Lab 2 - Describing Distributions with Numbers
Objectives: Numerical Summaries and Boxplots

A (20 pts) The Density of the Earth (Data Set: EARTHDENSITY – on website)
In 1798 the English scientist Henry Cavendish measured the density of the earth by careful work with a torsion balance. The variable recorded was the density of the earth as a multiple of the density of water. Here are Cavendish's 29 measurements.

5.50	5.61	4.88	5.07	5.26	5.55	5.36	5.29	5.58	5.65
5.57	5.53	5.62	5.29	5.44	5.34	5.79	5.10	5.27	5.39
5.42	5.47	5.63	5.34	5.46	5.30	5.75	5.68	5.85	

1) (6 points) Find the five-number summary for these data.
2) (6 points) Make a boxplot.
3) (6 points) Find the mean $\bar{x}$ and standard deviation s. Is the median quite close to the mean?
4) (2 points) What is your estimate of the density of the earth based on these measurements?

B (20 pts). 1.73 Blood proteins in children from Papua New Guinea.
(Data Set: ex01-73crp.txt – from book) C-reactive protein (CRP) is a substance that can be measured in the blood. Values increase substantially within 6 hours of an infection and reach a peak within 24 to 48 hours. In adults, chronically high values have been linked to an increased risk of cardiovascular disease. In a study of apparently healthy children aged 6 to 60 months in Papua New Guinea, CRP was measured in 90 children.[29] The units are milligrams per liter (mg/l). Here are the data from a random sample of 40 of these children:

0.00	3.90	5.64	8.22	0.00	5.62	3.92	6.81	30.61	0.00
73.20	0.00	46.70	0.00	0.00	26.41	22.82	0.00	0.00	3.49
0.00	0.00	4.81	9.57	5.36	0.00	5.66	0.00	59.76	12.38
15.74	0.00	0.00	0.00	0.00	9.37	20.78	7.10	7.89	5.53

1) (5 points) Find the five-number summary.
2) (5 points) Make a boxplot. Is the distribution left or right-skewed?
3) (5 points) Are there any outliers according to 1.5 IQR rule? Justify your answer.
4) (5 points) Make a histogram of the data. Do you agree with the rule's suggestions about the outliers?