

SCIENTIFIC PRACTICES #1

The Amazing Bouncing Ball Experiment

Have you ever wondered why some balls bounce higher than others? In this exciting scientific experiment, we will investigate how different types of balls bounce and try to find out which one bounces the highest. Get ready to have some bouncing fun!

Materials:

- A basketball - Leather
- A tennis ball - Wool & Cotton
- A rubber ball - Rubber
- A ruler
- A notebook and pen
- A flat surface, like a table or floor

Pre-Procedure Thoughts:

We have 3 balls today, a basketball, tennis ball, and rubber ball. We are going to make a prediction before the experiment to see if we will be able to make a correct prediction. Let's predict that the rubber ball will bounce the highest, as it is made out of rubber and smaller than the tennis ball. This is called a **hypothesis**. A hypothesis allows us to make an educated guess based on the information that is given to us.

- Hypothesis Example:

- **If** _____ **then** _____, **because** _____.
- Hypothesis: **If** the rubber ball is dropped **then** it will bounce the highest, **because** it is the smallest ball out of all of them.

Experiment Procedure:

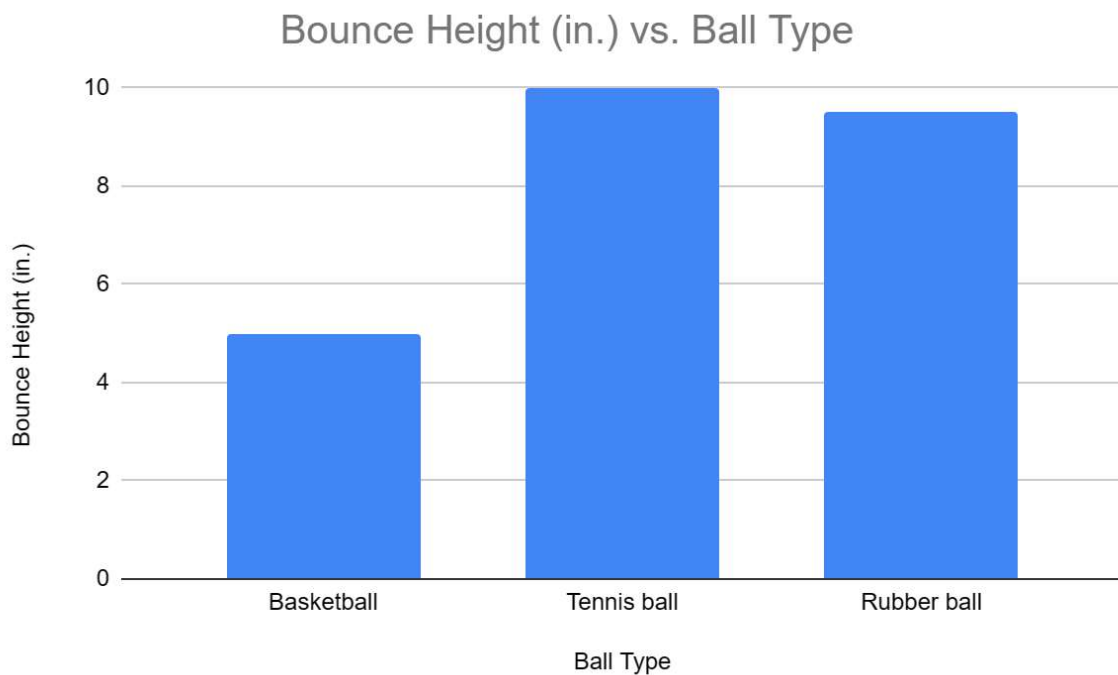
1. Start by gathering all the materials needed for the experiment.
2. Find a flat surface where you can bounce the balls. Make sure it's a safe area with no breakable objects nearby.
3. Take the basketball and drop it from a height of one foot onto the surface. Observe how high it bounces and make a note of it in your notebook.
4. Now, it's time to test the tennis ball. Drop it from the same height and observe how high it bounces. Write down the height in your notebook.

5. Lastly, it's the rubber ball's turn. Drop it from the same height as before and note how high it bounces.

Data Collection:

Now that you have completed the experiment, it's time to analyze your data. This is called **data collection**. We collect data so we can look at it after the experiment is over. We can then see if our **hypothesis** was correct. Let's organize the information in a bar graph to make it easier to understand.

Bar Graph:



Interpreting the Data:

Look at the bar graph and think about the heights of each bounce.

Hint: You can compare the heights by looking at the lengths of the bars.

- Which ball bounces the highest?
- Which one bounced the lowest?

Answer the following questions:

1. Which material was used to make the basketball?
 - A) Rubber
 - B) Leather
 - C) Plastic
 - D) Wood
2. What tool was used to measure the bounce height?
 - A) Ruler
 - B) Stopwatch
 - C) Scale
 - D) Thermometer
3. Which type of ball bounced the highest?
 - A) Basketball
 - B) Tennis ball
 - C) Rubber ball
 - D) They all bounced the same height.
4. How many times did each ball get dropped during the experiment?
 - A) Once
 - B) Twice
 - C) Three times
 - D) Four times
5. Why is it important to record the data in a notebook?
 - A) To make drawings
 - B) To have a record of the experiment
 - C) To measure length and weight
 - D) To communicate with others
6. What type of graph was used to represent the data?
 - A) Line graph
 - B) Pie chart
 - C) Bar graph

D) Pictograph

7. What does it mean if a result is unusual or unexpected?

- A) It means the experiment was a failure.
- B) It means the experiment was done incorrectly.
- C) It means the result is different from what was predicted.
- D) It means the result is the same as previous experiments.

8. What was the purpose of this experiment?

- A) To learn about different sports balls.
- B) To see how high balls can bounce.
- C) To practice using a ruler.
- D) To compare the bounce heights of different balls.

Answers:

1. B) Leather
2. A) Ruler
3. B) Tennis ball
4. A) Once
5. B) To have a record of the experiment
6. C) Bar graph
7. C) It means the result is different from what was predicted
8. D) To compare the bounce heights of different balls

Explanations:

1. In the materials list, next to the Basketball it says the material is leather.
2. A ruler is in the materials list and it says to measure the height using a ruler in the directions.
3. Looking at the bar graph, it can be seen that the tennis ball bounces the highest, 10 inches high!
4. It does not say to repeat the procedure for each drop, so therefore, only dropped once.
5. It is important to collect data during the experiment, so when the experiment is done, we can have a record of the experiment.
6. The Bar Graph is used to show the data, as the graph has bars.
7. Unusual or unexpected means different and not predictable. Therefore, the result would be very different from what we thought was going to happen before the experiment began.
8. We compared the bounce heights of different balls. A way to see this is the title of the bar graph, as it shows the relationship between the balls and their heights.