King Abdul Aziz University
Faculty of Science
Physics Department
Year: 1433/ 1434
Term: 1

Course: 281
Report number (   )

(   )

Name of Experiment:

Student's Name:

Student's Number:

Lab partners' name:

Instructor's Name:
Najah Altwarqi

Objective:

♦ To Find The Acceleration Of gravity .

Apparatuses:

1- Air Track .

2- Photo Gate .

3- Air Bump .

4- Smart Timer .

5- Different Blocks .

Main Equations:

♣ **a= g× sin**

♣ Slope = g

And also we used in the experiment :

♣ $\sin\emptyset = \dfrac{h}{L}$

♣ $V = \dfrac{L}{T_{av\ g}}$

♣ $a = \dfrac{v^2}{2D}$

NOTES

a : The Acceleration (m/s^2)..

g : The Acceleration Of Gravity (m/s^2)..

Ø : The Angle Of Inclined Plane..

Data:

♣ L = 10cm = 0.1 m

♣ L = 100cm = 1 m

♣ D = 187 − 59 = 128 cm

$h \times 10^{-2}$ (m)	$\sin\emptyset \times 10^{-2}$	T_1(s)	T_2 (s)	T_{avg} (s)	V (m/s)	V^2 (m/s^2)	a (m/s^2)
0.64 cm	0.64 cm	0.3370	0.3306	0.3338	0.2996	0.0898	0.0351
1.62 cm	1.62 cm	0.1699	0.1693	0.1696	0.5896	0.3476	0.1358
2.16 cm	2.16 cm	0.1447	0.1442	0.1445	0.6920	0.4789	0.1871
3.2 cm	3.2 cm	0.1157	0.1155	0.1156	0.8651	0.7484	0.2923
4.17 cm	4.17 cm	0.1003	0.1005	0.1004	0.9960	0.9920	0.3875

Graph:

♣ The Graph :
(you can see it in the next page)

Calculations and results:

♣ $T_{avg} = \dfrac{T_1 + T_2}{2}$

(you can see it in the* fifth column*)

♣ $V = \dfrac{L}{T_{avg}} = \dfrac{0.1}{T_{avg}}$

(you can see it in the* sixth column*)

♣ $V^2 = (V)^2$

(you can see it in the* seventh column*)

♣ $a = \dfrac{V^2}{2D}$

(you can see it in the* eighth column*)

♣ $\text{Slope} = \dfrac{\Delta y}{\Delta x \times 10^{-2}} = \dfrac{0.28 - 0.21}{(3.2 - 2.4) \times 10^{-2}} = 8.75 \; m/s^2$

♣ $\% \text{ error} = \dfrac{g_{th} - g_{exp}}{g_{th}} \times 100 = 10.7 \; \%$