Physics 101
Quiz # 6
Chapter 9

Name : Solution Id : Sec. # :

1. If you drop two apples side by side from a bridge at the same time, what is the acceleration of the center of mass of the two-apple system?

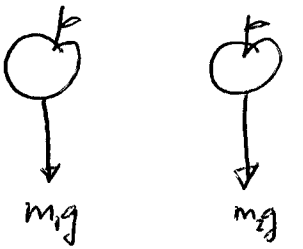
$$\sum \vec{F}_{ext} = M \vec{a}_{cm}$$

$$\vec{F}_1 = -m_1 g \hat{j} \quad ; \quad \vec{F}_2 = -m_2 g \hat{j}$$

$$M = m_1 + m_2$$

$$\Rightarrow \quad -(m_1+m_2) g \hat{j} = (m_1+m_2) \vec{a}_{cm}$$

$$\Rightarrow \quad \boxed{\vec{a}_{cm} = -g \hat{j}}$$



2. If you delay dropping one of the two apples by one second, what is the acceleration of the center of mass of the two-apple system while both are falling?

SAME AS ABOVE

$$\vec{a}_{cm} = -g \hat{j}$$