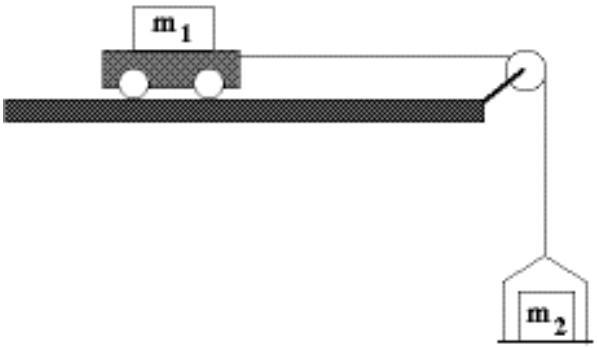
Name_____

Date_____

The Modified Atwood Machine

Where the Atwood Machine allows for the study of the vertical motion of two masses along a pulley**, the Modified Atwood Machine allows for the study of how the vertical motion of one mass translates to the horizontal motion of another.** The Modified Atwood Machine is shown below where the mass of the cart and the mass of the elevator platform is significantly small when compared to m_1 and m_2.



1. What is the mass of the system in terms of m_1 and m_2?

2. Draw a force diagram for each mass and create an Fnet equation that describes the forces acting on each mass. Assume friction is negligible.

3. How does the tension on m1 compare the to the tension force acting on m2? Create an equation that describes the relationship and explain in a complete sentence how you came to this conclusion.

4. Solve for the acceleration of each block in terms of $\mathbf{m_1}$, $\mathbf{m_2}$ and **g** using your equations from #1 and #2

5. If m_1 was increased but the m_2 remained the same, how would the acceleration be affected? Explain how you know in terms of net force and system mass.

6. If masses on the cart were moved from the cart to the hanger, how would the acceleration be affected? Explain how you know in terms of net force and system mass.