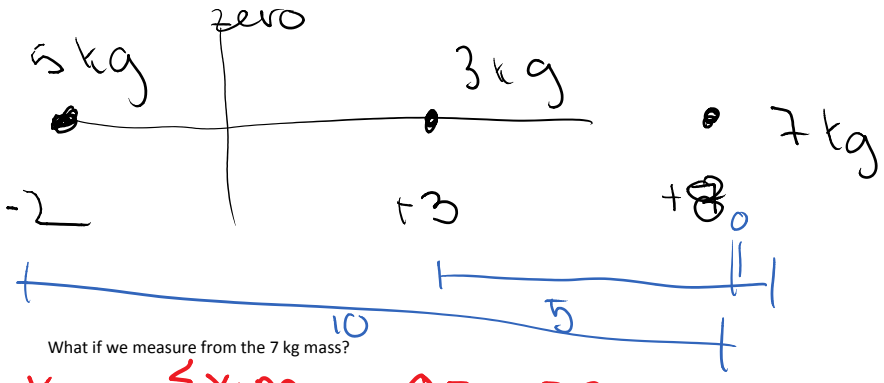
Center of Mass Examples

Monday, January 20, 2014 1:21 PM



What if we measure from the 7 kg mass?

$$X_{cm} = \frac{\Sigma x \cdot m}{\Sigma m} = \frac{0.7 + 5.3 + 10.5}{7+3+5} =$$

$$= \frac{0+15+50}{15} = \frac{65}{15} = 4.33$$

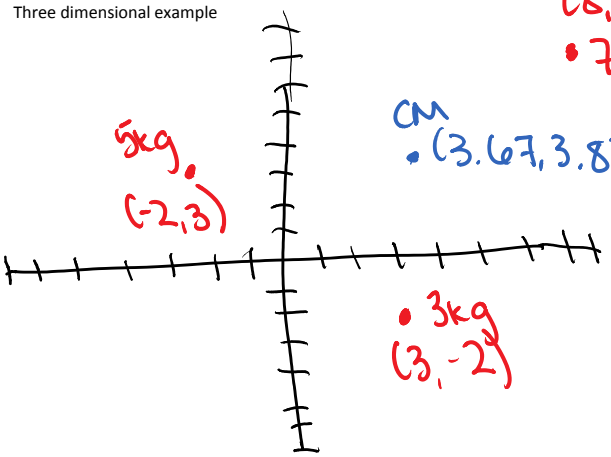
80 cm is 8-4.33 → 3.67 on the # line

What if we measure from the origin?

$$X_{cm} = \frac{\Sigma x \cdot m}{\Sigma m} = \frac{5 \cdot (-2) + 3(3) + 7(8)}{7+3+5} = \frac{-10+9+56}{15} = \frac{55}{15} = 3.67$$

(distance)

Three dimensional example



$$X_{cm} = \frac{\Sigma xm}{\Sigma m}$$

$$= \frac{-2.5 + 3.3 + 8.7}{5+3+7}$$

$$= \frac{-10+9+56}{15} = 3.67$$

$$y_{cm} = \frac{\Sigma ym}{\Sigma m}$$

$$= \frac{3 \cdot 5 + (-2) \cdot 3 + 7 \cdot 7}{5 + 3 + 7}$$

$$= \frac{15 - 6 + 49}{15} = 3.87$$