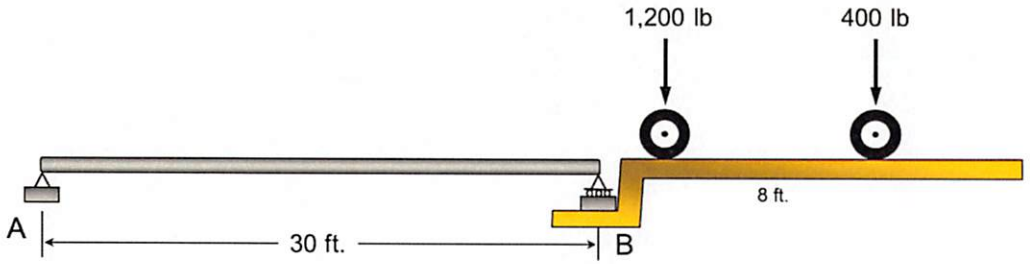
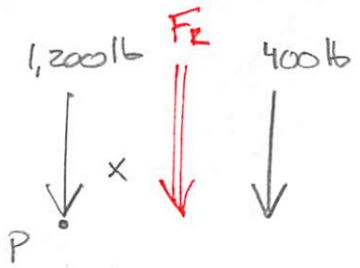
Example 6d-1: Determine the absolute maximum moment in beam below due to the wheel loads of a moving truck. The truck travels from right to left.





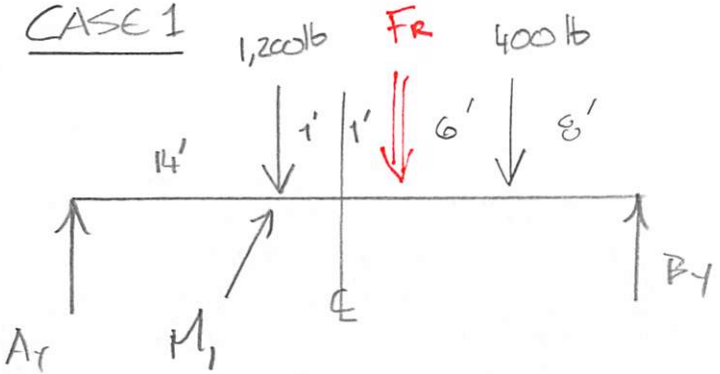
$F_R = 1{,}200\,lb + 400\,lb = 1{,}600\,lbs$

$\Sigma M_P = 400lb(8\,ft) = 3{,}200\,lb\cdot ft$

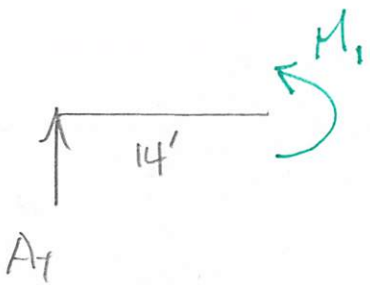
$= F_R x = 3{,}200\,k\,ft$

$x = 2\,ft$

CASE 1



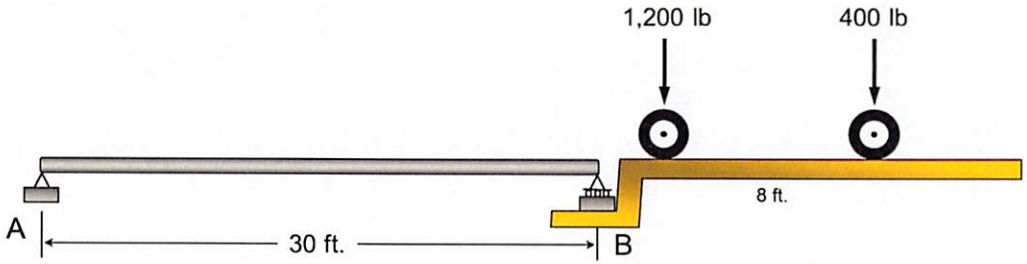
$\circlearrowleft + \Sigma M_B = 0 = F_R(14\,ft) - A_Y(30\,ft)$ $\quad A_Y = 746.67lb$



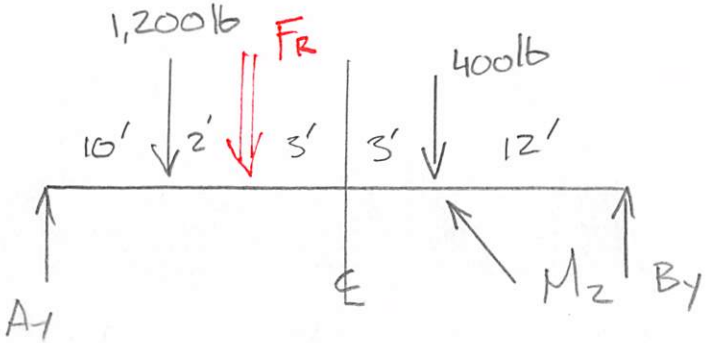
$\circlearrowleft + \Sigma M_{cut} = 0$

$= M_1 - A_Y(14') = \underline{10{,}453.3\,lb\,ft}$

Example 6d-1: Determine the absolute maximum moment in beam below due to the wheel loads of a moving truck. The truck travels from right to left.

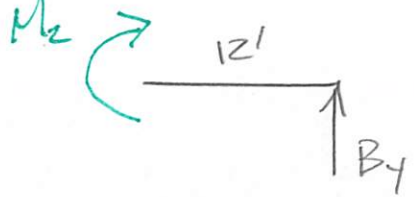


CASE 2



$$\circlearrowleft + \sum M_A = 0 = -F_R(12\,ft) + B_y(30\,ft)$$

$$B_y = 640\,lb.$$



$$\circlearrowleft + \sum M_{CUT} = 0 = -M_z + B_y(12\,ft)$$

$$M_z = 7{,}680\,lb\cdot ft$$

$$M_{MAX} = 10.45\,k\,ft \;@\; x = 14\,ft$$