

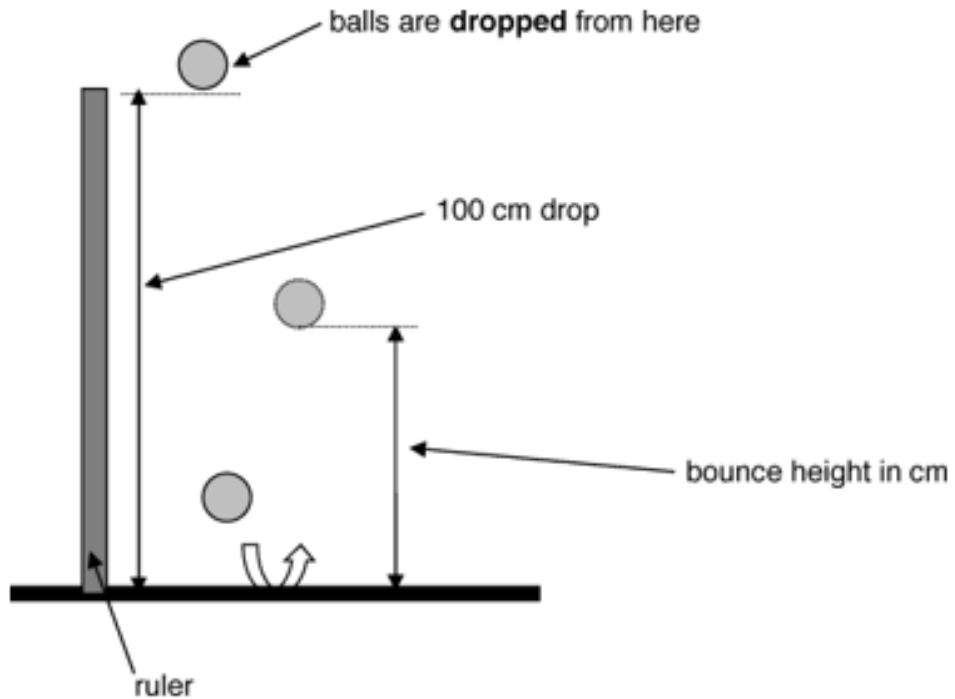
Gateway Science Physics A

J249/02 Physics A P5-P8 and P9 (Foundation Tier)

Question Set 23

A student investigates how well different balls bounce.

- She drops five different balls from the same height and measures the height the balls bounce.
- She repeats the experiment three times for each ball.



Her results are shown in **Table 1.1**.

Ball	Drop height (cm)	Bounce height (cm)			Mean bounce height (cm)
		1st reading	2nd reading	3rd reading	
Red	100	75	77	73	75
Blue	100	61	62	60	61
Green	100	60	31	58	
White	100	84	86	85	85
Yellow	100	26	24		26

Table 1.1

(a) Calculate the **mean** bounce height for the **green** ball.

Answer = cm

[1]

(b) The student forgot to write down one of the bounce heights for the **yellow** ball.

Suggest the **missing** result for the **yellow** ball.

Answer = cm

[1]

(c) Evaluate the reliability of the results.

Suggest how she could have improved her experiment.

[3]

(d) The student suggests that 15% of the **white** ball's initial energy was not transferred usefully.

(i) Show that her suggestion is correct and suggest where the energy has been transferred to.

Use calculations and the information in **Table 1.1** to help you answer.

[2]

(ii) How could the efficiency of the ball be improved?

[1]

(e) Explain how energy is transferred and lost from the ball when it bounces.

[2]

Total Marks for Question Set 23: 10

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