Action and Reaction due to Coulomb Interaction

Two particles with masses \( m_1, m_2 \) and charges \( q_1, q_2 \) are released from rest a distance \( r \) apart.

We consider the following four distinct configurations:

(a) \( m_1 = 1\text{kg}, m_2 = 1\text{kg}, q_1 = 1\text{C}, q_2 = 1\text{C} \)
(b) \( m_1 = 1\text{kg}, m_2 = 1\text{kg}, q_1 = 1\text{C}, q_2 = 2\text{C} \)
(c) \( m_1 = 1\text{kg}, m_2 = 2\text{kg}, q_1 = 1\text{C}, q_2 = 1\text{C} \)
(d) \( m_1 = 1\text{kg}, m_2 = 2\text{kg}, q_1 = 1\text{C}, q_2 = 2\text{C} \)

Answer the following questions for each configuration:

(1) Is the force experienced by particle 1 smaller than or equal to or larger than the force experienced by particle 2?
(2) Is the acceleration of particle 1 smaller than or equal to or larger than the acceleration of particle 2?