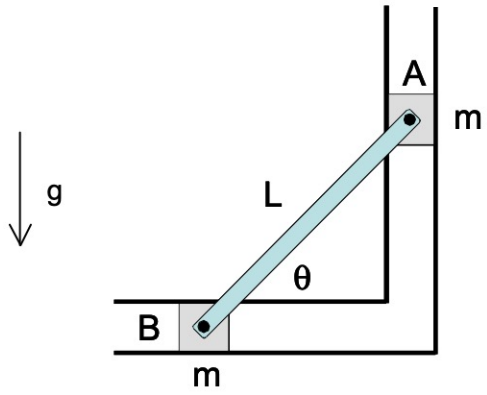
**Homework H.4.I**

**Given:** The mechanism shown below, consisting of two blocks A and B and a massless bar, is released from rest in the configuration shown.

**Find:** Determine the speed of block A when it reaches the bottom of the slot.

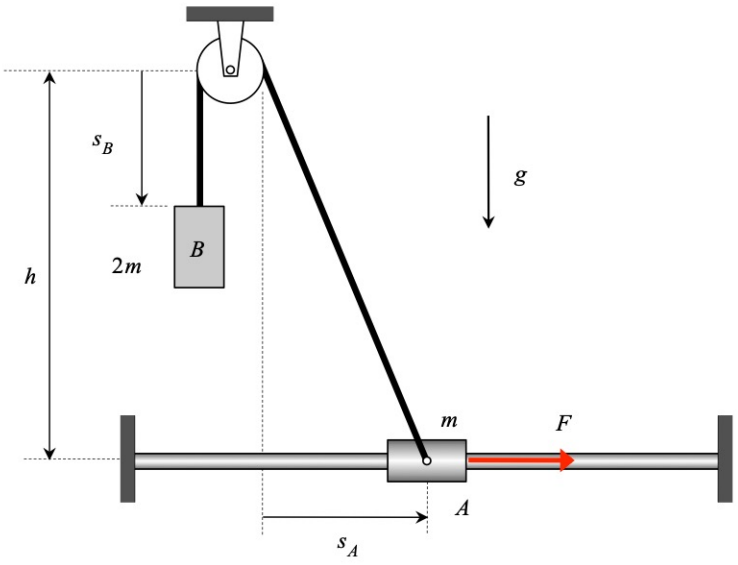



Please leave your answer in terms of, at most, $m$, $\theta$ and $L$.

**Homework H.4.J**

**Given:** Particles A and B (having masses of $m$ and $2m$, respectively) are connected by the cable-pulley system shown. Particle A is constrained to move along a horizontal guide. A constant force $F$ acts to the right on particle A. When A is at a position of $s_{A1} = 0$ m, it is given an initial speed of $v_{A1}$ to the right. Assume that the cable remains taut at all times and that all surfaces are smooth.

**Find:** Determine the speeds of A and B when A is at the position $s_{A2}$.




Use the following parameters in your analysis: $m = 6$ kg, $F = 40$ N, $h = 3$ m, $s_{A2} = 2$ m and $v_{A1} = 15$ m/s.