Two charged particles are held 3 m apart and then released from rest. The first particle has a mass of 2 kg and a charge of 27 C. The initial acceleration of the first particle is 15 m/s² and that of the second particle is 10 m/s². Treat K as a constant without units. Do not forget to put units on your final answer.

a. What is the magnitude of the charge on particle 2?

b. What is the mass of particle 2?

\[ q_1 = 27 \text{C} \]
\[ m_1 = 2 \text{kg} \]
\[ q_2 = ? \]
\[ m_2 = ? \]

\[ a_1 = 15 \text{m/s}^2 \]
\[ a_2 = 10 \text{m/s}^2 \]

\[ F_1 = k \frac{q_1 q_2}{r^2} = m_1 a_1 \]
\[ k \frac{(27)(q_2)}{3^2} = (3)(15) \]
\[ q_2 = \frac{10}{k} \text{C} \]

\[ F_2 = k \frac{q_1 q_2}{r^2} = m_2 a_2 \]
\[ k \frac{(27)(10)}{3^2} = m_2 (10) \]
\[ m_2 = 3 \text{kg} \]