BOUNCING BALL ENERGY LAB

NAME

CLASS / DATE

01 QUESTION

How does the type of ball change the percent of drop height it bounces back to?

02 PREDICT BEFORE YOU MEASURE

WHICH BALL MAY RETURN THE GREATEST PERCENT OF ITS DROP HEIGHT?

○ tennis ○ basketball ○ ping-pong ○ rubber bouncy ○ not sure yet

Predict before testing; use the same release height and compare first rebounds only.

03 VARIABLES

I CHANGE (INDEPENDENT)	I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: BALL TYPE. MEASURED: FIRST-BOUNCE HEIGHT IN THREE TRIALS AND AVERAGE PERCENT OF THE FIXED DROP HEIGHT. KEEP RELEASE HEIGHT, FLOOR AND RELEASE METHOD CONSTANT.

04 MATERIALS

- ☐ Tennis, basketball, ping-pong and rubber bouncy balls
- ☐ Marked 100 cm release height and vertical scale
- ☐ Same hard, flat floor
- ☐ Side-view phone camera if available
- ☐ Calculator, tape and clear bounce zone

05 PROCEDURE

SAFETY Drop each ball from the exact same height and release it the same way — a small toss instead of a drop adds extra energy that isn't part of the test. Test on the same hard, flat floor for every ball — carpet or an uneven surface absorbs more energy and skews the comparison.

1 **MARK THE HEIGHT** Mark a 100 cm drop height beside a vertical scale. Use the same hard, flat floor for all balls. ☐

2 **PREDICT** Choose the ball you think will return the largest percent. Clear the bounce zone. ☐

3 **DROP AND MEASURE** Release each ball from rest three times. Record each first-rebound peak in centimeters. ☐

4 **AVERAGE AND CALCULATE** Find the average of three heights. Calculate average height ÷ 100 cm × 100%. ☐

5 **COMPARE EVIDENCE** Compare ball averages and identify energy transfers to sound, heat or deformation; retrieve balls after they stop. ☐

DATA AND EXPLANATION

NAME

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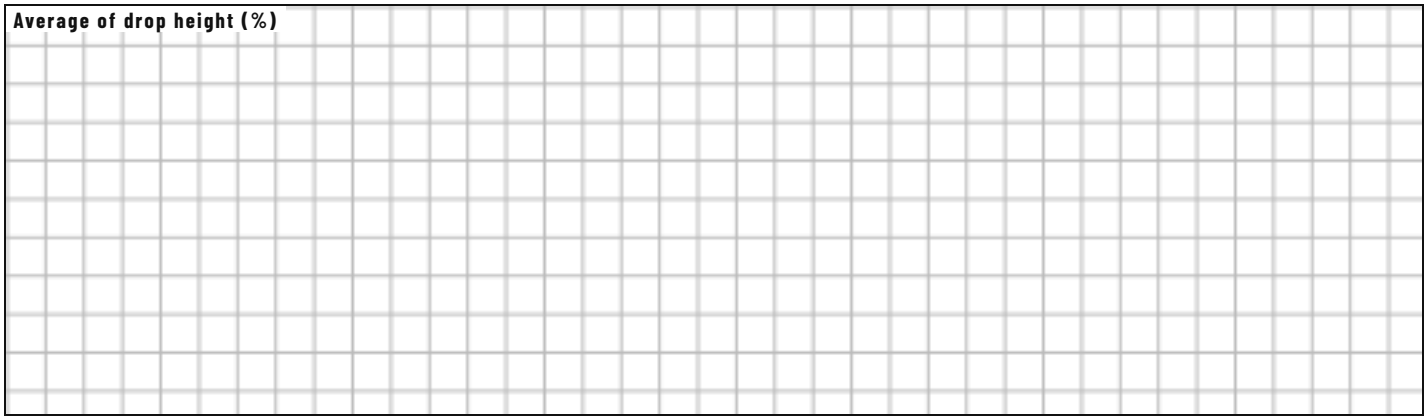
06 RECORD YOUR OBSERVATIONS

BALL TYPE	TRIAL 1 (CM)	TRIAL 2 (CM)	TRIAL 3 (CM)	AVERAGE % OF DROP HEIGHT
Tennis ball				
Basketball				
Ping-pong ball				
Rubber bouncy ball				

For each ball: average height = (Trial 1 + Trial 2 + Trial 3) ÷ 3. Average % = (average height ÷ 100 cm) × 100. Use first-bounce heights only.

SHOW ONE CALCULATION

07 AVERAGE FIRST BOUNCE BY BALL TYPE



Graph the average percent for each ball. Start the vertical scale at zero. X: Ball type

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: ball type · first bounce · three trials · average height · energy transfer

09 THINK FURTHER

How would a different floor surface affect the rebound if release height and ball stayed the same?