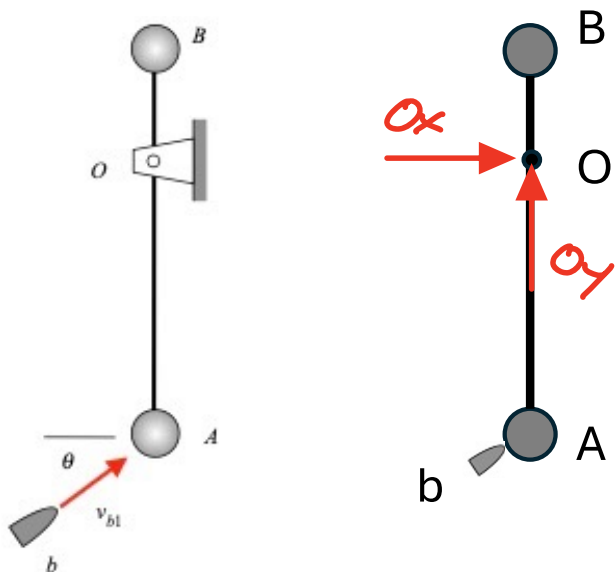


Q1

Given: $e < 1$

Find: Draw FBD for A + B + b + bar and answer T/F below



During impact, for A + B + b + bar:

- (a) TRUE or **FALSE** linear momentum is conserved
- (b) TRUE or **FALSE** angular momentum about A is conserved
- (c) **TRUE** or FALSE: angular momentum about O is conserved
- (d) TRUE or **FALSE** mechanical energy is conserved

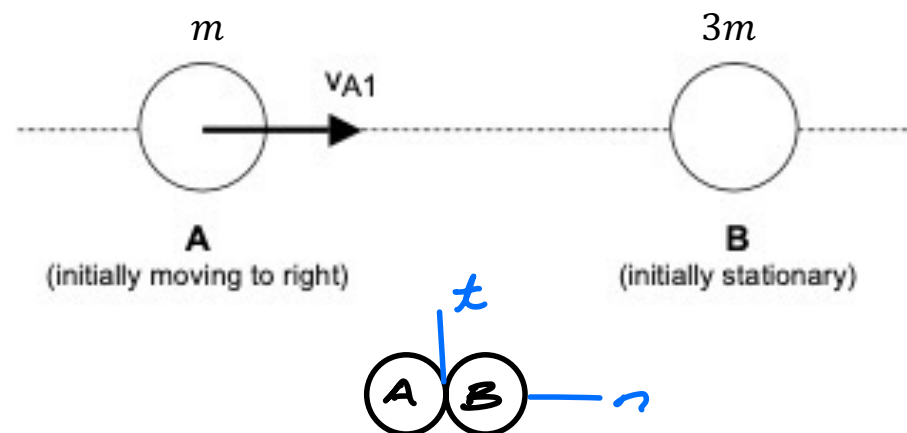
- (a) $\Sigma \vec{F} \neq \vec{0} \Rightarrow$ lin. mom. not conserved
- (b) $\Sigma \vec{M}_A \neq \vec{0} \Rightarrow$ ang. mom. about A not conserved
- (c) $\Sigma \vec{M}_O = \vec{0} \Rightarrow$ ang. mom. conserved
- (d) $e \neq 1$

Name SOLUTION

Q2

Given: $v_{A2} = 0$

Find: The value for e .



- $\Sigma F_n = 0 \Rightarrow$
 $m v_{A1} + 3m v_{B1} = m v_{A2} + 3m v_{B2}$
 $\hookrightarrow v_{B2} = \frac{1}{3} v_{A1}$
- $e = - \left[\frac{v_{B2} - v_{A2}}{v_{B1} - v_{A1}} \right] = \frac{v_{B2}}{v_{A1}} = \frac{1}{3}$