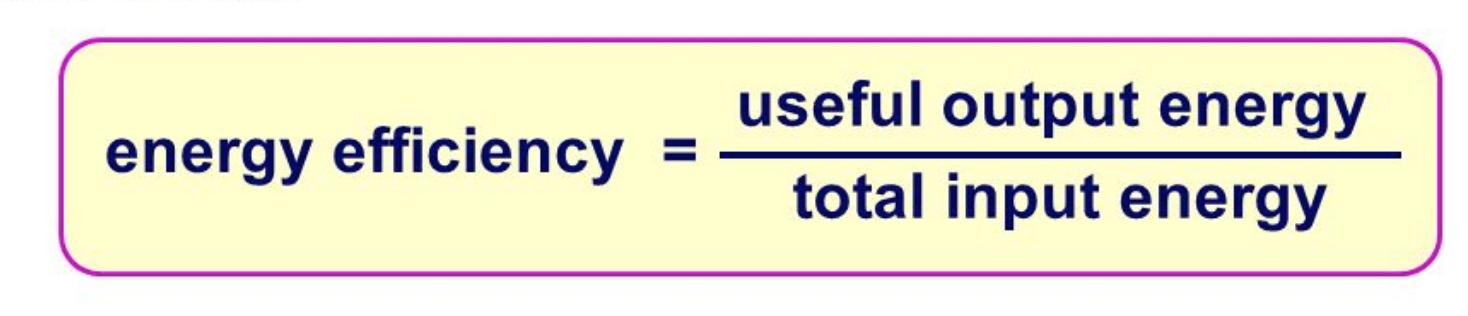
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Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Investigating the Efficiency of Bouncing Balls

Energy appears in different forms including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems. The Law of Conservation of Energy states that ‘Energy cannot be created nor destroyed only transformed from one form to another’.

When a ball is dropped from a height, its gravitational potential energy is converted to kinetic energy and heat. As the ball rebounds from the floor, some of its kinetic energy is converted into gravitational potential energy. This process continues until all of the initial gravitational potential energy has been converted into other forms of energy. The efficiency of the bounce of the ball can be calculated as:



This calculation should give you a number between 0 and 1.

This number can then be converted into a percentage by multiplying by 100. This is the figure you should work with.

You will investigate the efficiency of different balls by dropping them from a set height and recording the bounce height. Using this information, calculate the efficiency.

Marks: /30

Teacher comment:

Investigating the Efficiency of Bouncing Balls

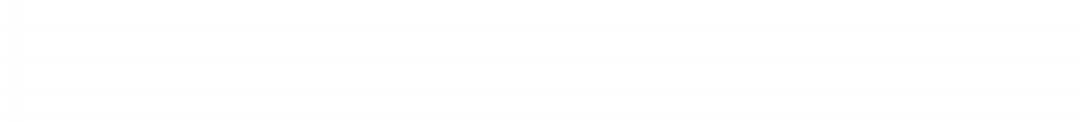
Experiment Report

# Introduction

Briefly describe what you are going to be investigating.

Aim

## Question 1 (1 mark)

What is it you are aiming to find out?

# Hypothesis

## Question 2 (2 marks)

Complete the hypothesis using the following format: *If* *, then* *,..*

# Variables

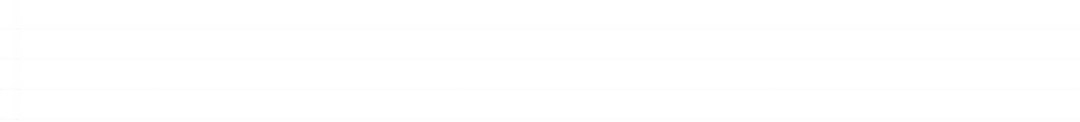
## Question 3 (4 marks)

|  |  |
| --- | --- |
| Independent variable |  |
| Dependent variable |  |
| Controlled variables |  |

Materials

**Question 4 (2 marks)**

List your materials and be sure to include units and measurement.

e.g. 150 ml Distilled Water

# Diagram

## Question 5 (4 marks)

Draw a **labelled** diagram of your experimental set up in the space below or upload and annotate an image or photograph.



# Method

## Question 6 (3 marks)

List every step of your experiment so anyone could repeat what you have done.

e.g. 1. Add 150 ml of distilled water to a glass beaker.

1.

2.

3.

4.

5.

6.

# Results

# Question 7 (Table – 5 marks; Graph – 5 marks)

Display your data in a results table in the space below. (5 marks)

Graph your results in the graph paper over the page. (5 marks)

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# Discussion

## Question 8 (2 marks)

State two (2) trends (patterns) in the data.

# Conclusion

## Question 9 (2 marks)

Write a statement that concludes your results. Do your results support your hypothesis?

Marking Key

|  |  |  |
| --- | --- | --- |
| Aim | Well worded, testable | 1 |
| Hypothesis | Correctly identifies if….. | 1 2 |
| Then…. |
| Variables | Independent | 1 2 3 4 |
| Dependent |
| At least two controlled |
| Materials | Basic list, missing some information | 1 2 |
| Good list, numbered with appropriate detail |
| Diagram | Pencil | 1 2 3 4 |
| Ruler |
| Labelled |
| Titled |
| Method | Poor | 1 2 3 |
| OK but missing some detail |
| Excellent, no faults |
| Table | Title, headers, units in header, data entered, neat | 1 2 3 4 5 |
| Graph | Title, X-axis has title (1/2) and units (1/2), Y axis has title and units, appropriate choice of graph, accurate | 1 2 3 4 5 |
| Discussion | Describes what happened  Tries to applies the concepts leant in class | 1 2 |
| Conclusion | Restates the findings  Relates it back to their hypothesis, true or false | 1 2 |
|  | **TOTAL** | /30 |