

LAB 04 - NEWTON'S 2nd LAW

1 Objective

1-2 lines

2 Theory

Detail the theory of the materials relevant to this lab.

3 Experimental data

NO PRINT OUT.

3.1 Section 3.4-Taking Data

Question 1: Sketch the graphs acceleration and force versus time.

3.2 Section 3.5-Analysis

Question 2: Compare the graph for force with the graph for acceleration. Does the curve for force pretty much duplicate the shape of the curve for acceleration? Are the magnitudes what they should be? What about the zero crossings? If you made exactly the same motion with the force sensor but at a different distance from the motion sensor, which of your 4 graphs would differ from the ones you actually took?

3.3 Section 4.5-Data taking

Calculation 1: Summarize your data in a table:

	m=10g	m=20g	m=30g	m=40g	m=50g
Mass glider 1	a=, %err=	a=, %err=	a=, %err=		
Mass glider 2			a=, %err=	a=, %err=	a=, %err=

The table must be filled appropriately with the experimental value of the acceleration and the calculation of percent error.

3.4 Section 4.6-Analysis

Question 3 : What are possible reasons for any disagreement between your measured value and the theoretical value of acceleration

3.5 Section 5.3-Taking Data

Calculation 2: Summarize your data in a table:

run number	g (m/s ²)
1	
2	
1	
3	
4	
5	
6	
7	
8	
9	
10	

Calculate the average value of the measured g and the standard deviation (see Eq. 3 p.4 [Error Analysis]).

3.6 Section 5.4-Analysis

Question 4: Compare your results to g. What contributes to errors? If you were able to release the picket a considerable distance above the photogate and still have it go through the photogate would your results be as accurate? Explain.

4 Sources of Error

Discuss here possible sources of error for the 3 measurements (section 3, 4 & 5 in the lab manual).

5 Conclusion