AP Physi	cs Part 1 Lab Handou	t 10 "Simple Mach	nines: Inclined Plane"			
Your Name:	:	Lab Partner(s):				
Purpose:	Purpose: To investigate how raising an inclined plane affects the mechanical advantage.					
Materials: woode sprin	: en board ng scale	meter stick ring stand & clamp	wood block			
 Procedure: 1. Measure the length (d_e) of the wood board to the nearest 0.001 m and record it in the data table as length for all four conditions. 2. Find the resistance force (F_r) of the wood block by attaching it to the spring scale. Record this to the nearest 0.01 N. 3. Raise one end of the board to 0.100 m. 4. With the spring scale attached, pull the block up the ramp at a constant speed. Record the effort force (F_e) while the block is moving uniformly. 						

- 5. Raise the height of the board by 0.100 m and repeat step 4.
- 6. Repeat step 5 two additional times.

Results:

Observations:

Data:

Length (d _e)	Height (d _r)	Fr	Fe
	0.100 m		
	0.200 m		
	0.300 m		
	0.400 m		

Data Analysis: (show complete work for one example of each calculation) 1. Calculate the actual mechanical advantage for each inclined plane

- using AMA = F_r / F_e . 2. Calculate the ideal mechanical advantage for each inclined plane
- 2. Calculate the ideal mechanical advantage for each inclined plane using IMA (plane) = L / h.
- 3. Calculate the amount of work input for each pulley using $W_{in} = F_e \cdot d_e$.
- 4. Calculate the amount of work output for each pulley using $W_{\text{out}} = F_r \, \cdot \, d_r.$
- 5. Calculate the percent efficiency for each inclined plane using % efficiency = $W_{out}/W_{in} \cdot 100$.

AMA	IMA	W _{in}	Wout	<pre>% efficiency</pre>

Diagram:

Error Analysis:

Conclusion: