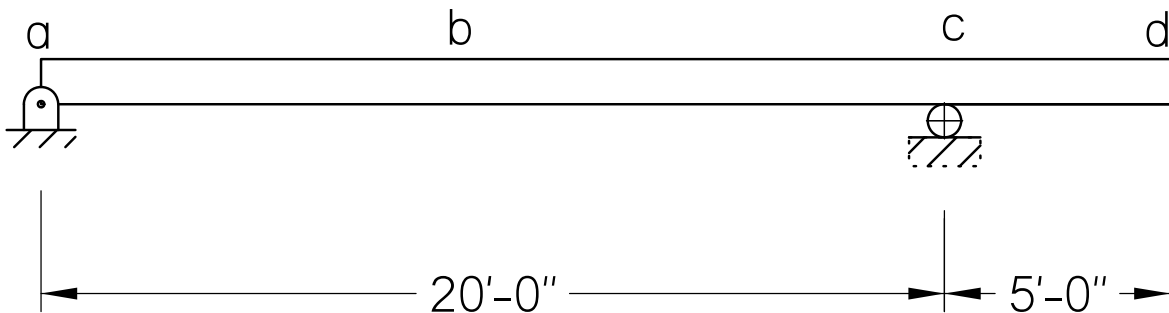


Final Exam - CE 342 - Fall 2001

Please use additional paper when necessary. Do not try to cram everything on the pages provided and do not write on the back of the pages.

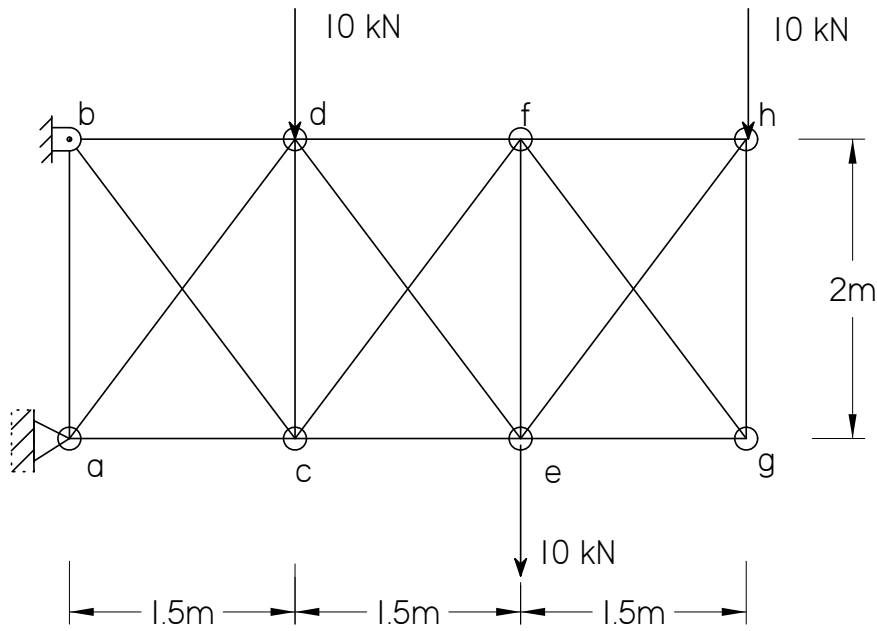
Problem #1. (35 points)

The concrete beam shown below carries a dead load of 10 kip/ft and a live load of 15 kip/ft. Calculate the maximum positive and negative bending moments in the beam, as well as the maximum shear at the supports and at midspan.



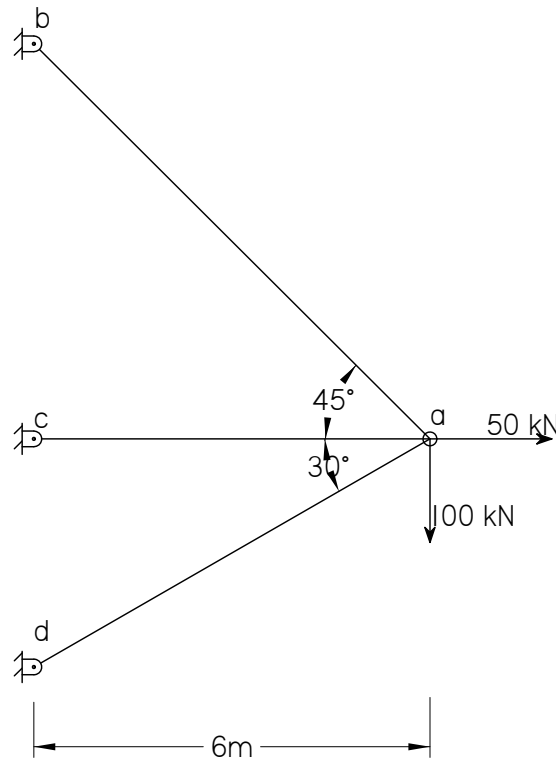
Problem #2. (30 points)

Calculate the approximate forces in members df , de , cf , and ce of the truss shown below assuming that the diagonals in a panel each resist half the shear.



Problem #3. (35 points)

Given the truss shown below has $A_{ab} = 30 \cdot 10^{-4} \text{ m}^2$, $A_{ac} = 20 \cdot 10^{-4} \text{ m}^2$, $A_{ad} = 15 \cdot 10^{-4} \text{ m}^2$, $E = 200 \text{ Gpa}$, and $\alpha = 1.2 \cdot 10^{-5} \text{ mm/mm} \cdot ^\circ\text{C}$.



Calculate the nodal displacements and nodal forces for the loads shown, *and* member *ab* increasing in temperature by 45°C .