

John L. Hubisz, Column Editor Department of Physics, North Carolina State University Raleigh, NC 27695-8202; hubisz@unity.ncsu.edu

How many ...? How much ...? Guesstimation: Solving the World's Problems on the Back of a Cocktail Napkin,

by Lawrence Weinstein and John A. Adams, Princeton University Press, Princeton, NJ (2008), xv+301 pp., \$19.95 paperback ISBN 978-0-691-12949-5. Available from AAPT.

Many years ago I was returning from an AAPT meeting, and Alan Van Heuvelen came to the back of the plane and asked, "How many people are there per square kilometer in the U.S.?" I was using a quartersheet of paper for a book mark and quickly calculated that there were about 25, if he were only interested in the lower 48 states. A few minutes later he was back and asked about China, and I answered that that was easy, 125. I sometimes present a workshop, "Seven Ways to Make Your Class More Interactive," and one of the ways is to divide the class into groups of three and have them work on questions like this "Fermi Question" or similar problems that force them to make guesses and to also make use of their store of information. This particular question is great for an "ice-breaker" the first day of the semester, because so many groups come up with the approximate answer. Even discussing the outliers is informative.



Guesstimation, after chapters on solving this type of problem and how to deal with large numbers, follows up with questions in nine different areas: general, animals and people, transportation, energy and work, hydrocarbons and carbohydrates, the Earth and Moon and gerbils, energy and the environment, the atmosphere, and risk. Each question is followed by several hints (printed upside down) suggesting the information that you need to attack the problem. A solution appears on the next page. The last chapter leaves the reader with 33 unanswered questions. There are a couple of appendices with some useful number facts, simple formulas, and information on well-known objects that can be used for comparisons. These questions are a bit simpler, more applicable to

everyday questions, and more numerous than those of Swartz's *Back-ofthe-Envelope Physics*, making the two books an excellent complementary pair.

So, if Weinstein's "Fermi Questions" column in *The Physics Teacher* leaves you asking for more, buy the book!

John L. Hubisz

DOI: 10.1119/1.2981305

Microreviews by the Book Review Editor

• Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions, by Lisa Randall and published by Harper Perennial, New York, NY, xii+500 (2006) \$15.95, paperback.

After hearing the author's Klopsteg Award talk (...on a topic of current significance suitable for non-specialists) at the 2007 Summer AAPT Meeting in Syracuse, I knew that the book was going to be great, ... and it is.

DOI: 10.1119/1.2981306

• Death by Black Hole and Other Cosmic Quandaries, by

Neil deGrasse Tyson and published by W. W. Norton, New York, NY, 10110, pp. 384 (2007), \$15.95, paperback.

You will find it difficult to put down this collection of 42 essays by this highly entertaining writer/astrophysicist.

DOI: 10.1119/1.2981307