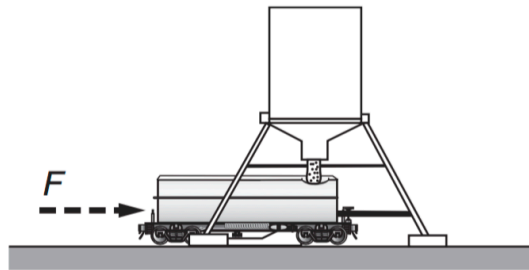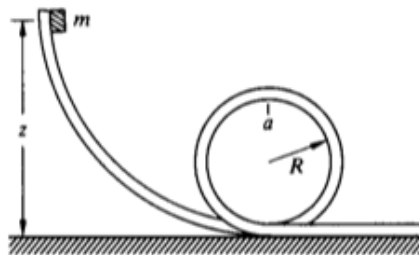# Homework 7: Momentum

Due: Tuesday November 13th, 16:00

Policy: Collaboration is allowed, but every student is required to hand in his/her own version of the solutions. Please include your name and student number on the solutions.

Problem 1. (K. & K. Ex. 4.11) An empty freight car of mass M starts from rest under an applied force F. At the same time, sand begins to run into the car at steady rate b from a hopper at rest along the track. Find the speed when a mass of sand m has been transferred.

Problem 2. (Minor modification of K&K, Problem 5.1) A small block of mass m starts from rest and slides along a frictionless loop. See below. What should be the initial height z, so that m pushes against the top of the track (at a) with a force equal to n times its weight?