Feb 4th

Second Law

$$\vec{a} = \frac{\vec{F}_{NET}}{m}$$

Third Law

$$\vec{F}_{A\ on\ B} = -\vec{F}_{B\ on\ A}$$

$$(F_{NET})_B = F_{A\ on\ B} - F_{C\ on\ B}$$

$$(F_{NET})_C = F_{B\ on\ C}$$

$$a_B = \frac{F_{A\ on\ B} - F_{C\ on\ B}}{m_B} \qquad a_C = \frac{F_{B\ on\ C}}{m_C}$$

NEWTON'S THIRD LAW gives $F_{C\ on\ B} = F_{B\ on\ C}$

Since all of the objects move together, the ACCELERATION CONSTRAINT for this question is that $a_A = a_B = a_C = a$

$$F_{A\ on\ B} - F_{B\ on\ C} = m_B a$$

$$F_{A\ on\ B} - (m_C a) = m_B a$$

$$F_{A\ on\ B} = m_C a + m_B a = (m_B + m_C) a$$

$$a = \frac{F_{A\ on\ B}}{m_B + m_C}$$

The force of B on C is

$$F_{B\ on\ C} = m_C a = m_C \frac{F_{A\ on\ B}}{m_C + m_B}$$

ASSESS $F_{B\ on\ C}$ is related to, but less than $F_{A\ on\ B}$