**Force Analysis Lab – Block and Mass**

**Purpose**: To determine the mass of a block when pulled by a hanging mass via a pulley.

**Materials**:

* String
* Mass Set
* Wood board
* Pulley
* Block
* Spring Scales
* Laptop with Tracker program

**Procedure**:

1. Determine the force of friction of the block on the board by pulling the block at a constant velocity with a spring scale.
2. Attach the pulley to the board and tie a length of string to the block.
3. Set up the board and materials as seen in the diagram



1. Release the mass hanging from the pulley and let it pull the block. Record the movement of the block using a video recording device
	1. Be sure to catch the block before it falls off the board!
2. Repeat the experiment at least 3 times.
3. Using the Tracker program, make a velocity time graph for each run. Use a best fit line to determine the acceleration of the system.

**Analysis:**

1. Draw a clear Free Body Diagram for the system.
2. Using the acceleration found from the graphs, calculate the mass of the block. Show all work.
3. Determine the tension of the string. Show all work.
4. What possible sources of error may contribute to uncertainty in your results?