1) a. On Earth a crate weighs 5.00 x 103 N. What is its mass on Earth?

b. If the acceleration due to gravity on the moon is 1.6 m/s2, what is its mass on the moon?

2) Draw free body diagrams for the following situations; label **all** forces.

a. A textbook is sliding across a frictionless table at a constant velocity.

b. A hockey player coming to a stop on a sheet of ice.

c. A dragster, at rest, hits the gas.

d. A student pushes a wagon at a constant velocity.

3) Two blocks are attached by a rope over a pulley as shown. Ignore friction. If m1 = 12.0 kg and m2 = 8.0 kg, determine the acceleration of m1.

4) While traveling upwards in an elevator a 77.5 kg physics student slows down at 2.60 m/s2.

a. What is the student’s **actual** weight?

b. What is the student’s **apparent** weight while decelerating?

5) A 930.0 kg car driving at 70.0 km/h in the snow is trying to come to a sudden stop. If the car skids to a stop in 76 m find the force of friction acting on the car.

6) A dragster can travel from 0 to 100.0 km/h in 2.90 s. To do so it must exert 1.25x104 N. If the dragster has a weight of 10800 N, what is the friction force acting it?

7) How does a headrest help prevent whiplash during a rear end collision? (Your answer should include which of Newton’s Laws this applies to…)

8) Find the tension in the line connecting the two masses.

(HINT: Find a first…)