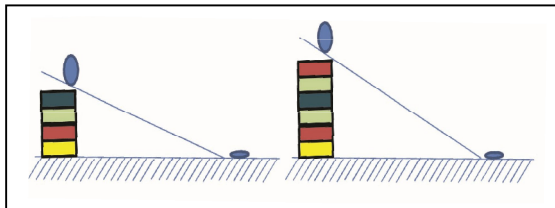


EXPERIMENT - 1**MOTION OF OBJECT ON INCLINED PLANE - 2**

Aim : To prove that the acceleration of an object moving on an inclined plane increases with the angle of inclination of the track.

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



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

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

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

$$2s = at^2$$

$$\text{acceleration } a = \frac{2s}{t^2}$$

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 100 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 note them in the table.

(11) Measure the angle of inclination between the track and floor.

(12) Do the same for different angle of inclinations.

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Sl No.	Angle of inclination	Distance (in cm's)	Time			Average time (t)	$a = \frac{2s}{t^2}$
			t_1	t_2	t_3	$\frac{(t_1 + t_2 + t_3)}{3}$	
1.		100					
2.		100					
3.		100					
4.		100					
5.		100					
6.		100					
7.		100					

The following are the observations from the table :

- The acceleration of the object increases with angle of inclination of the inclined plane.

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 :

- It is proved that the acceleration of an object moving on an inclined plane increases with the angle of inclination of the track.