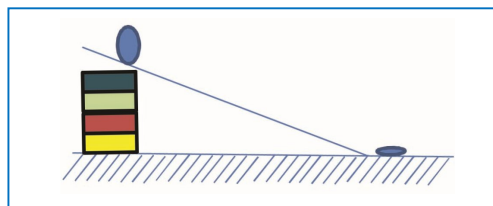


EXPERIMENT - 1**MOTION OF OBJECT ON INCLINED PLANE - 1**

Aim : To find the acceleration and velocity of an object moving on an inclined plane.
To draw the graph between distance travelled by the object and time.

Required : Glass marble, identical books-6, stop clock/digital timer, long plastic tube of 2 m, steel plate, Marker pen



Formula : The initial velocity of the object released on an inclined plane (u) = 0

$$S = ut + \frac{1}{2} at^2$$

$$S = \frac{1}{2} at^2$$

$$2s = at^2$$

$$\text{acceleration } a = \frac{2s}{t^2} \text{ and } V = u + at$$

$$V = at \quad (: u = 0)$$

Procedure: (1) Take a long plastic tube of 2m length and cut it in half along the length of the tube to make like a track.

(2) Mark the readings on the track from '0' to 200 cm with a marker pen.

(3) Place the books under the tube at one edge such that it looks like an inclined plane.

(4) Keep a steel plate at the other edge.

(5) Hold a marble at certain point say 40 cm on the track and release the marble. Start the stop clock simultaneously. (Distance (s) = 40 cm)

(6) The marble hits the plate and produced sound on reaching the ground. Then stop the stop clock.

(7) Note down the time taken by the marble to travel 40 cm on inclined plane as t_1 .

(8) Repeat the same procedure two times and find t_2 and t_3 .

(9) Note down the readings in table and find the average time $\frac{(t_1+t_2+t_3)}{3}$. E

(10) Find acceleration $a = \frac{2s}{t^2}$, and velocity $v = at$ and note them in the table.

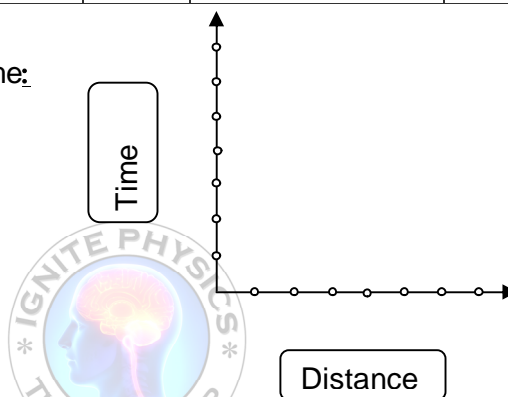
(11) Draw a graph by taking distance on 'X' axis and time on 'Y' axis.

(12) Do the same for different distances like 60, 80, 100, 120, 140 and 160 cm.

Observation :

Sl No.	Distance (in cm's)	Time			Average time (t)	$a = \frac{2s}{t^2}$	$v = at$
		t_1	t_2	t_3	$\frac{(t_1 + t_2 + t_3)}{3}$		
1.	40						
2.	60						
3.	80						
4.	100						
5.	120						
6.	140						
7.	160						

Graph between distance and Time:



The following are the observations from the table :

- The speed of the object increases with distance travelled on inclined plane.
- The graph between distance and time for an object travelled on inclined plane is a curve.

Precautions :

- (1) Take care while switch on / off the stop clock. (Must take accurate measurement)
- (2) Arrange the track such that the readings are marked from bottom to top.
- (3) Releasing marble and switch on the stop clock must be done simultaneously. So more care is needed.

Result :

- The acceleration and velocity of an object moving on an inclined plane are calculated.
- The graph between distance travelled by the object and time on inclined plane is drawn.