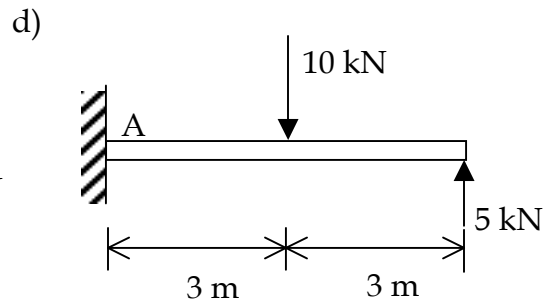
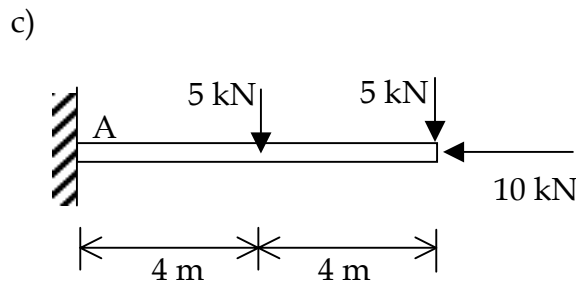
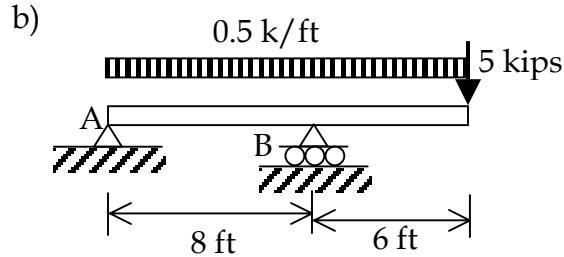
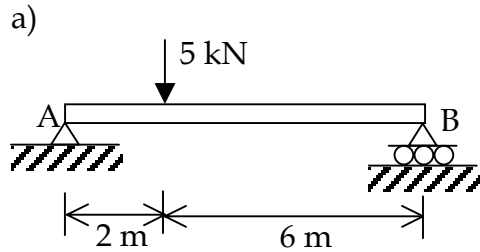


Homework #5: Beam Design

Due: Class #16

- 1) Draw the shear and moment diagram for each beam under the given loading. Provide all values for the support reactions in each case.



- 2) A tall building must resist lateral loading due to wind. The building shown is 100 meters high, and it must resist a total wind load of 5000 kN, which is assumed to act at mid-height of the building. The building is supported on two rows of columns, one at A and one at B, and these columns must provide a force couple to resist the wind loading. The wind acts to overturn the building, and the force couple at the base provides a stabilizing moment. The columns are spaced at 20 meters apart, and each row of columns carries the same magnitude of force, F . What is the value of F (in kN) necessary to resist the moment applied due to wind loading? Are the columns at A in tension or compression? The columns at B? What would be the effect of spreading the columns further apart at the base? (Note: neglect the weight of the building.)

