

Science 9 Lab

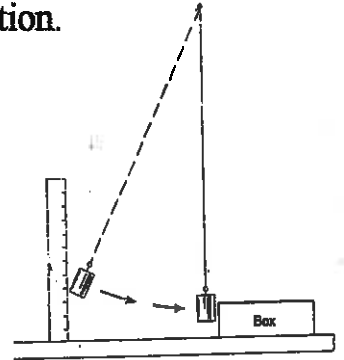
Newton's Laws of Motion

PURPOSE: to apply Newton's First Law and Third Law of Motion.

MATERIALS: ring stand setup, 4 masses,
metric ruler, string, carton

PROCEDURE:

1. Set up a pendulum and make a loop on the end of the string. Hang the 10g mass so it swings just above the surface of the desk or counter.
2. While the mass hangs motionless, position the empty carton on the desk or counter so that it just touches the mass. (The mass should touch the center of one side of the carton)
3. Pull the mass back to a height of 20 cm above the desk or counter.
4. Release the mass and allow it to strike the carton.
5. Measure the distance the carton moves. Repeat two times.
6. Repeat steps 2-5 using the 20g and 50g mass.
7. Draw a data table in the space below and record your measurements and calculations.



8. Place the 100g mass into the carton, then repeat steps 2-5 for all 3 masses.
(The mass should be placed against the side of the carton closest to the pendulum).
9. Draw a data table in the space below and record your measurements and calculations.

GRAPH THE DATA: Construct a distance-mass bar graph. Include both sets of data (empty carton and carton with mass) on the same grid paper.

LAB REPORT QUESTIONS

1. What is the relationship between the size of the mass on the pendulum and the size of the force it delivered to the carton? Use your graph to explain.
2. Complete the following: As the mass of the carton increased, its inertia _____, and the effects of the force of the pendulum _____.
3. Why is a passenger in a car thrown forward when the car is stopped suddenly?
4. How do seat belts help to protect a passenger in a car if it is in a collision?
5. Why is a standing passenger thrown to the rear when a bus starts to move forward suddenly?
6. Why did the pendulum slow down or stop when it hit the carton?