Answers for Homework 1 - STAT451

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1 Exercise 64:

Python source code: ex64.py

Viscosity	**Wear**					
20.4	58.8	30.8	27.3	29.9	17.7	76.5
30.2	44.5	47.1	48.7	41.6	32.8	18.3
89.4	73.3	57.1	66.0	93.8	133.2	81.1
252.6	30.6	24.2	16.6	38.9	28.7	23.6

Results:

Viscosity	**Mean** ($\bar{x}$)	**Standard Deviation** (s)	**Coefficient of Variation** ($100s/\bar{x}$)
20.4	40.167	22.497	56.011
30.2	38.833	11.519	29.663
89.4	84.083	27.156	32.296
252.6	27.100	7.549	27.857

2 Exercise 65:

Class	81 - <83	83 - <85	85 - <87	87 - <89	89 - <91
Frequency	6	7	17	30	43
Class	91 - <93	93 - <95	95 - <97	97 - <99	
Frequency	28	22	13	3	

2.1 a) Construct a histogram based on relative frequencies.

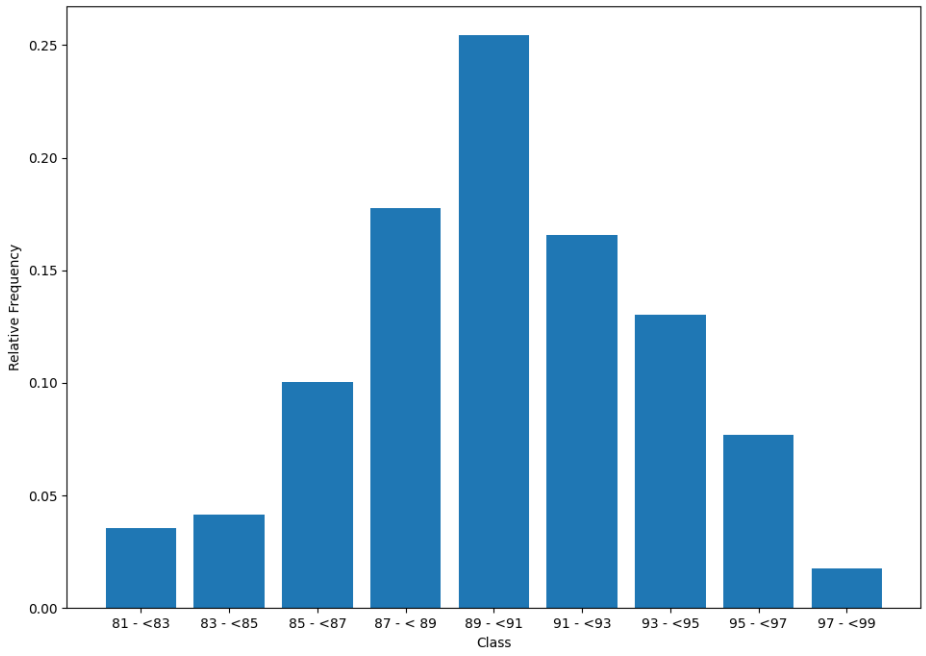

Figure 1: Histogram based on relative frequencies

Sum of frequencies: 169

2.2 b) What proportion of the strength observations are at least 85? Less than 95?

- At least 85%:
  - Total frequency: $17 + 30 + 43 + 28 + 22 + 13 + 3 = 156$
  - Proportion: $\frac{156}{169} = 0.9237$
- Less than 95%:
  - Total frequency: $6 + 7 + 17 + 30 + 43 + 28 + 22 =$
  - Proportion: $\frac{153}{169} = 0.9053$

2.3 c) Roughly what proportion of the observations are less than 90?

- Total frequency: $6 + 7 + 17 + 30 = 60$
- Proportion: $\frac{60}{169} = 0.3550$