Second Year - Term II
Systems & Biomedical Eng. Department
Cairo University

Spring Semester
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Biostatistics: Sheet 4 –
Random Sampling and
Sampling Distributions

1. The breakdown time of an insulating fluid between electrodes at 34 kV. The times, in minutes, are as follows: 0.19, 0.78, 0.96, 1.31, 2.78, 3.16, 4.15, 4.67, 4.85, 6.50, 7.35, 8.01, 8.27, 12.06, 31.75, 32.52, 33.91, 36.71, and 72.89.
   Calculate the sample mean, sample median, sample range, and sample standard deviation.

2. The following data are direct solar intensity measurements (watts/m2) on different days at a location in western desert: 562, 869, 708, 775, 775, 704, 809, 856, 655, 806, 878, 909, 918, 558, 768, 870, 918, 940, 946, 661, 820, 898, 935, 952, 957, 693, 835, 905, 939, 955, 960, 498, 653, 730, and 753.
   Calculate the sample mean and sample standard deviation.

3. The following data are the joint temperatures of the O-rings (°F) for each test firing or actual launch of the space shuttle rocket motor: 84, 49, 61, 40, 83, 67, 45, 66, 70, 69, 80, 58, 68, 60, 67, 72, 73, 70, 57, 63, 70, 78, 52, 67, 53, 67, 75, 61, 70, 81, 76, 79, 75, 76, 58, 31.
a. Compute the sample mean and sample standard deviation.
b. Set aside the smallest observation and recomputed the quantities in part (a). Comment on your findings.

4. The mean weight of an adult male is 170 pounds and the standard deviation is 15 pounds. Find the probability that the combined weight of 16 randomly chosen adults exceeds 2900 pounds.

5. The time it takes students in a cooking school to learn to prepare seafood gumbo is a random variable with a normal distribution where the average is 3.2 hours with a standard deviation of 1.8 hours.
   a. Find the probability that the average time it will take a class of 36 students to learn to prepare seafood gumbo is less than 3.4 hours.
   b. Find the probability that it takes one student between 3 and 4 hours to learn to prepare seafood gumbo.