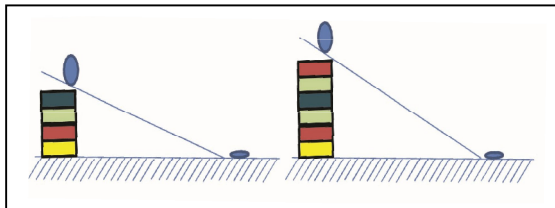


EXPERIMENT - 1**MOTION OF OBJECT ON INCLINED PLANE - 2**

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.

పరిశీలనలు :

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.