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# SCIENCE NEWS LETTER

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A SCIENCE SERVICE PUBLICATION

# PROBABILITY AND STATISTICS KIT K22

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**From the Instruction Book's preface by Dr. Frederick Mosteller, Professor of Mathematical Statistics, Department of Statistics, Harvard University, Cambridge, Mass.:**

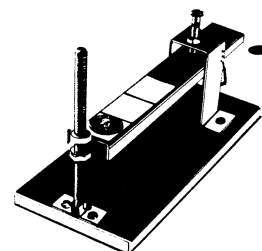
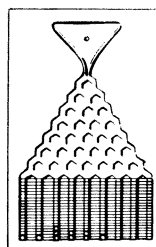
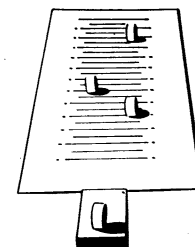
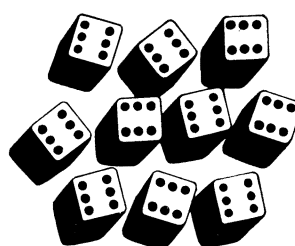
. . . Some may feel that this sort of material is only for the youth who is quick at science and mathematics, and certainly such a youngster will profit mightily. But it is not so well known that children, retarded in the mathematical areas, brighten up when presented mathematical tasks derived from experiments they have executed themselves . . .

In all the talk about science and mathematics, let's not forget that experimentation with mathematical ideas is fun. And hours and hours of such instructive fun are in the Berkeley book and lab. How do I know? In preparing this introduction, I have been greatly hampered by my not-very-studious 14-year old who busily instructs me in the use of all these materials.

Now if you'll excuse me, I have a new theory I'd like to try on the coin-flipping machine. Have fun!

**SOME OF THE CONTENT OF THE EXPERIMENTS:** If you flip a coin 50 times, what will happen? If you roll 2 dice, what will happen? If you roll 30 dice and do that 40 times, what will happen? How often will you get 5 sixes when you roll 30 dice? How often will you get 10 sixes when you roll 30 dice? How will raindrops be distributed? How do you use the frequency of letters to solve a cryptogram? If you have 20 black beads and 10 white beads in a sampling box, what are you likely to get in ten samples? If you have 20 black beads and 10 white beads in one sampling box and 25 black beads and 5 white beads in another sampling box, are you likely to be able to tell the boxes apart if you sample twenty times? How random is random? Can a person name 100 digits randomly out of his head? How do you measure departure from randomness?

**STATISTICAL DISTRIBUTIONS DISCUSSED IN THE KIT AND EXPERIMENTS:** Uniform Distribution in one and two dimensions; Binomial Distribution; Normal Distribution; Chi-Squared Distribution; Poisson Distribution; Multinomial Distribution.



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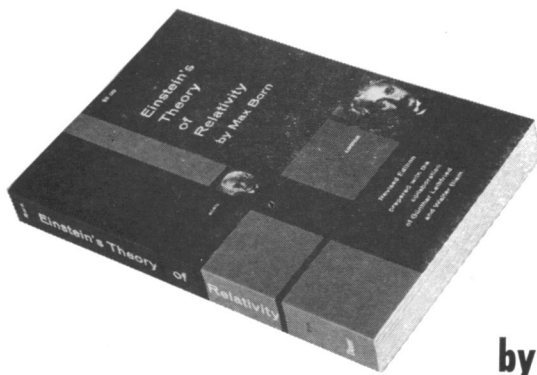
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cal system of physics covering such topics as the origin of measurements of space and time, Ptolemaic and Copernican astronomy, concepts of equilibrium and force, geometry and its axioms, the Newtonian world system, laws of optics, and electrodynamics.

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tivity has been brought up-to-date. Professor Born has added material on predictions by the theory and its implications for cosmology, and on what is now being sought in unified field theory.

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