Student Exploration: Fan Cart Physics

Gizmo Warm-up

The Fan Cart Physics Gizmo™ shows a common teaching tool called a fan cart. Place fan A on the cart and turn it on by clicking the ON/OFF button below.

- Look at the blue lines coming from the fan. In which direction is the air pushed?
- Press Play () and observe the cart. In which direction does the cart move? _____



By blowing to the left, the fans exert a **force** on the cart that pushes it to the right. This illustrates **Newton's third law**: A force in one direction results in an equal force in the opposite direction.

 The velocity (v) of the cart is its speed and direction. Click Reset (). Select the Graph tab, and click Play. Does the velocity change or is it constant? _______

A change in velocity is called acceleration (a).

Activity B:	Get the Gizmo ready:	
Newton's second	Click Reset. Set the Initial velocity of cart to 0.0 m/s.	13
larw	Place all three fans on the cart and turn them on.	0 0

Question: How do mass and force affect acceleration?

- Form hypothesis:
 - A. How do you think changing the mass of the cart will affect its acceleration?
 - B. How do you think the number of fans will affect the cart's acceleration?

5. Experiment: Select the BAR CHART tab and turn on Show numerical values. For each of the situations below, record the acceleration of the cart. After recording acceleration CLICK THE GRAPH Tab and compare the shape of the graph for each trial. Then Select the BAR CHART tab and continue.

Load	Number of fans turned on	Acceleration
3 fans, 0 mass units	1	
3 fans, 0 mass units	2	
3 fans, 0 mass units	3	
3 fans, 2 mass units	1	
3 fans, 2 mass units	2	
3 fans, 2 mass units	3	

- 6. Analyze: Look at the acceleration values.
 - A. How did doubling the force affect the acceleration of the cart?
 - B. Compare the first and third lines of data. How did tripling the force affect the acceleration of the cart?
 - C. A cart with two mass units and three fans has twice the mass as a cart with just three fans. How did doubling the mass affect the acceleration of the cart? ______



What Are The Answers To Fan Physics Gizmo

Wan Yong Loo

What Are The Answers To Fan Physics Gizmo:

Sif Physics Ol Tb Wan Yong Loo, 2007 Media Ethics Clifford G. Christians, Mark Fackler, Kathy Brittain Richardson, Peggy Kreshel, 2016-10-04 Media Ethics Cases and Moral Reasoning challenges readers to think analytically about ethical situations in mass communication through original case studies and commentaries about real life media experiences. This text provides a comprehensive introduction to the theoretical principles of ethical philosophies facilitating ethical awareness It introduces the Potter Box with its four dimensions of moral analysis to provide a framework for exploring the steps in moral reasoning and analyzing the cases Focusing on a wide spectrum of ethical issues faced by media practitioners the cases in this Tenth Edition include the most recent issues in journalism broadcasting advertising public relations and entertainment Visit the companion website at www mediaethicsbook com *James B. Conant: Harvard to* Hiroshima and the Making of the Nuclear Age James Hershberg, 2019-07-31 James B Conant 1893 1978 was one of the titans of mid 20th century American history attaining prominence and power in multiple fields Usually remembered as an educational leader he was president of Harvard University for two tumultuous decades from the Depression to World War II to the Cold War and McCarthyism To take that job he gave up a scientific career as one of the country's top chemists and he left it twenty years later to become Eisenhower's top diplomat in postwar Germany Hershberg's prize winning study however examines a critical aspect of Conant's life that was long obscured by government secrecy his pivotal role in the birth of the nuclear age During World War II as an advisor to Roosevelt and then Truman on the elite Interim Committee that considered how to employ the bomb against Japan Conant was intimately involved in the decisions to build and use the atomic bomb During and after the Manhattan Project he also led efforts to prevent a postwar nuclear arms race between the United States and the Soviet Union that he feared threatened the survival of civilization an apocalyptic prospect he glimpsed in the first instant of the new age when he witnessed the first test of the new weapon at Alamogordo on July 16 1945 a vivid inquiry a model of historiography evocative reading Conant was central to atomic policy and progress the bomb would be as much Conant's as it was anyone s in Government His inner response to that burden responsibility has long been obscured but it is illumined here Philip Morrison The New York Times Book Review In his splendid portrait of Conant James Hershberg has illuminated the life of a pivotal figure in the making of U S nuclear scientific educational and foreign policy for almost a half century But the book is much more It is not only an insightful narration of Conant's life it is also a brilliant and important account of the making of the nuclear age a chronicle that contains much that is new Hershberg's superb study is a chronicle of Conant's moral journey and we are the wiser for his having charted Conant's path S S Schweber Washington Post Book World James G Hershberg ably comes to grips with Conant and his hazardous times His book is vibrantly written and compelling and it breaches Conant's shield of public discretion in masterly fashion making extensive use of unpublished interviews diaries reports and correspondence pried from private and governmental repositories It is a huge ambitious work

