Newton's Second Law Lab report

By: Marissa Hartman

Objectives: 1. Collect force and acceleration data for a cart as it is moved back and fourth.

- Compare force vs. time and acceleration vs. time graphs.
- 3. Analyze a graph of force vs. acceleration.
- 4. Determine the relationship between force, mass, and acceleration.

Materials: Computer, Vernier Computer Interface, Logger Pro, Vernier Low-g Accelerometer, Vernier Force Sensor or WDSS in place of sensors and interface, Low Friction Dynamic Cart, 0.500kg mass

Procedure: 1. Connect a Dual- Range Force Sensor to Channel 1 on the Vernier computer interface, and then connect the Low-g Accelerometer to Channel 2 on the interface.

- Open the file "09 Newton's Second Law" from the Physics with Vernier folder.
- 3. Attach the Force Sensor to a dynamics cart so you can apply a horizontal force to the hook, directed along the sensitive axis of your particular Force Sensor. Next, attach the Accelerometer so the arrow is horizontal and parallel to the direction that the cart will roll. Orient the arrow so that if you pull on the Force Sensor the cart will move in the direction of the arrow. Find the mass of the cart with the Force Sensor the cart will move in the direction of the arrow. Find the mass of the cart with the Force Sensor and Accelerometer attached. Then record the mass in the data table.
- 4. Place the cart on a level surface. Make sure the cart is not moving and click the button that has the zero with a slash through it and says "Zero" on it. Check to make sure both sensors are highlighted and click "OK".

Trial 1

- 5. You are now ready to collect force and acceleration data. Grasp the Force Sensor hook. Click "Collect" and take several seconds to move the cart back and fourth on the table. Vary the motion so that both small and large forces are applied. Make sure that your hand is only touching the hook on the Force Sensor and not the Force Sensor or cart body.
- Note the shape of the force vs. time graph. When the force is maximum, is the acceleration maximum or minimum? To turn off Examine mode, click on the Examine button.
- 7. The graph of force vs. acceleration should appear to be a straight line. To fit a straight line to the data, click on the graph, then click the Linear Fit Button. Record the equation for the regression line in the data table.

Trial 2

Attach the .500kg mass to the cart. Record the mass of the cart, sensors, and additional mass in the data table. And then repeat steps 5 through 8.

Trial 1 Data

Mass of cart with sensors (kg) = .6859

Regression line for force vs. acceleration data = F= 2.59a+.008320

Trial 2 Data

Mass of cart with sensors and additional mass (kg) = 1.1859 Regression line for force vs. acceleration data = F= 5.201+.12

Equations: Slope= Rise/ Run = change in F / change in A

Newton Second Law Lab Report

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Newton Second Law Lab Report:

Screen Schooled Joe Clement, Matt Miles, 2017-10-01 Over the past decade educational instruction has become increasingly digitized as districts rush to dole out laptops and iPads to every student Yet the most important question Is this what is best for students is glossed over Veteran teachers Joe Clement and Matt Miles have seen firsthand how damaging technology overuse and misuse has been to our kids On a mission to educate and empower parents they show how screen saturation at home and school has created a wide range of cognitive and social deficits in our young people They lift the veil on what s really going on in schools teachers who are often powerless to curb cell phone distractions zoned out kids who act helpless and are unfocused unprepared and unsocial administrators who are influenced by questionable science sponsored by corporate technology purveyors They provide action steps parents can take to demand change and make a compelling case for simpler smarter more effective forms of teaching and learning

Physics Laboratory Experiments Jerry D.

Wilson, 1986 Artificial Intelligence in Education Andrew M. Olney, Irene-Angelica Chounta, Zitao Liu, Olga C. Santos, Ig

Ibert Bittencourt, 2024-07-01 This book constitutes the refereed proceedings of the 25th International Conference on

Artificial Intelligence in Education AIED 2024 held in Recife Brazil in July 8 12 2024 Proceedings The 49 full papers and 27 short papers presented in this book were carefully reviewed and selected from 334 submissions and advancement of education

And the Physics Laboratory Experiment of education and the cognitive sciences for the improvement and advancement of education

