Part II

1. The object `Nile` contains 100 observations on the flow rate (in m^3 per year) of the Nile river.
   (a) (2 points) Write down the mean or average of these observations.
   (b) (2 points) Write down the median of these observations.
   (c) (4 points) Write down the R code required to obtain a histogram of Nile river flow observations with title "Histogram of Nile River Flow Rate" and x-axis label "River Flow Observations (in cubic meters)".
   (d) (3 points) Look at the `help` file on the `sort()` function to learn how to sort a vector in decreasing order. Then sort the `Nile` vector in decreasing order and write down the flow rate at the 15th and 25th observations.
   (e) (3 points) Look at the `help` file on the `order()` function. Which three elements of the `Nile` vector correspond to the three smallest flow observations?
   (f) (2 points) Compare the results you obtained above from the functions `order()` and `sort()`, and then explain what these two functions do, in your own words.

2. Download the file `NAvector.R` from Canvas. It contains a vector with some `NA`'s. (This file was created by using the `dump()` function.)
   (a) (1 point) Load the object `NAvector` into an R session using the `source()` function.
   (b) (3 points) Find out how many `NA`s are in the vector and assign this count to an object named `NAcount`.

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3. (a) (4 points) Create a data frame called `Manitoba.lakes` that contains the data listed below. (Your data frame should have the same row names and column names. Hint: see the help file for `row.names`.)

	elevation	area
Winnipeg	217	24387
Winnipegosis	254	5374
Manitoba	248	4624
SouthernIndian	254	2247
Cedar	253	1353
Island	227	1223
Gods	178	1151
Cross	207	755
Playgreen	217	657

   (b) (4 points) Find the standard deviation of the elevation of the lakes whose areas are greater than 1200.

4. Download the file `ex10.22.txt` from Canvas.
   (a) (2 points) Read the data from `ex10.22.txt` into R, assigning it to `tomatoes`. This data frame gives tomato yields at four levels of salinity, as measured by electrical conductivity (`EC`, in nmho/cm).
   (b) (2 points) Find the mean yield for each unique value of ECf, using the `aggregate` function.
   (c) (2 points) The third column of the `tomatoes` data frame is a factor representing the four different levels of `EC`. Change the four different levels of `ECf` to 1,2,3, and 4.