Two equally charged particles are held 2 m apart and they are initially both at rest. When released, the acceleration of the first particle is observed to be 24 m/s² and the acceleration of the second particle is observed to be 16 m/s².

a) If the mass of the first particle is 6 kg, what is the mass of the second particle?

b) What is the magnitude of the charge of the particles?

\[ m_1 = 6 \text{ kg} \]
\[ a_1 = 24 \text{ m/s}^2 \]
\[ a_2 = 16 \text{ m/s}^2 \]

\[ F = m_1 a_1 = m_2 a_2 \]
\[ (6)(24) = m_2 (16) \]

\[ m_2 = 9 \text{ kg} \]

\[ |F| = \frac{kQ^2}{(2)^2} = (6)(24) = F \]
\[ Q^2 = \frac{k}{4}(6)(24) \]
\[ Q = \frac{24}{\sqrt{k}} \text{ C} \]