AP Physics: Short Lab 5-C

Muscle Up

Name _____ Hour _____

Lab Partners _____

Purpose:

To calculate the work done and power exerted while lifting weights.

Equipment:

Meter Stick
Weights
Stopwatch

Procedures:

1. Decide what measurements are required to determine the work that you do and power exerted as you complete 10 arm curls at a constant velocity. In the space below, record all measurements taken and show each step of your calculations, including any equations used. *(HINT: You may use the conversion factor 1 lb = 4.45 N)*

Summary:

1. Suppose you lifted weights at a faster rate. Would the work done be affected? Would the power exerted be affected? Explain your answers.

2. Suppose that Phil the Physics student lifts a mass of 5 kg. Calculate the net force required for Phil to accelerate the mass upwards at a rate of 1.0 m/s^2 as he does an arm curl. How much applied force would Phil need to provide in order to cause this acceleration? Draw a free body diagram to support your answer.

3. Use your calculations from Question #2 to explain why it is important to lift weights at a constant velocity when you measure work. How would your measurements for work be affected if you accelerated as you lifted weights?