UNIVERSITY OF CENTRAL FLORIDA

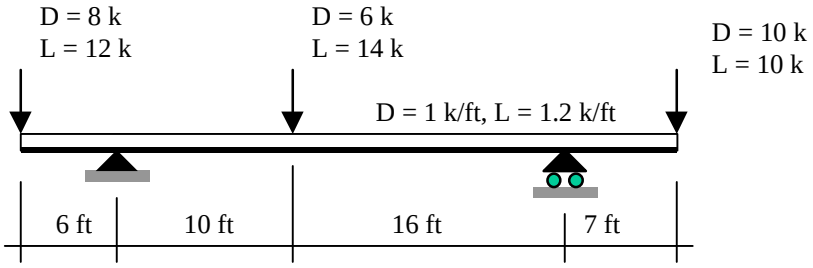
Department of Civil and Environmental Engineering

CES 4605 STEEL STRUCTURES FALL 2001

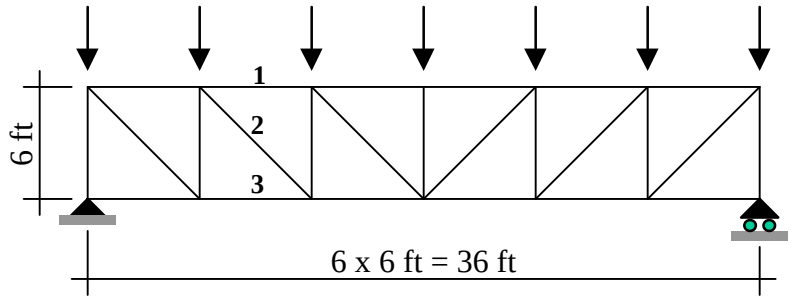
HOMEWORK 1

1) Consider the simply supported beam shown below. The beam is subjected to a set of concentrated and distributed loads that have dead and live components. Find:

   - The factored design reactions (both supports).
   - The maximum factored design moment for the central span. Where does this maximum moment occur? Clearly show the live load pattern that results in this moment.
   - The factored design shear at the left support. Investigate the shear to the right of the support. Clearly show the live load pattern that results in the maximum shear force.



2) Consider the truss shown below. The system is subjected to the given concentrated loads. Draw influence lines for members 1, 2, and 3. What are the factored design forces for these members. *Note that unlike regular live loads, wind loads either act at all nodes simultaneously, or don't exist at all.*



D = 4 kips
L = 6 kips
W = - 4 kips (upwards)