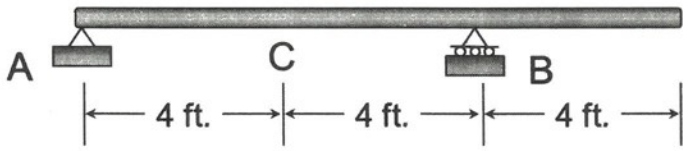
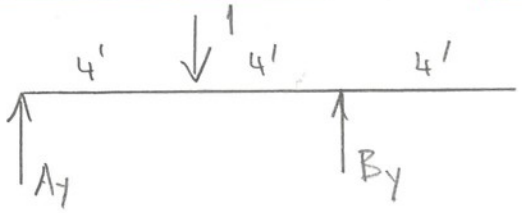
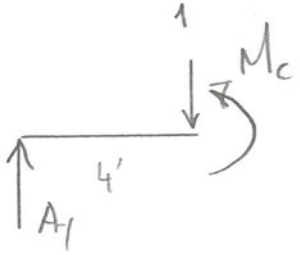
Example 6a-5: Determine the maximum ***positive*** moment that can be developed at point C on the beam shown below due to a single concentrated live load of 8 k, a uniform live load of 3 k/ft., and a beam weight (dead load) of 1 k/ft.





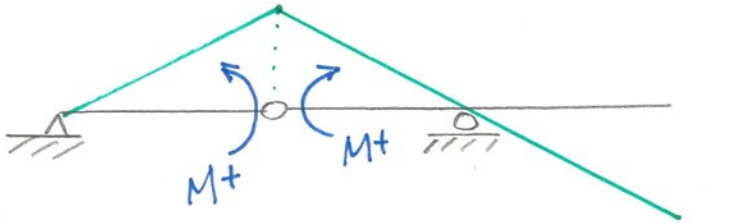
$\circlearrowleft + \sum M_B = 0$

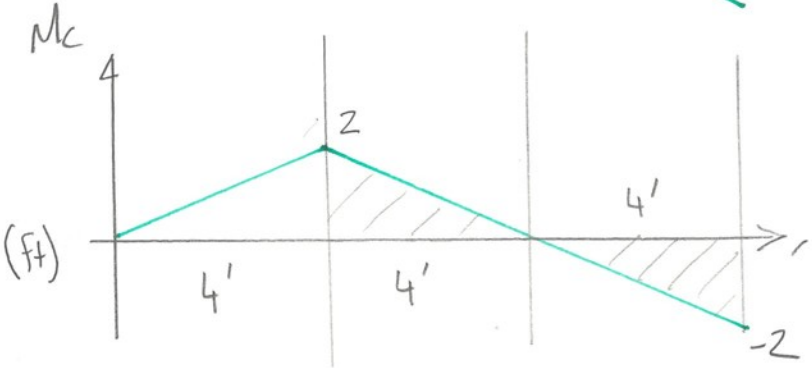
$= 1(4') - A_y(8') \quad A_y = 1/2$

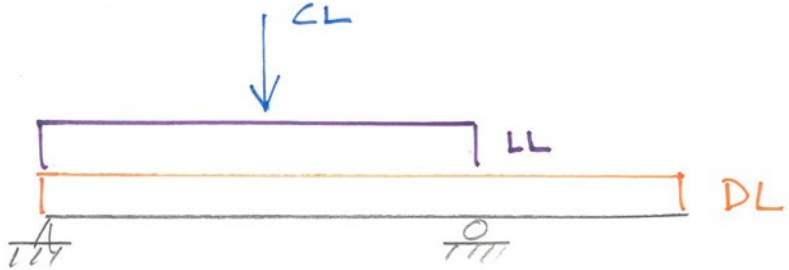


$\circlearrowleft + \sum M_{cut} = 0$

$= M_c - A_y(4') \quad M_c = A_y(4') = 2\,ft$







$M_c = 8k(2\,ft) \Rightarrow 16\,kft$

$+ 1k/ft\left(\frac{1}{2}\right)(8'(2') + 4'(-2')) \Rightarrow 4\,kft$

$+ 3k/ft\left(\frac{1}{2}\right)(8'(2')) \Rightarrow 24\,kft$

$= 44\,kft$