



Let the longer (L) beam have mass M_L
 And the bigger beam (B) have mass M_B

The total mass of the system = $M = M_B + M_L$

Assuming that the M of the entire system is located at G (red dot) and located by coordinates: x , y & z w.r.t a cartesian coordinate system O-XYZ, and each Center of mass : for M_B & M_L is located at : x_B , y_B , z_B & x_L , y_L , z_L respectively.

Summing the moments about the y –axis: $xM = x_B \cdot M_B + x_L \cdot M_L$

Similarly, $yM = y_B \cdot M_B + y_L \cdot M_L$ and $zM = z_B \cdot M_B + z_L \cdot M_L$

$$x = \frac{x_B \cdot M_B + x_L \cdot M_L}{M_B + M_L}$$

$$y = \frac{y_B \cdot M_B + y_L \cdot M_L}{M_B + M_L}$$

$$z = \frac{z_B \cdot M_B + z_L \cdot M_L}{M_B + M_L}$$