Written Homework 1

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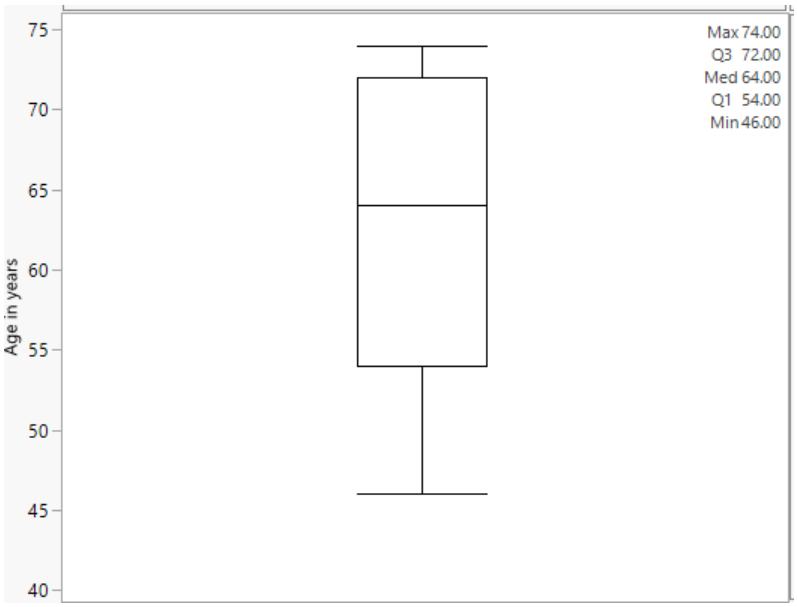
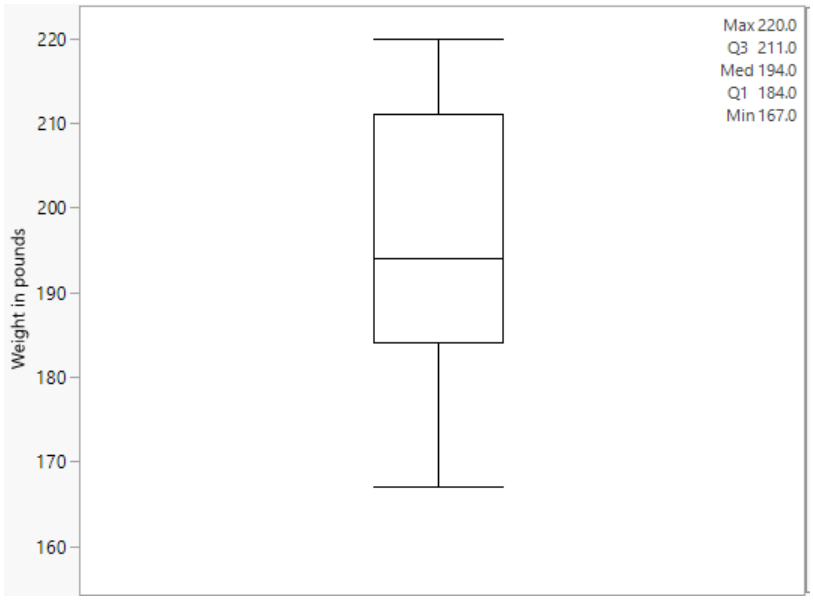
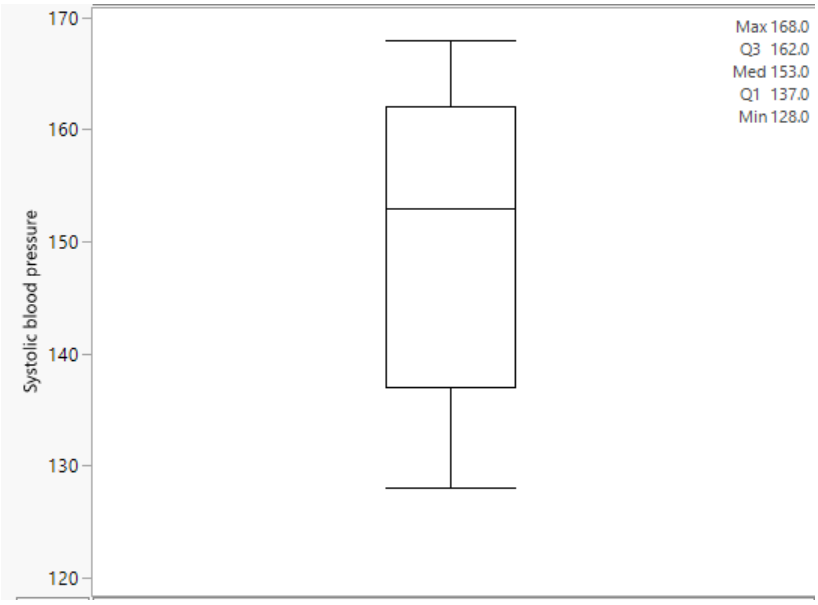
1. (a)
   - **Name of individual** is qualitative nominal
   - **Systolic blood pressure** is quantitative discrete (at least in this data set)
   - **Age in years** is qualitative discrete
   - **Weight in pounds** is qualitative discrete (at least in this data set where it is rounded, is usually a qualitative ordinal value)
   - **Smoking/Nonsmoking** is qualitative nominal
   - **Level of physical activity** is qualitative ordinal in this study (goes from bottom to top poor, normal, good, excellent)

(b) **Analysis 1**

Analysis 2







2. **I - Individual**

   The individual in this survey is the student. The surveryors are analyzing a trait that the S&T student has

   V - Variable

   The variable in this survey is the opinion on online classes. The student's preference on fully online classes is the piece of information the surveyors are recording

   P - Population

I believe the population is the S&T community, since the prompt mentions that the survey includes the entire S&T community. Even though this survey is only focusing on students, it most likely is just a part of a study focused on the S&T community as a whole. If it is not, then the population would just be students

P - Parameter

The parameter for this survey is the proportion of students who prefer fully online classes. Meaning they want to know that a student either prefers or does not prefer fully online classes, then keep a running tally of each to compare them

S - Sample

The sample, or subset of the population, that the surveyors chose was 100 students from S&T

S - Statistic

The statistic for this survey would be the proportion of S&T students (out of the 100 in the sample) who prefer fully online classes

3. (a) The **response variable** is the observed battery life that results from the battery being subjected to a certain material type and temperature

   (b) The **factors** are material type and temperature. The **factor levels** for material type are listed as material 1, 2, and 3, and the levels for the temerature are 15°F, 70°F, and 125°F

   (c) The number of **treatment combinations**, or different combination of factors is $3^2 = 9$, since there are 3 levels per factor, and two total factors. The **treatment conditions** are:

   MType 1 and 15°F, MType 1 and 70°F, MType 1 and 125°F
   MType 2 and 15°F, MType 2 and 70°F, MType 2 and 125°F
   MType 3 and 15°F, MType 3 and 70°F, MType 3 and 125°F

   (d) The number of **replications** total is the number of treatment combinations (9) times the number of replications each treatment combination recieves (4)

$$9 \times 4 = 36$$

which gives us 36 total replications