



Rolling Ball Lab

_____ Date _____ Period _____

Problem: Use the materials given to find the average velocity and the momentum of each ball in the tray.

1. Write a detailed procedure of how you solved the problem. Write the procedure so another student could follow your directions and get your results.
2. Create a detailed Data Table that contains all given, collected and calculated data.
3. Draw two bar graphs. One comparing the velocities of each ball and one comparing the momentum of each ball.
4. Create a raw data sheet that neatly shows all of your calculations. (5 step format)

Questions:

1. Did all of the balls have the same velocity? Explain and compare each ball.
2. Did all of the balls have the same momentum? Explain and compare each ball.
3. How did the size affect the velocity of the balls? Explain and give evidence.
4. How did the size affect the momentum of the balls? Explain and give evidence.
5. How did the mass affect the velocity of the balls? Explain and give evidence.
6. How did the mass affect the momentum of the balls? Explain and give evidence.

Rolling Ball Lab Prompt

The world we live in is full of moving objects. Our everyday experience shows that some objects move faster than others do. *Speed* is the distance traveled by the object divided by the time it takes to travel that distance. To find the *velocity* of a moving object, simply add a direction to the speed. When observing objects in motion it is also important to consider the object's *mass*. The *momentum* of a moving object is the mass of the object multiplied by its velocity.

Rolling Ball Lab Rubric

Procedure (10 pts.)

- Find distance
- Distance units
- Find time
- Time units
- Find mass
- Mass units
- Find velocity
- Velocity units
- Find momentum
- Momentum units

Data Table (10 pts.)

- Distance
- In meters
- Time
- In seconds
- Mass
- In kg
- Velocity
- In m/sec
- Momentum
- In kg · m/sec

Velocity Graph (5 pts.)

- X axis label/units
- Y axis label/units
- Title
- Accurate
- Accurate

Momentum Graph (5)

- X axis label/units
- Y axis label/units
- Title
- Accurate
- Accurate

Raw Data Sheet (5)

- Collected times
- Recollected times
- Collected mass
- Worked problems
- Rough drafts

Reasons for Lab (5)

- One
- Two
- Three
- Four
- Five

Questions (10 points)

- One (no)
- Compare Balls
- Two (no)
- Compare Balls
- Three (no)
- Four (no)
- Five
- No Affect
- Six
- Massive high

COMMENTS: