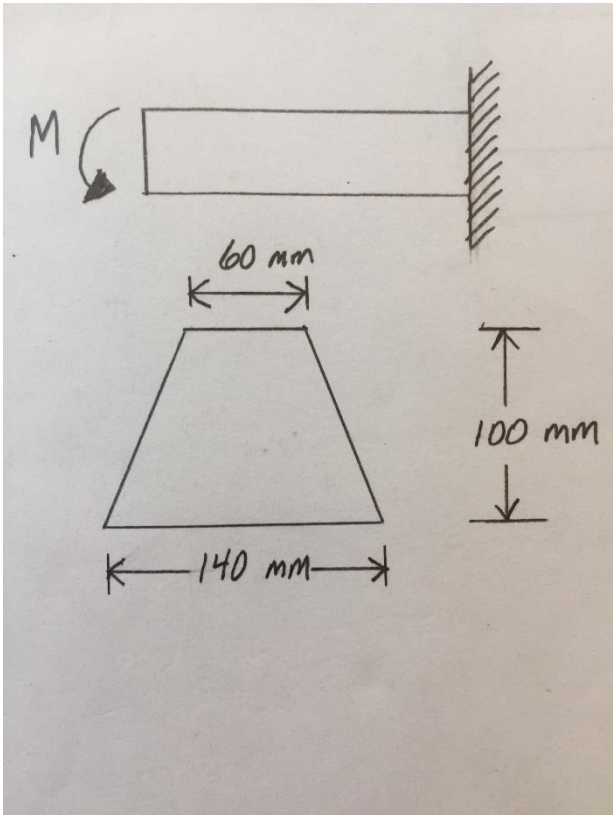
#1-#4) For the beam shown, the allowable stress is 120 MPa in tension and 150 MPa in compression. Determine the largest couple M (considering the beam as shown) which may be applied such that neither allowable stress is exceeded.



This problem will be broken into 4 parts. Find the answers to the multiple-choice questions #1-#4 in D2L Quiz #4:

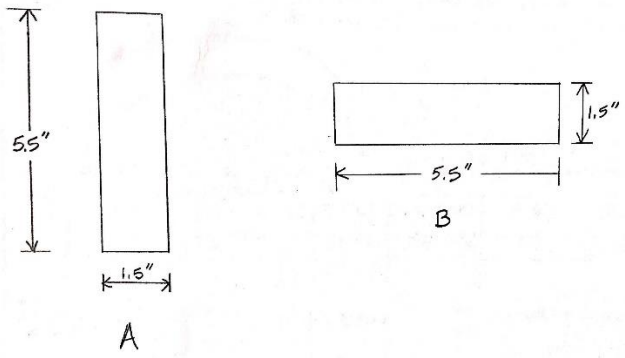
#1) Find the neutral axis (horizontal centroidal axis) location of the cross-section from the bottom of the beam. What is $\bar{Y}$?

#2) Find the Moment of Inertia about the neutral axis for this cross-section. What is I?

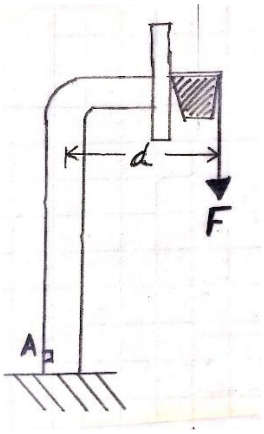
#3) What is the largest M considering the allowable stress in tension?

#4) What is the largest M considering the allowable stress in compression?

#5) A wood 2”x 6” beam (which is actually 1.5” by 5.5”) can be oriented as shown in A or as shown in B. Which orientation would be ‘stiffer’ considering resistance to bending and how many times ‘stiffer’?



#6) Damian Lillard, star of the Portland Trailblazers, hangs from the front of the basketball rim after a dunk, with a force of F as shown in the diagram. Choose the correct equation for normal stress that point A would be experiencing due to the force, F:



a) σ = F/A + Fdc/I
b) σ = F/A - Fdc/I
c) σ = -F/A + Fdc/I
d) σ = -F/A - Fdc/I

#7) What is the $|V|_{MAX}$ of the loading diagram below?

#8) What is the $|M|_{MAX}$ of the loading diagram below?