HW#7: Appl. of Newton's Laws (Due 11 pm central time, 10/28, Tuesday).
HW hint posted on course web (http://web.njit.edu/~kenahn)
Common exam 2 on Oct 31st, Friday
  8:30 - 9:45 A.M. (Arrive by 8:15am)
  KUPF 209
  Exam covers B1 Chapter 4, B2 Chapter 6 Sect 1-4
  Bring scientific calculators

Last class...
  B2. Sect. 6.4 :
    Objects moving through liquid or gas : resistive forces
  Example: Objects moving together

Today..
  Other applications of Newton's Laws
A 4.8 kg object hangs at one end of a rope that is attached to a support on a railroad boxcar. When the car accelerates to the right, the rope makes an angle of $22^\circ$ with the vertical. The acceleration of gravity is 9.8 m/s$^2$.

Find the acceleration of the car. (Hint: $\vec{a}_{\text{object}} = \vec{a}_{\text{car}}$)

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Consider the 637 N weight held by two cables shown below. The left-hand cable had tension $T$ and makes an angle of $\theta$ with the wall. The right-hand cable had tension 960 N and makes an angle of $26^\circ$ with the ceiling.

a) What is the tension $T$ in the left-hand cable slanted at an angle of $\theta$ with respect to the wall? Answer in units of N.

b) What is the angle $\theta$ which the left-hand cable makes with respect to the wall? Answer in units of $^\circ$.
As shown in the figure, a block is pushed up against the wall. Let the mass of the block be $m = 2.8 \text{ kg}$, the coefficient of kinetic friction between the block and the wall be $\mu = 0.56$, and $\theta = 61^\circ$. Suppose $F = 73 \text{ N}$.

The acceleration of gravity is $9.8 \text{ m/s}^2$.

Find the force of friction. Answer in units of N.

### iClicker quiz

**Normal force on the block points**

- a) Up
- b) Down
- c) Left
- d) Right
- e) 61 degree from horizontal