
EECE-340, Probability and Statistics
University of New Mexico, Albuquerque
PS # 1.0, Fall 2002
Assigned: 08/23/02
Due: 08/30/02

Problem Description

In this exercise, we will look at the random experiment of throwing a die (several of them were handed out in class) that has six faces with numbering 1 – 6. You may assume for the purposes of this exercise that the different throws of the die are independent of each other. The goal of this assignment is to study the relative frequency interpretation of probability, i.e.,

$$p_k = \lim_{n \rightarrow \infty} \frac{n_k}{n},$$

where n_k , $k = 1 - 6$, corresponds to the number of times the outcome k was recorded. With respect to this random experiment:

1. Enumerate the sample space associated with this random experiment. Record the outcomes from $n = 100$ throws of the die.
2. Plot the histogram of the frequencies for the different outcomes after the 100 experiments.
3. Plot the relative frequency of the outcome $k = 4$, i.e., plot the ratio, $\frac{n_4}{n}$, for $n = 20, 40, 60, 80, 100$ trials.
4. Using the relative frequency interpretation estimate the following: (a) probability of obtaining a even number on any trial, (b) probability of obtaining a multiple of 3 on any trial.