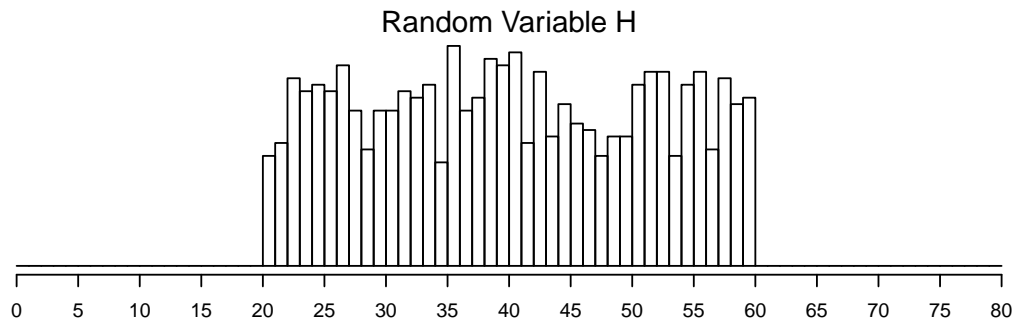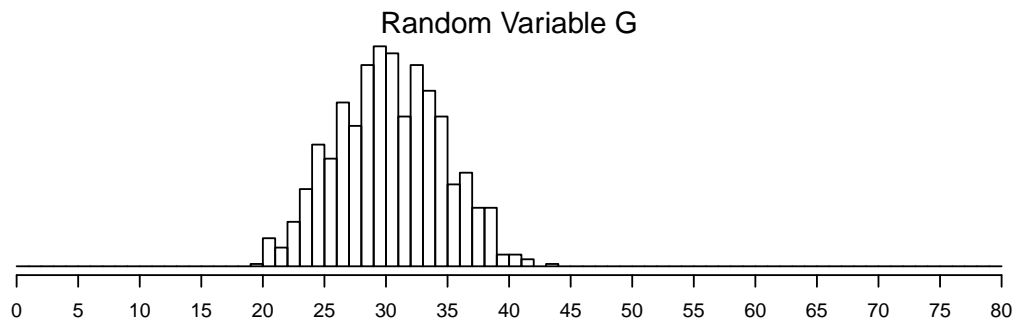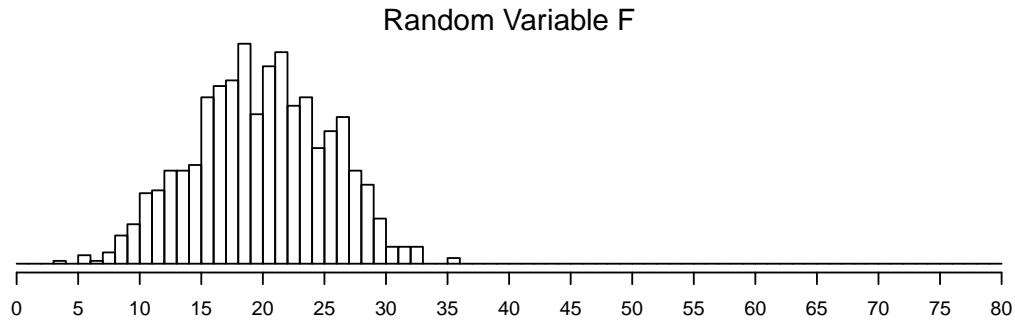1. **Problem**

   Three random variables (F, G, and H) were measured 1000 times each. The resulting histograms show the three distributions.

   Random Variable F

   Random Variable G

   Random Variable H

   (a) Which distribution has the highest mean? (F, G, or H)

   (b) Which distribution has the lowest mean? (F, G, or H)

   (c) Which distribution has the largest standard deviation? (F, G, or H)

   (d) Which distribution has the smallest standard deviation? (F, G, or H)

2. **Problem**
   From a very large population, a small sample of measurements was taken.

132	137	133	145	139	136

   Please calculate the average absolute deviation using the following formula:

   $$\text{AAD} = \frac{\sum |x - \bar{x}|}{n}$$

3. **Problem**

A continuous random variable X was measured 22 times. The sorted measurements are shown below.

75.34	80.18	84.64	85.27	88.76	95.68	99.53	101.9	104	116.7
117.9	118.9	119	119.4	121.2	122.5	124	124	124.3	124.8
125.8	127.7								

The total of the measurements is 2401.5.

(a) Determine the percentile rank of the measurement 117.9. In other words, determine what percent of data are less than or equal to 117.9.

