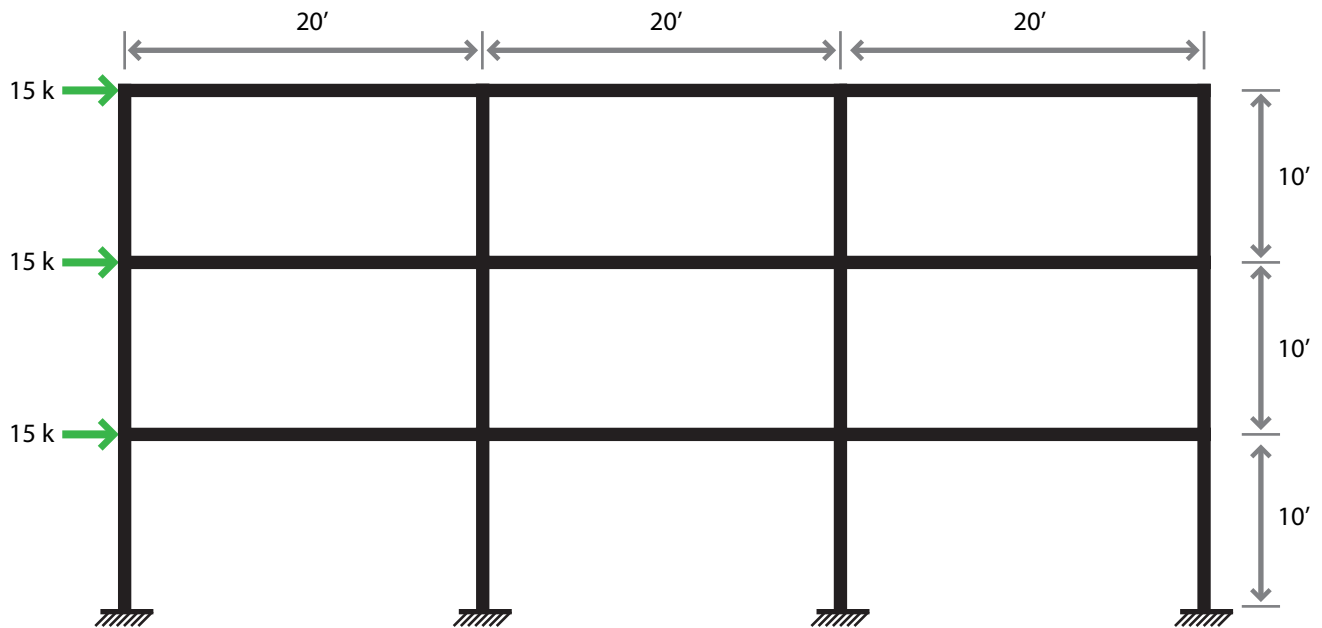


# Arch 311 - Assignment

## Portal Frame Calculations

Consider the following multi-story frame:



Assume that all nodes are rigid connections and inflection points in every column and beam occur at midspan.

Using the portal method:

- 1) identify shear forces at the midheight of each column,
- 2) draw the bending moment diagrams with peak values for all members,
- 3) and sketch a deformed shape.

Show each step of your analysis. Make several drawings of the above frame to present your final results. Make sure they are neat and clear. Each number above (1 to 3) should have its own drawing.

### EXTRA CREDIT

- 1) Calculate internal shears at the midspan of each beam.
- 2) Calculate vertical support reactions at the base of each column.
- 3) Calculate internal axial stresses (tension, compression) in each member.

NOTE: Do not put all of these results on the same drawing! Make several drawings that provide only one set of results requested.