

Experiment 9: Work & Mechanical Energy

Student Name: _____

Section Number: _____

PRELAB

PRE-LAB Instructions:

Print out this page. Feel free to refer to the lab Instructions and other materials, your physics textbook, other students, etc. to help you to ponder, understand, and work out answers to the following question(s). Show your work & answers in the space(s) provided.

PRE-LAB Questions

- 1) Draw free-body diagrams for the cart **and** the hanging mass (Clearly label all forces present and indicate their relative magnitudes) when the cart is moving:
 - (a) on a horizontal track.
 - (b) up a track inclined at an angle θ .
- 2) When the cart moves at constant speed, it is in equilibrium, i.e., the net force on it is zero. Does it require more, less, or the same tension in the string to pull the cart up the track at constant speed or down the track at constant speed? Explain your answer.
- 3) Derive an equation for the work done by friction when the cart is moving up the track at **constant** speed. Show your work.