$$X_{com} = \frac{x_1 m_1 + x_2 m_2 + ... + x_N m_N}{m_1 + m_2 + ... + m_N}$$

$$Y_{com} = \frac{y_1 m_1 + y_2 m_2 + ... + y_N m_N}{m_1 + m_2 + ... + m_N}$$

$$X_{com} = \frac{\sum x_i m_i}{\sum m_i}$$

$$Y_{com} = \frac{\sum y_i m_i}{\sum m_i}$$

$$Z_{com} = \frac{\sum z_i m_i}{\sum m_i}$$

$$X_{com} = \frac{\sum x_i m_i}{M}$$

$$Y_{com} = \frac{\sum y_i m_i}{M}$$

$$Z_{com} = \frac{\sum z_i m_i}{M}$$

$$(MX_{com}, MY_{com}, MZ_{com}) = \left(\sum x_i m_i, \sum y_i m_i, \sum z_i m_i\right)$$

$$MV_x = \sum v_i m_i$$

$$\vec{p} = m\vec{v}$$

$$\vec{p}_{tot} = \sum \vec{p_i} = \sum m_i \vec{v_i}$$