

Green Goblin Activity – The scenario will be modified slightly by the Instructor. $g = -10 \text{ m/s}^2$

The system would accelerate in real life, but we will first assume the system is at rest for #1 and #2.

1. Draw a Force Diagram for Mass 2 (cable car):
2. Draw a force diagram for Mass 1 (GG & MJ):
3. Now assume there is acceleration. Write the net force literal equation for Mass 1:
4. Assuming acceleration, write the net force literal equation for Mass 2:
5. Combine the net force literal equations to solve for acceleration of the system in terms of the gravitational force on Mass 2, friction force, and the two masses. Make acceleration +.
6. The coefficients of kinetic and static friction are both 1. The Green Goblin has mass 100 kg and Mary Jane has mass 55 kg. Calculate the kinetic friction force magnitude on Mass 1.
7. Calculate the force gravity magnitude on Mass 2. The cable car has mass 2000 kg.
8. How does the force gravity of the cable car compare to the static friction on the Green Goblin?
9. Calculate net force and acceleration of the entire system. Make net force and acceleration +.
10. Calculate the tension in the cable.