

FERMI QUESTIONS

Enrico Fermi was one of this country's greatest physicists. Among his accomplishments were the 1938 Nobel Prize for nuclear and particle physics and the title "Father of the Atomic Age" for his role in building the first nuclear reactor. He had a rare talent as both a gifted theorist and experimentalist. One of his legacies is the "Fermi Question," an insightful question requiring both an understanding of physics principles and estimation skills.



ENRICO FERMI

1901 - 1954

The Fermi Questions given below require information gathered for this workbook, estimation and some clever thinking. The additional questions provide hints for *one possible* way to figure out the answer.

1. Lun-A-Beach

In the year 2001, imagine an amusement park built on the Moon. On the Moon there are two important differences: (1) the acceleration due to gravity is only 15 % as that on Earth; and (2) there is no air resistance (or air!). Would you expect to be moving slower, faster, or the same speed at the bottom of the first hill on Colossus? Why? Does the lack of air cause you to move faster or slower? What about the change in gravity?

2. How many gallons of soft drinks will be drunk during Physics Day today at Lagoon?

a. How much does the "average" person at Lagoon drink during the day? Estimate the number of soft drinks an average person drinks and their average size?

b. Here is the tough part: How many people are here today? There are many ways to do this. For instance, you could check out the parking lot. Or you could estimate the number of rides, games, drink stands, and the number waiting at each of these. (Can you come up with a better way?)

c. Does it take more power to turn the Ferris wheel or light it?