Leading, Teaching, and Learning the Common Core Standards Rosemarye T. Taylor, Rebecca Watson, Joyce Nutta, 2014-07-09 Leading Teaching and Learning is a resource for teachers taking action on Common Core State Standards to enhance student learning Each chapter addresses various disciplines and grade levels with concrete examples Chapters focus on research based instruction academic language development thinking and complexity English learners non proficient readers rigor and collaboration for ongoing professional capacity building Nuclear Science Abstracts, 1973 Scientific and Technical Aerospace Reports ,1995 Designing Soldier Systems Dr Laurel Allender, Dr Pamela Savage-Knepshield, Mr John Lockett III, Mr John Martin, 2013-01-28 This book focuses on contemporary human factors issues within the design of soldier systems and describes how they are currently being investigated and addressed by the U S Army to enhance soldier performance and effectiveness Designing Soldier Systems approaches human factors issues from three main perspectives In the first section Chapters 1 5 focus on complexity introduced by technology its impact on human performance and how issues are being addressed to reduce cognitive workload In the second section Chapters 6 10 concentrate on obstacles imposed by operational and environmental conditions on the battlefield and how they are being mitigated through the use of technology The third section Chapters 11 21 is dedicated to system design and evaluation including the tools techniques and technologies used by researchers who design soldier systems to overcome human physical and cognitive performance limitations as well as the obstacles imposed by environmental and operations conditions that are

encountered by soldiers The book will appeal to an international multidisciplinary audience interested in the design and development of systems for military use including defense contractors program management offices human factors engineers human system integrators system engineers and computer scientists Relevant programs of study include those in human factors cognitive science neuroscience neuroergonomics psychology training and education and engineering

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Energy Research Abstracts ,1993 U.S. Government Research Reports ,1959 Physics Laboratory Manual
David H. Loyd,1989-11 Annual Catalogue United States Air Force Academy,1985 United States Air Force Academy,1985 United States Air Force Academy,1985 Inquiry: The Key to Exemplary Science Robert Yager,2009-06-17

American Journal of Physics ,1998 Resources in Education ,1997 Laboratory Manual [in] Engineering Physics ... Seville Chapman, 1947 The Princeton Companion to Applied Mathematics Nicholas J. Higham, Mark R. Dennis, Paul Glendinning, Paul A. Martin, Fadil Santosa, Jared Tanner, 2015-09-15 The must have compendium on applied mathematics This is the most authoritative and accessible single volume reference book on applied mathematics Featuring numerous entries by leading experts and organized thematically it introduces readers to applied mathematics and its uses explains key concepts describes important equations laws and functions looks at exciting areas of research covers modeling and simulation explores areas of application and more Modeled on the popular Princeton Companion to Mathematics this volume is an indispensable resource for undergraduate and graduate students researchers and practitioners in other disciplines seeking a user friendly reference book on applied mathematics Features nearly 200 entries organized thematically and written by an international team of distinguished contributors Presents the major ideas and branches of applied mathematics in a clear and accessible way Explains important mathematical concepts methods equations and applications Introduces the language of applied mathematics and the goals of applied mathematical research Gives a wide range of examples of mathematical modeling Covers continuum mechanics dynamical systems numerical analysis discrete and combinatorial mathematics mathematical physics and much more Explores the connections between applied mathematics and other disciplines Includes suggestions for further reading cross references and a comprehensive index Chemistry and Society Michael E Green, 2019

The book delves into Newton Second Law Lab Report. Newton Second Law Lab Report is a vital topic that needs to be grasped by everyone, ranging from students and scholars to the general public. The book will furnish comprehensive and indepth insights into Newton Second Law Lab Report, encompassing both the fundamentals and more intricate discussions.

- 1. The book is structured into several chapters, namely:
 - Chapter 1: Introduction to Newton Second Law Lab Report
 - Chapter 2: Essential Elements of Newton Second Law Lab Report
 - Chapter 3: Newton Second Law Lab Report in Everyday Life
 - Chapter 4: Newton Second Law Lab Report in Specific Contexts
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- 3. In chapter 2, the author will delve into the foundational concepts of Newton Second Law Lab Report. This chapter will elucidate the essential principles that must be understood to grasp Newton Second Law Lab Report in its entirety.
- 4. In chapter 3, this book will examine the practical applications of Newton Second Law Lab Report in daily life. The third chapter will showcase real-world examples of how Newton Second Law Lab Report can be effectively utilized in everyday scenarios.
- 5. In chapter 4, the author will scrutinize the relevance of Newton Second Law Lab Report in specific contexts. This chapter will explore how Newton Second Law Lab Report is applied in specialized fields, such as education, business, and technology.
- 6. In chapter 5, this book will draw a conclusion about Newton Second Law Lab Report. The final chapter will summarize the key points that have been discussed throughout the book.
 - The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. It is highly recommended for anyone seeking to gain a comprehensive understanding of Newton Second Law Lab Report.

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