1. The data in `scorest.txt` represent the scores that 50 students earned on a college qualification test. Use R expressions to do the followings.

   (a) Plot the histogram of the scores.

   (b) Calculate the sample mean, the sample standard deviation[1] and median of data.

   (c) The **mode** of a collection of observation is defined as the observed value with largest relative frequency. The mode is sometimes used as a center value. There can be more than one mode in a data set. Find the mode for the data.

   (d) The **coding** of a data set refers to the operation of subtracting (or adding) a constant to each observation and then dividing (multiplying) by another constant. The coding by subtracting the sample mean of data and dividing by the sample standard deviation is called *standardization* and the coded data is called *standardized data*. Standardize the data and calculate the mean and the variance of the standardized data.

2. A student buys a lottery ticket for $1. For every 1000 tickets sold, 2 bicycles are to be given away in a drawing.

   (a) What is the probability that the student will win a bicycle?

   (b) If each bicycle is worth $160, determine the student's expected gain.

3. It is anticipated that a new instructional method will more effectively improve the reading ability of elementary-school children than the standard method currently in use. To test this conjecture, 16 children are divided at random into two groups of 8 each. One group is instructed using the standard method and the other group is instructed using the new method. The children's scores on a reading test are found to be:

   Reading test scores
Standard	65	70	76	63	72	71	68	68
New	75	80	72	77	69	81	71	78

   (a) Analyze the data and make an inference about the difference of the population mean scores achieved using the standard and new methods of instruction.

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[1]Recall that the sample standard deviation is the squared root of the sample variance.