Name_____Date_____Hour_____

Acceleration Lab

Materials:	Ramp	Tennis Ball	Golf Ball	Measuring tape
	Hot Wheel Track	Timers	Ping Pong	

Question to Investigate: Does mass affect acceleration as we move down an incline?

Hypothesis: If mass affects acceleration then the ball with the _____ mass would have the _____ acceleration.

Procedure:

1. Assemble your ramp and track. Your ramp should be propped up on 3 science books, and your track should be approximately 200 cm long.
2. Tape the track to the top of your ramp using masking tape. Tape the end of your track to the floor. Mark off 90cm from the base of your ramp, place a piece of tape on the floor at this point. Have Mrs. Nickel check your set up.
3. Place each ball on the balance one at a time and obtain their masses.

   Record them here: 1. _____

   2. _____

   3. _____
4. Return to your track set up, one person should be near the end of your track to stop the balls from rolling down the hallway. This person should also be the timer.
5. Place one ball at the top of the ramp/track. On a count of 3, release your ball and start your timers. Stop the timer when the ball passes the 90cm tape mark. Record your time in the data table for ball 1. Repeat for an additional three trials.
6. Repeat step 5 for balls 2 and 3. Recording their times in their respective data tables.
7. Calculate the average time for each of the ball types.

Ball 1: _____ Ball's Mass _____g

Distance	Trial 1	Trial 2	Trial 3	Trial 4	Average Time

Ball 2: _____ Ball's Mass _____g

Distance	Trial 1	Trial 2	Trial 3	Trial 4	Average Time

Ball 3: _____ Ball's Mass _____g

Distance	Trial 1	Trial 2	Trial 3	Trial 4	Average Time

8. Transfer your average time data for each ball into data table 2. Calculate the velocity of the ball as it passed the 150 cm mark on the track.

Data Table 2

Ball 1			
Location	Actual Distance (cm)	Time	Velocity= Distance/Time
Top of the Ramp	0cm	0	0 cm/s
Tape mark on the track	150 cm		
Ball 2			
Top of the Ramp	0cm	0	0 cm/s
Tape mark on the track	150 cm		
Ball 3			
Top of the Ramp	0cm	0	0 cm/s
Tape mark on the track	150 cm		

9. Calculate the average acceleration from start to finish for each of your 3 balls. Show your work:
   Remember Acceleration is V_f-V_i/T_f-T_i

Acc. Ball 1 = _____cm/s^2 Acc. Ball 2 = _____cm/s^2 Acc Ball 3 = _____cm/s^2

10. Is the acceleration for each ball positive or negative? What does this tell you about the balls speed every second it is traveling?

11. Is your hypothesis supported, use evidence from your data to justify your claim. (use specific data values in your response).

12. What variables did we hold constant in the experiment? (Hint what didn't we change) Why did we need to hold these things constant?