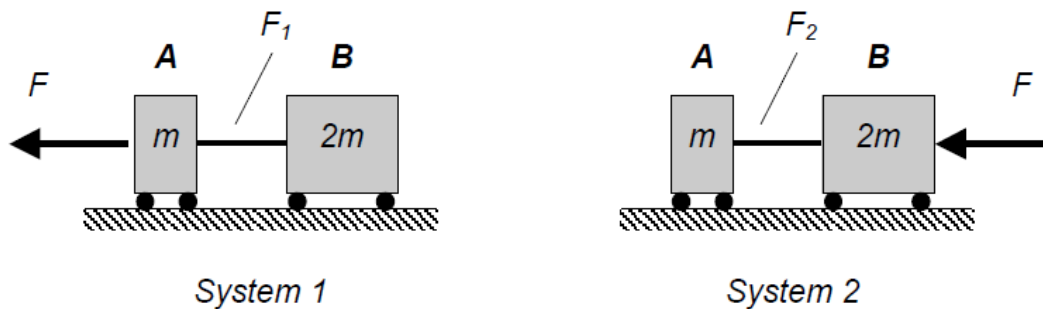


You may work in groups. You may use your book. You may not use the internet.

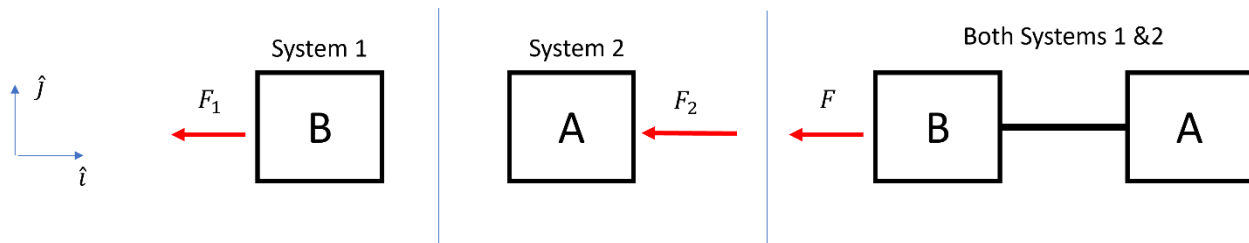
Blocks A and B (having masses of m and $2m$, respectively) are connected by a lightweight, rigid rod. In System 1, a force acts to the left on block A. In system 2, the same force acts to the left of block B. Let F_1 and F_2 represent the magnitude of the load carried by the rod in Systems 1 and 2. Circle the answer below that most accurately represents the magnitude of F_1 and F_2 .

- (a) $F_1 > F_2$
- (b) $F_1 = F_2$
- (c) $F_1 < F_2$

Provide justification for your answer.



Justification:



Sum force in the x on whole system in both cases:

$$3ma_x = F$$

Sum forces in x on B in system 1:

$$2ma_x = F_1$$

Sum forces in x on A in system 2:

$$ma_x = F_2$$

Thus:

$$F_1 = 2m \left(\frac{F}{3m} \right) = \frac{2}{3}F$$

$$F_2 = m \left(\frac{F}{3m} \right) = \frac{1}{3}F$$

$$F_1 > F_2$$