a history of the Cold War as Conant encountered it as well as a study of the man Daniel J Kevles The New Yorker a well written comprehensive nonjudgmental but sensitive biography Conant was involved in so many and such critical events that students of almost any aspect of our public life over the past half century will find useful the new material and helpful insights in this book This fine biography of one of the most important and complicated of America's twentieth century leaders immediately establishes James Hershberg as one of America's outstanding young historians Stephen E Ambrose Foreign Affairs magnificent Any reader interested in nuclear weapons Cold War history or American politics from FDR to JFK will find this biography riveting Priscilla McMillan Chicago Tribune masterful The prose is clear the narrative forceful and the author s judgments are balanced and judicious This is simply splendid biography. The highest praise one can give for a book of this sort is that the historian has not shrunk from speaking truth to power This book quietly but insistently does so It should be read by the public at large as one of the definitive texts on the cold war and the nuclear age Hershberg's triumph is that he has prevailed over all the official lies to give us one more layer of the historical truth Kai Bird The Nation riveting an impressive achievement honest and comprehensive in its scholarship the author has shown himself to be a historian of notable achievement and promise McGeorge Bundy Nature Hershberg's outstanding balanced biography lifts the self imposed secrecy surrounding a key architect of U S Cold War policy and of the nuclear age Publisher's Weekly an impressive and substantial achievement Hershberg has used the life of one strategically placed individual to illuminate the most important issues surrounding America's role and conduct in the nuclear age His book will be invaluable to scholars assessing the impact and legacy of the group who acquired the epithet wise men now that the Cold War has receded Carol S Gruber Science definitive a far more textured picture than one finds in Conant's own guarded and unrevealing autobiography an important and rewarding book illuminating Conant led a remarkable and eventful life in remarkable and eventful times James Hershberg has explored that life and those times in exhaustive and revealing detail Paul Boyer The New Republic James G Hershberg has achieved the impossible He has written a huge biography of a Harvard president that is fascinating informative and as valuable a piece of American history as anything I have read in years Mr Hershberg has brought us back vividly to an age that seems remote so long ago but the questions about nuclear proliferation are the same even while the answers are still ambiguous As we watch men struggling with unanticipated post Cold War problems and civil wars sprouting like Jason's men at arms it is good to read this story about a complex man who deserves an important place in our history because he helped make that history possible Arnold Beichman The Washington Times engrossing A magisterial study of an awesome and intriguing public career Kirkus Reviews entertaining thought provocative Dick Teresi The Wall Street Journal Hershberg's book helps us more clearly understand the postwar Establishment and offers a challenging appraisal of the role of elites of universities and of the state Gar Alperovitz In These Times Hershberg deserves great credit for cracking a tough New England walnut analyzing this very important public figure demonstrating how he fit into his own time and showing us

what we can learn from the man Daniel R Mortensen The Friday Review of Defense Literature a compelling account an engaging examination of one of the central figures of the nuclear age It succeeds in showing one man's intersection with great events and issues and in the process illuminates those issues for us all American Historical Review well written Conant s participation in one of our country s most dynamic periods is thanks to Hershberg now much better understood Library Journal A reader of the book will enter the realm of the greats the shapers of worlds created by the atomic blasts at Hiroshima and Nagasaki Conant was no bit player in Cold War history the book is very successful in weaving Conant s subsurface persona in with his ups and downs as a prominent and committed public figure And it leaves out little detail in describing top level decisions involving the Cold War geopolitics of nuclear weaponry Conant was a participant in most of these decisions with Presidents Roosevelt and Truman themselves their Secretaries of War and State and of course all the major scientific figures of the time Chemical Engineering News A wonderfully rich portrait that emerges from a carefully documented account of Conant's role in the development of the atomic bomb and post war nuclear policy. An extraordinarily well written text Hershberg lays bare the person behind the persona warts dimples and all Stanley Goldberg Bulletin of the **The Impossible Clue** Sarah Rubin, 2017-01-03 A compelling and funny new whodunit with a strong **Atomic Scientists** girl heroine for fans of Book Scavenger Greenglass House and The Mysterious Benedict Society Math whiz Alice Jones has already cracked a mystery or two She's smart and she's fearless so who else would her classmates turn to But when a famous local scientist vanishes from a locked room Alice and her detective skills graduate to the big leagues Dr Learner had been working on a top secret invisibility suit that everyone wants Rumor has it he s disappeared under suspicious circumstances literally But is wacky science really behind his vanishing Or is it something more sinister Alice won t stop until she knows the truth The Impossible Clue is a middle grade story whose appeal is no mystery with a protagonist whose charm needs no magnifying glass to detect Using Physics Gadgets and Gizmos, Grades 9-12 Matthew Bobrowsky, Mikko Korhonen, Jukka Kohtamäki, 2014-03-01 What student or teacher can resist the chance to experiment with Rocket Launchers Drinking Birds Dropper Poppers Boomwhackers Flying Pigs and more The 54 experiments in Using Physics Gadgets and Gizmos Grades 9 12 encourage your high school students to explore a variety of phenomena involved with pressure and force thermodynamics energy light and color resonance buoyancy two dimensional motion angular momentum magnetism and electromagnetic induction The authors say there are three good reasons to buy this book 1 To improve your students thinking skills and problem solving abilities 2 To acquire easy to perform experiments that engage students in the topic 3 To make your physics lessons waaaaay more cool The phenomenon based learning PBL approach used by the authors two Finnish teachers and a U S professor is as educational as the experiments are attention grabbing Instead of putting the theory before the application PBL encourages students to first experience how the gadgets work and then grow curious enough to find out why Students engage in the activities not as a task to be completed but as exploration and discovery The idea is to help your students go

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