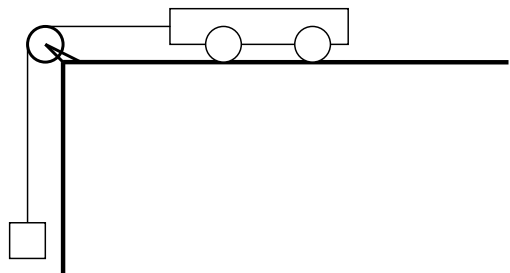


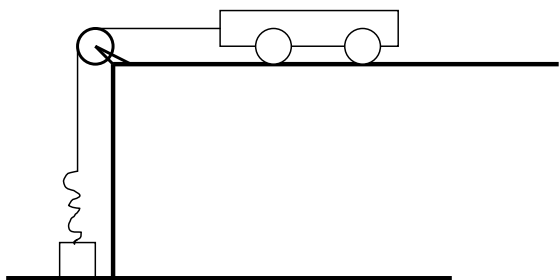
Pre-lab 10 MOMENTUM and ENERGY

In this lab, we need to introduce the momentum. Therefore, please be AWARE that the scenario may be different from what you did in the past three weeks.

- (a) A Hot Wheels car, whose mass is 200g is hauling a mass block of 150g along a flat table surface with a string as shown in the graph below. Assume the car *and* the attached mass is moving with an initial velocity of 1.7 m/s. How far can the car travel before it was pulled back, with all the frictions neglected? Explain fully.



- (b) Everything is same as the previous question, however, the string is not taut, *i.e.*, the mass sits on the floor before the car start to pull it up. The car has an initial velocity of 1.7 m/s. Can the car travel same distance as the previous question from the point where the string is just taut? Please Explain fully.



- (c) Same as question (b) above. At the moment just after the string is taut, what is the velocity of the combination of the car and the mass? Is the total energy of the system (car + mass) the same as that before the string is taut? Why or why not? Is there anything you want to change in your answer for question (b)?