

Lab: Graphing and Calculating Motion

Materials

- Ball (baseball, golf ball, basketball, etc)
- Board (approximately 1 meter long; any long, flat surface that you can prop up will work)
- A pile of books (approximately 7-12 cm thick)
- Stopwatch
- Masking tape
- Tape measure (note: if you don't have a metric tape measure, then you can replace "meters" with "yards" in this lab)

Procedure

1. Build a ramp by place the end of a board on a stack of books. You need to build the ramp in a location where there is a straight line of about 10 meters.
2. Using masking tape, mark distances of 0.5m, 1.0m, 1.5m, 2.0m, 2.5m, and 3.0m from the bottom of the ramp. Label each piece of tape with the distance.
3. It helps if you have a 2nd person for this part of the lab. Have a lab partner release the ball from the top of the ramp. The ball needs to reach the 3.0m mark. If the ball doesn't reach this mark, adjust the height of your ramp until it does.
4. Have your lab partner release the ball from the top of the ramp. When the ball reaches the bottom of the ramp, you will start your stopwatch. When the ball reaches the 0.5m mark, stop the timer. Record the time in a data table. Repeat and record this timing for 2 more trials.
5. Repeat step 4. As in step 4, you will begin timing when the ball reaches the bottom of the ramp. But this time you will stop the timer when the ball reaches 1.0m. Record the time in a data table. You should have a total of 3 times that the ball took to reach the 1.0m.
6. Repeat step 4 again. This time stop the timer when the ball reaches the 1.5m mark. Record the time. Repeat step 4 several more times until you have recorded 3 times for the ball reaching the 1.5m, 2.0m, the 2.5m, and the 3.0m marks.

Data

Time from the bottom of the ramp to the...	Trial 1 Time (seconds)	Trial 2 Time (seconds)	Trial 3 Time (seconds)	Average of Trials 1-3 (seconds)
0.5 m mark				
1.0 m mark				
1.5 m mark				
2.0 m mark				
2.5 m mark				
3.0 m mark				

