

LABORATORY 4 Uniformly Accelerated Motion

LABORATORY REPORT

Data Table

	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
h (m)	20	20	20	20	20
d (m)	0.15	0.2	0.25	0.3	0.35

x (m)	t_1 (s)	t_2 (s)	t_3 (s)	t_4 (s)	t_5 (s)
15	0.09	0.42	0.33	0.34	0.34
20	0.37	0.4	0.46	0.49	0.39
25	0.45	0.46	0.33	0.53	0.52
30	0.46	0.51	0.51	0.44	0.44
35	0.45	0.61	0.51	0.50	0.56
40	0.67	0.5	0.53	0.45	0.59

Calculations Tables

$\bar{h} = 20$ m	$\sigma_{h-1} =$ m	$\alpha_h =$ m
$\bar{d} = 0.3$ m	$\sigma_{d-1} =$ m	$\alpha_d =$ m
$\sin \theta = \bar{h}/\bar{d} = 66.7^\circ$		

x (m)								
\bar{t} (s)								
σ_{n-1} (s)								
α_t (s)								
\bar{t}^2 (s ²)								

Slope =	$a =$	m/s ²	$g_{\text{exp}} =$	m/s ²	%Err =	$r =$
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SAMPLE CALCULATIONS

- $a = 2(\text{slope})$
- $g_{\text{exp}} = a / (\sin \theta) =$
- % error = $\frac{g_{\text{exp}} - g}{g} \times 100\% =$

QUESTIONS

- The decimal place of the standard error coincides with the least significant digit and determines the number of significant figures in the values of \bar{h} and \bar{d} . Because these are used to calculate the experimental value of g , they determine the number of significant figures in your value of g . How many significant figures are in your values of \bar{h} and \bar{d} , and how many are in your experimental value of g ?
- Would friction tend to cause your experimental value for g to be greater or less than 9.80 m/sec²? In which direction is your error for the value for g ? Could friction be the cause of your observed error? State your reasoning.