

## Lab: Inclined to Roll

Purpose: How does the steepness of a ramp affect how fast an object moves across the floor?

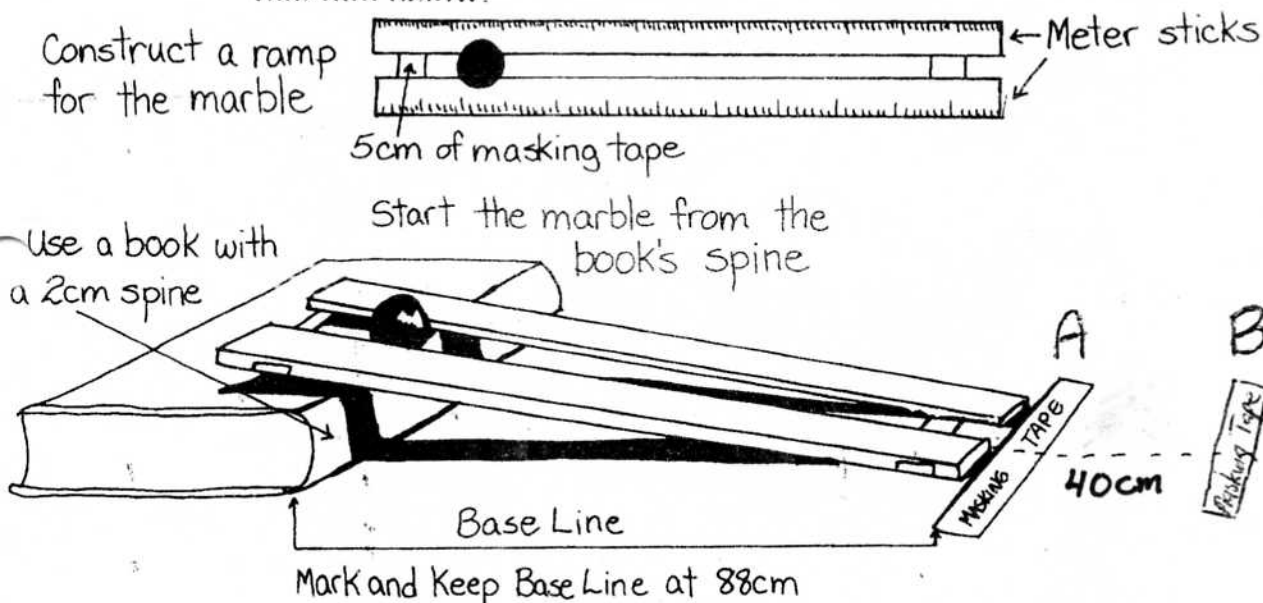
Gather Information:

Hypothesis: \_\_\_\_\_

Materials: 1 marble      2 meter sticks      4 textbooks  
1 stopwatch      masking tape

Procedure:

- 1) Construct the ramp using one textbook exactly as described in the diagram below:



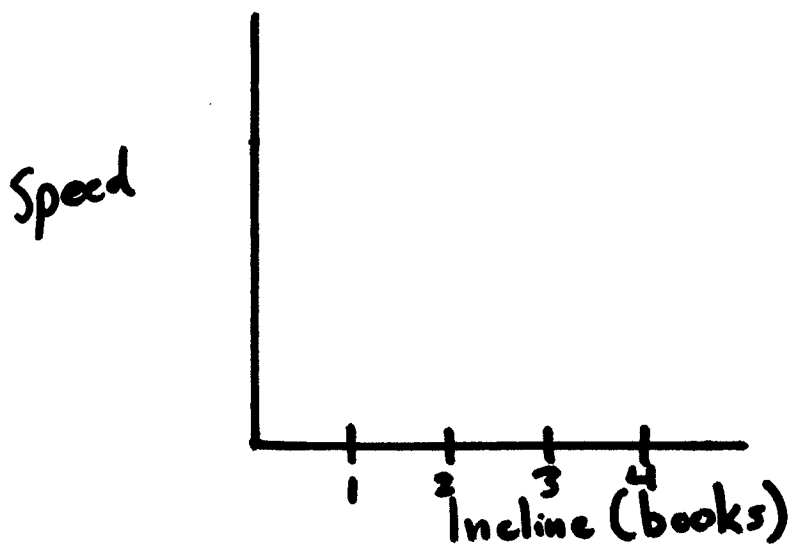
- 2) Record the height of the ramp in cm
- 3) Place the marble at the top of the ramp and release it.
- 4) Using the stopwatch, record the time it takes for the marble to go from point A to point B
- 5) Do a second trial with the same ramp.
- 6) Raise the ramp by adding a 2<sup>nd</sup> book and repeat steps 2 through 5
- 7) Raise the ramp by adding a 3<sup>rd</sup> book and repeat steps 2 through 5
- 8) Raise the ramp by adding a 4<sup>th</sup> book and repeat steps 2 through 5

Data:

Number of books in ramp	Height of ramp (cm)	Distance traveled (m)	Trial #1: Time to travel from pt. A to pt. B (sec)	Trial #2: Time to travel from pt. A to pt. B (sec)	Average Time to travel from pt. A to pt. B (sec)	Average Speed from pt. A to pt. B (m/sec)
1		.4				
2		.4				
3		.4				
4		.4				

Graph:

Average Speed vs. Incline



Conclusion: \_\_\_\_\_

Post lab Questions:

- 1) What does the shape of your graph show about the relationship between the speed and the height of the ramp?
- 2) At each height, did you always get identical times for both trials?
- 3) Why or why not?