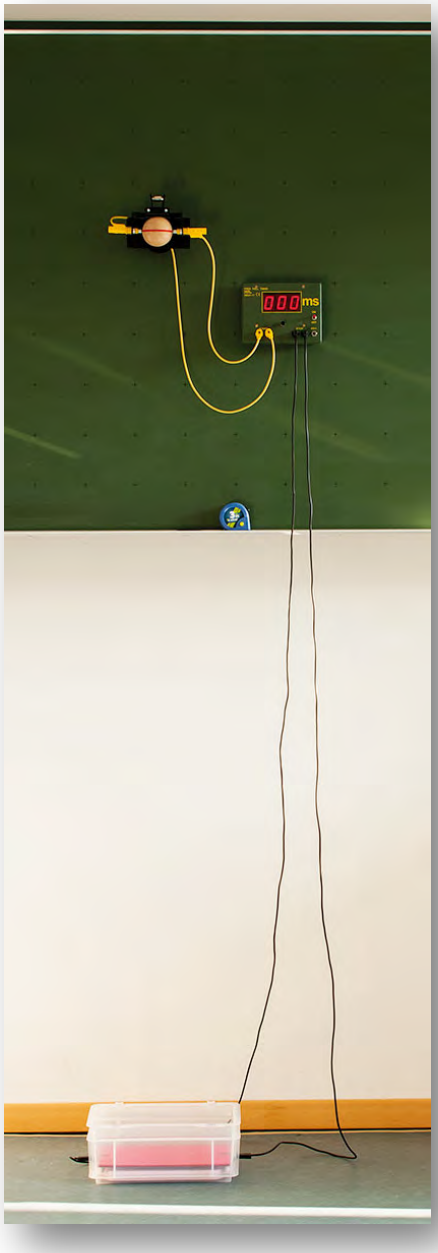
FREE FALL - DETERMINATION OF “G” (GRAVITATIONAL ACCELERATION)

MED 08.16



Material

Item-no.	Qty.	Description
DM347-1F	1	Falling body apparatus "Jumbo"
DM341-1T	1	Timer for falling body apparatus
DS110-66	1	Magnetic base, d=66 mm, with tube and pin
DG520-1C	1	Double cable, 50 cm
DG520-1G	1	Double cable, 200 cm

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Purpose
To determine the local gravitational acceleration from the measurement of the fall distance and the associated time.

Preparation
Mount the holder for the ball in the magnetic base or in other rail stand material; afterwards set the box up with the lid openend in the fall line of the ball.

Position the timer for falling body apparatus clearly visible; afterwards connect t the “Start”-socket with the holder and the “Stop”-socket with the box.

Place the wooden ball in the holder, the metal axis of the wooden ball has to be line with the metal pins of the holder.

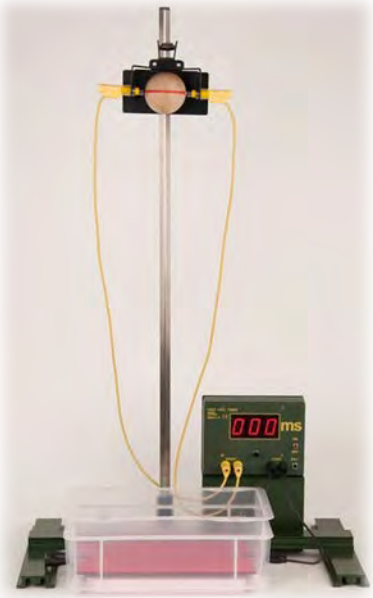
Measure the fall length with a measuring tape (from the bottom edge of the ball until the rubber pad of the box) and write it down.

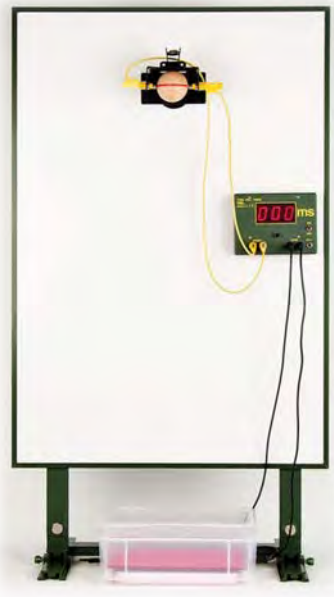
Experiment
Turn the timer on and set it to 0 if required.
By pressing the clamp of the holder together the ball gets released and falls down; note the time of the fall.

In order to get the most accurate result, it is recommended to carry out the measurement several times. The average value should then be used for the calculation.

Out of $s = \frac{g}{2} \times t^2$ follows $g = \frac{2s}{t^2}$

Additional possibilities to set up this experiment:





Attention
Possible errors: imprecise distance measurement (for longer distances the error is relatively smaller); release time; effect of air resistance