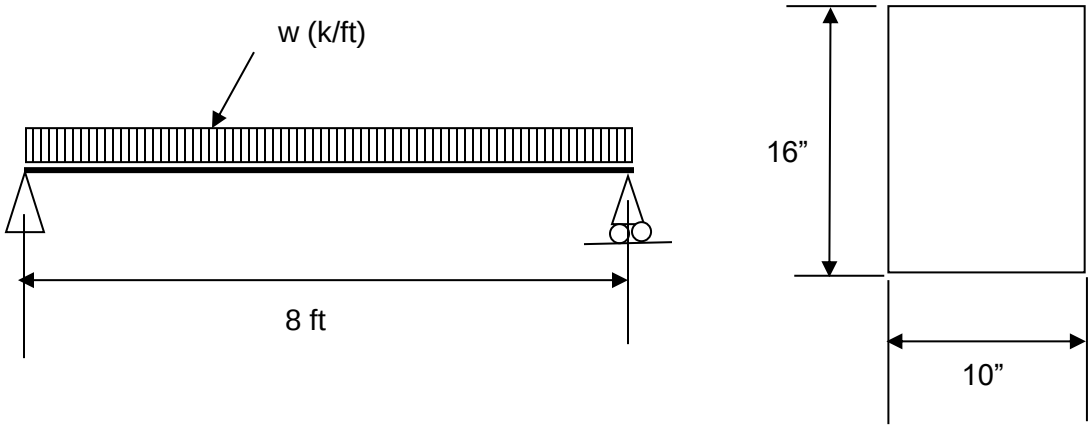
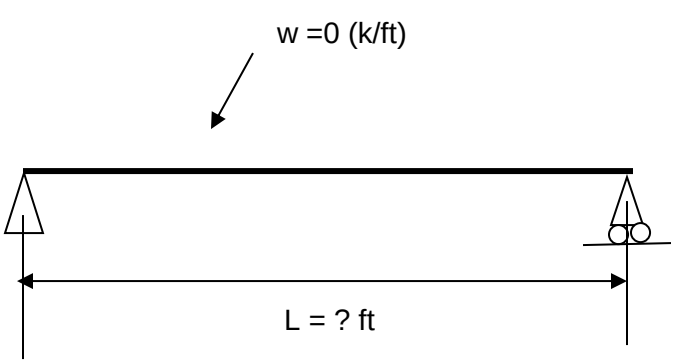
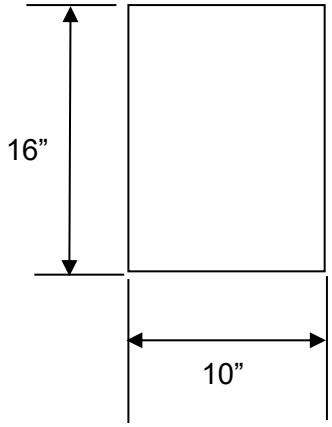
Q1. The plain concrete beam shown in figure is used on an 8'-0" simple span. The concrete is normal weight (unit weight = 150 pcf) with fc' = 3000 psi.
(a) Calculate the cracking moment, Mcr (k-ft)
(b) Calculate the self-weight of the beam, (k/ft)
(c) Calculate w (k/ft) that would cause the concrete beam to crack.



Answer: Mcr = 14.606 k-ft; sw = 0.1667 k/ft; w= 1.659 k/ft

Q2. Calculate the cracking moment strength, Mcr for the beam cross-section shown. fc'= 3000 psi, normal weight concrete (unit weight=150 pcf).
Determine the maximum simply supported span length at which the beam will fail due to its own weight.





Answer: L= 26.48 ft.