NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Science, Period \_\_\_\_\_\_\_\_ DATE \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**INVESTIGATION - CONSERVATION OF ENERGY**

1. BACKGROUND INFORMATION:

a. Use the glossary to write the Law of Conservation of Energy.

b. Use the table of contents to find what chapter talks about energy? chapter ***\_\_\_\_\_\_\_\_\_\_\_\_***\_

c. Use the index to where the book talks about kinetic energy. page \_*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

d. What is the formula for kinetic energy? ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

e. What does the m stand for? ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***\_ What does the v stand for? ***\_\_\_\_\_\_\_\_\_\_\_***

f. Does mass or velocity have a larger effect on an object’s kinetic energy? ***\_\_\_\_\_\_\_\_\_\_\_\_***

g. How do you know? (Formal Response)

b h. What is the formula for gravitational potential energy? ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

i. Use the index to find where the book explains the difference between weight and mass. Summarize in your own words.

b

j. Look in Ch. 9, Section 2 to find where the book explains the connection between kinetic and potential energy. Use a falling rain drop to explain the concept of this energy conversion.

b k. In Chapter 9, Section 3, find where it explains why there is no such thing as a perpetual motion machine. Explain this in your own words. Use the example of a roller coaster not going forever.

b QUESTION WE WANT TO ANSWER WITH THIS INVESTIGATION:

How much energy does a bouncing ball impart to the floor?

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**2. What was the** experimental variable **for this investigation? (What will change?) (FR) (FR = formal response)**

**3. List at least two variables that will be “**controlled variables**” each time you drop the ball. (Controlled variables do not change.)**

**5. What data do we need to collect and record to perform this investigation? Hint: There are three different types of measurements you recorded.**

**MATERIALS**

* A ball that bounces.
* 2-meter sticks (i.e. two meters long)
* Graph paper and ruler or straight-edge
* Hard surface for bouncing
* Calculator

**Procedure**

1. Release the ball from a height of two meters.
2. Another member of the group should measure the bounce height, and a third person can record both heights in the table.
3. Repeat the drop two more times and calculate the average rebound height.
4. Repeat the procedure by decreasing the drop height by 50 cm each time.
5. Find the mass of the ball. Use the mass to calculate the weight.