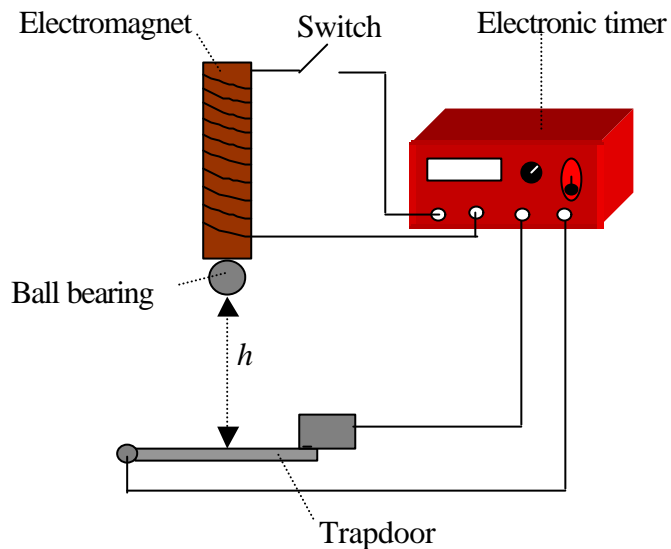


# MEASUREMENT OF $g$

## Apparatus

Millisecond timer, metal ball, trapdoor and electromagnet.



## Procedure

1. Set up the apparatus. The millisecond timer starts when the ball is released and stops when the ball hits the trapdoor.
2. Measure the height  $h$  as shown, using a metre stick.
3. Release the ball and record the time  $t$  from the millisecond timer.
4. Repeat three times for this height  $h$  and take the smallest time as the correct value for  $t$ .
5. Repeat for different values of  $h$ .
6. Calculate the values for  $g$  using the equation  $h = \frac{1}{2}gt^2$ . Obtain an average value for  $g$ . Alternatively draw a graph of  $h$  against  $t^2$  and use the slope to find the value of  $g$ .

## Results

$h/m$	$t_1/s$	$t_2/s$	$t_3/s$	$t/s$	$g/m\ s^{-2}$

## Notes

Place a piece of paper between the ball bearing and the electromagnet to ensure a quick release.

In some models of this apparatus, a pressure pad is used in place of the trapdoor; a manually operated spring-release mechanism may also be used in place of the electromagnet.