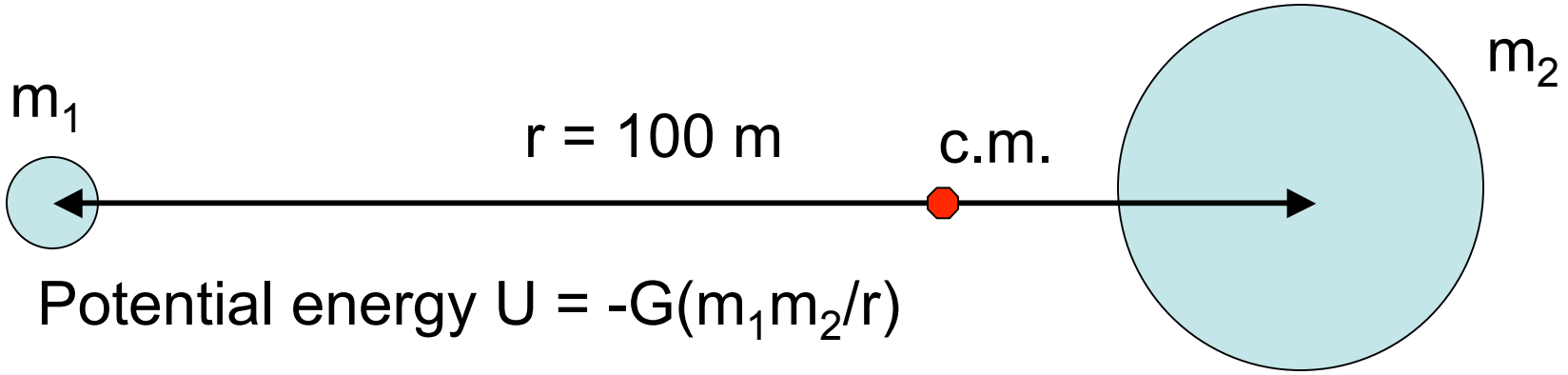
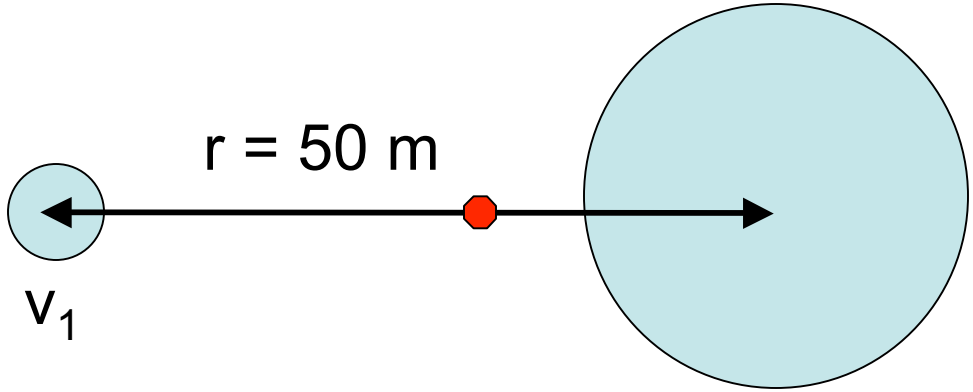
Gravity Between Two Unequal Masses



Potential energy $U = -G(m_1m_2/r)$



Center-of-Mass
Does Not Move

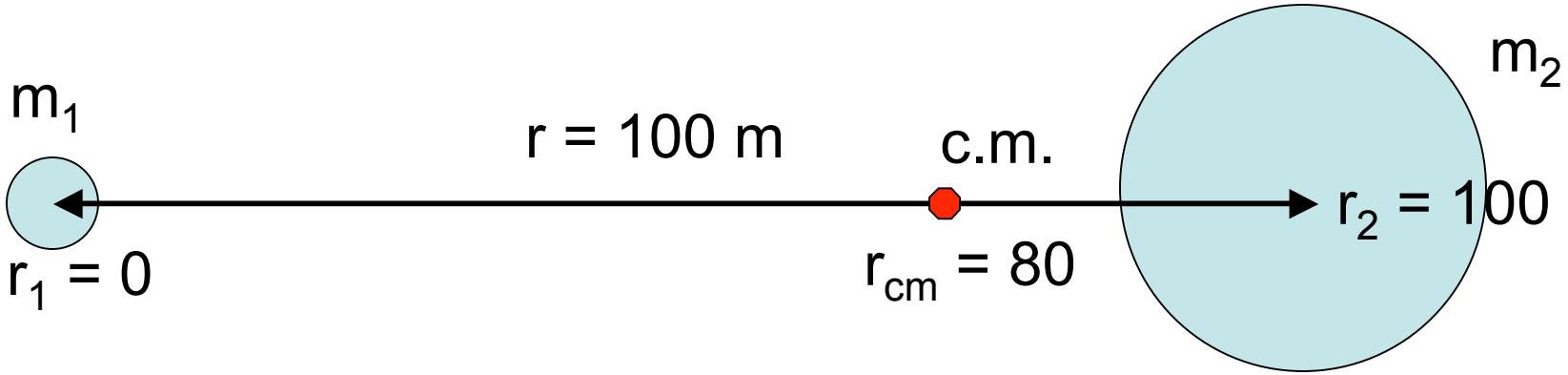
Total Momentum Remains at 0

Magnitudes: $m_1v_1 = m_2v_2$

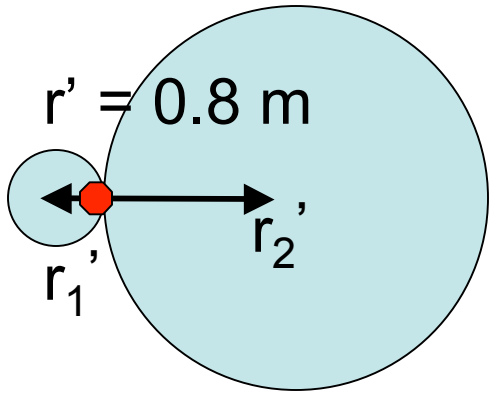
$v_1 = (m_2/m_1)v_2 = 4v_2$

Energy Conservation: $\Delta U = m_1v_1^2/2 + m_2v_2^2/2$

Gravity Between Two Unequal Masses



Masses Touching
Center-of-Mass
Has Not Moved



$$r_2' - r_1' = 0.8$$

$$m_1 r_1' + m_2 r_2' = (m_1 + m_2)80$$

Solution: $r_1' = 79.4$ m, $r_2' = 80.2$ m