1. \( \begin{align*}
& X = 0.5 \text{m} \\
& m = 5 \text{kg} \\
& d = 3 \text{m} \\
& \theta = 30^\circ \\
& \mu = 0.2
\end{align*} \)

(a) What is the \( \mu \) required to make this scenario possible?

(b) F.B.D. at bottom after release.

(c) If \( \mu = 0 \) \( \frac{1}{2} \) at top when at rest. What is \( x \) if \( k = 300 \text{N/m} \)?

2. \( \begin{align*}
& m_1 = 8 \text{kg} \\
& m_2 = 3 \text{kg}
\end{align*} \)

(a) Find \( \mu \) for \( \nu = 20\% \).

(b) \( \ddot{a}_1 \) and \( \ddot{a}_2 \) if \( \mu = 0 \).

(c) \( d \) after 2 sec. if \( \mu = 0 \).