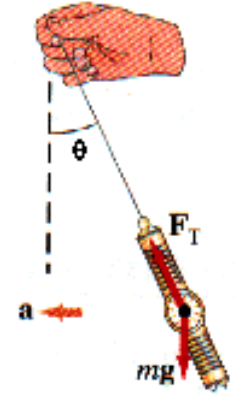
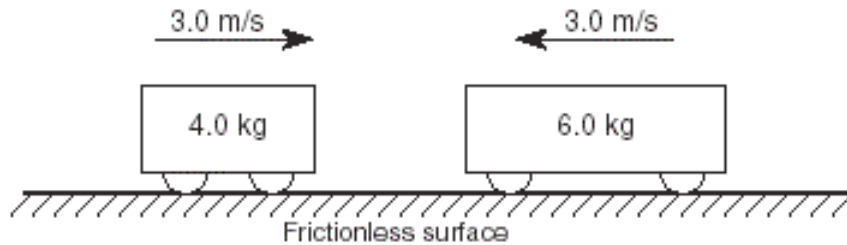


Jean, who likes physics experiments, dangles her watch from a thin piece of string while the jetliner she is in takes off from Dulles Airport. She notices that the string makes an angle of 25° with respect to the vertical while the aircraft accelerates for takeoff, which takes about 16 seconds. Estimate the takeoff speed of the aircraft.



The diagram below shows a 4.0 kilogram cart moving to the right and a 6.0 kilogram cart moving to the left on a horizontal frictionless surface. When the two carts collide they lock together. What is the magnitude of the total momentum of the two-cart system after the collision?



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Show all work, inclusive of pertinent relationships, FLM, units, variable isolation, FBD's, etc. as applicable..

FUEL TANK: FIND VOLUME IN GAL (1 GAL = 231 IN³)

