Math 160
Professor Busken
2.1 Frequency Distributions **Name:** Key

1. Write the Procedure for Constructing a Frequency Distribution here:

(1) Determine the number of classes (should be between 5 and 20)

(2) Calculate the class width (round up).

$$\text{class width} = \frac{\text{max data value} - \text{min data value}}{\text{the number of classes}}$$

(3) Choose the minimum data value, or a convenient value below it as the first lower class limit

(4) Using the first lower class limit and class width, proceed to list the other lower class limits.

(5) List the lower class limits in a vertical column and proceed enter the upper class limits.

(6) Take each individual data value and put a tally mark in the appropriate class. Add the tally marks to get the frequency.

A ***Relative Frequency Distribution Table*** includes the same class limits as a frequency distribution, but the frequency of a class is replaced with a percentage frequency (a percent). To find each percentage frequency use the formula

$$\textit{percentage frequency} = \frac{\textit{class frequency}}{\textit{sum of all frequencies}} \times 100\%$$

Use table 2.2 to get class frequencies

Make a Relative Frequency Distribution Table with the pulse rates data.

class1 % freq. $= \frac{12}{40} \cdot 100\% = 30\%$

class2 % freq. $= \frac{14}{40} \cdot 100\% = 35\%$

class3 % freq. $= \frac{11}{40} \cdot 100\% = 27.5\%$

Pulse Rate	Relative Frequency
60–69	30%
~~70–79~~	35%
80–89	27.5%
~~90–99~~	2.5%
100–109	2.5%
110–119	0
120–129	2.5%

The ***cumulative frequency*** for a class is the sum of the frequencies for that class and all previous classes.

Construct a Cumulative Frequency Distribution Table with the pulse rates data.

we use table 2-2 (the original frequency distribution table) to sum up the cumulative frequencies

Pulse Rate	Cumulative Frequency
less than 70	12
less than 80	26
less than 90	37
less than 100	38
less than 110	39
less than 120	39
less than 130	40

Consider the frequency distribution table below. Identify the class width, class midpoints, and class boundaries.

Tar (mg) in Non-Filtered Cigarettes	Frequency
10–13	1
14–17	0
18–21	15
22–25	7
26–29	2

class width: the difference between two consecutive lower class limits; $14-10=4$

class midpoints: add the lower class limit to the upper class limit, then divide the sum by 2. class midpoints $\{11.5, 15.5, 19.5, 23.5, 27.5\}$

class boundaries: are numbers that separate the classes.

class boundaries $\{13.5, 17.5, 21.5, 25.5\}$