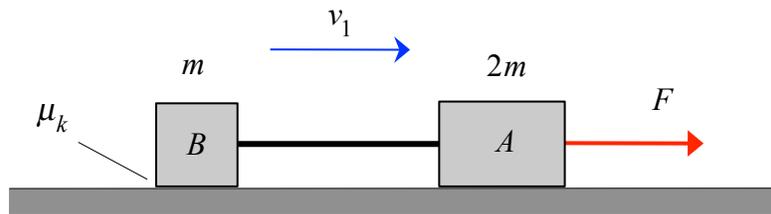


Homework H.4.H

Given: Blocks A and B (having masses of $2m$ and m , respectively) are connected by an inextensible cable and are able to slide along a rough horizontal surface (with coefficient of kinetic friction of μ_k). A constant force F acts to the right on block A, as shown in the figure. Initially, blocks A and B are moving to the right with a speed of v_1 . Assume that the cable remains taut at all times.

Find: For this problem:

- Draw a free body diagram (FBD) of a system made up of blocks A and B, and the cable. Using this FBD, determine the speed of the blocks after they have traveled a distance of Δs to the right.
- Draw a FBD of block B alone. Let F_{AB} represent the cable tension. Using this FBD, determine the work done by F_{AB} on block B after B has moved a distance of Δs to the right.



Use the following parameters in your analysis: $m = 10$ kg, $\mu_k = 0.1$, $F = 150$ N, $v_1 = 10$ m/s and $\Delta s = 3$ m.