



# **NEWTON'S SECOND LAW**

## **Guide Questions**

**40% of the Written Report (Group Report) grade**

1. As the mass difference ( $m_1 - m_2$ ) decreases, what happens to the time of fall? to the experimental value of acceleration?
2. What is the relationship between the net force on the system and the mass difference ( $m_1 - m_2$ )? Is the net force dependent on tension? Why or why not?
3. What is the shape of the graph of  $F_{\text{net}}$  vs.  $a_{\text{exp}}$ ? Based on the graph, what relationship can you deduce between  $F_{\text{net}}$  and  $a_{\text{exp}}$ ?
4. Calculate the slope of the graph of  $F_{\text{net}}$  vs.  $a_{\text{exp}}$ .
5. What is the unit of the slope of the  $F_{\text{net}}$  vs.  $a_{\text{exp}}$ ? What physical quantity does the slope represent? Is the total mass of the system constant in this experiment?