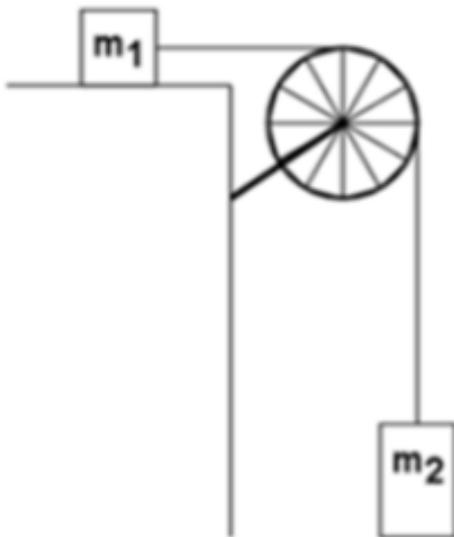


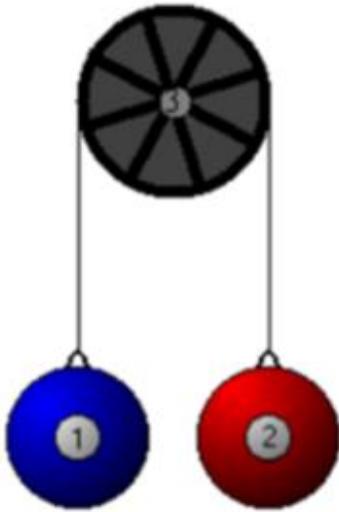
1. What is the defining characteristic of inertial and non-inertial frames of reference? Give an example of each type of frame of reference.
2. Describe how all of Newton's Laws apply to rocket launches from the ground to orbit.
3. An elevator with people has a mass of 625 kg. It is accelerated upward at 0.65 m/s^2 .
 - a. Calculate the net force on the elevator.
 - b. Calculate the upward force provided by the cable to obtain that acceleration.
4. A 33 kg person's fall is cushioned by a mattress. The instant the person hits the mattress he has a speed of 20 m/s and the mattress compresses 2.45 m to bring him to a stop.
 - a. Calculate the stopping acceleration by the mattress.
 - b. Calculate the average (net) stopping force by the mattress.
5. A Fletcher's Trolley consists of a 4.3 kg mass on a flat table attached by a wire to a 2.1 kg mass hanging over the edge of the table. The coefficient of kinetic friction between the table and the 4.3 kg mass is 0.15.
 - a. Calculate the acceleration of the masses when they are released.



- b. Calculate the tension in the wire.

6. The maximum force a person can apply upward is 275 N.

- a. Calculate the mass of a counter weighted required to help this person lift a 90.0 kg mass with an acceleration of 1.60 m/s^2 .



- b. Calculate the force of tension in the wire.