(b) Determine the measurement corresponding to a percentile rank of 0.364. In other words, determine x such that 36.4% of the data are less than or equal to x.

(c) Determine the mean of the measurements.

(d) Determine the median of the measurements.

4. **Problem**
   From a very large population, a small sample of measurements was taken.

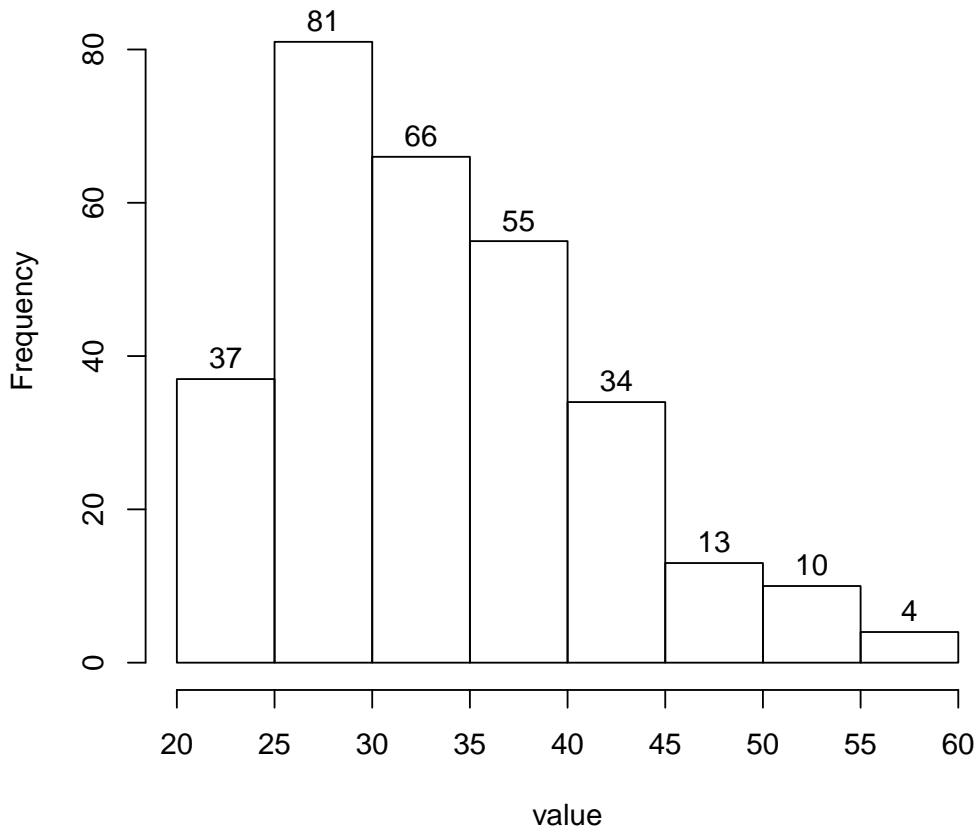 | 90 | 87 | 78 | 108 | 102 |
   |----|----|----|-----|-----|

   Please calculate the (Bessel corrected) sample standard deviation using the following formula:

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

5. **Problem**
   A continuous random variable was measured 300 times. The resulting histogram is shown below.

Histogram of data

(a) Describe the overall shape of the distribution. (symmetric mound, skew left, skew right, uniform, or bimodal)

(b) Estimate the range of the distribution (range = max-min).

(c) What percent of the measurements are greater than 40?

(d) What percent of the measurements are greater than 45?

(e) What percent of the measurements are between 40 and 45?

(f) What percent of the measurements are within 5 from 40? In other words, what percent of measurements satisfy $|x - 40| \leq 5$?

(g) Of the measurements greater than 40, what percent are greater than 45?

(h) Estimate the value of the 61.33th percentile. In other words, determine a value such that 61.33% of the measurements are less than or equal to it.

6. **Problem**

A continuous random variable was measured 250 times. The resulting frequency distribution is shown below.

class	frequency
35.2–35.4	9
35.4–35.6	13
35.6–35.8	32
35.8–36	45
36–36.2	48
36.2–36.4	43
36.4–36.6	32
36.6–36.8	20
36.8–37	4
37–37.2	1
37.2–37.4	3

(a) Describe the overall shape of the distribution. (symmetric mound, skew left, skew right, uniform, or bimodal)

(b) Estimate the range of the distribution (range = max-min).

(c) What percent of the measurements are greater than 36.8?

(d) What percent of the measurements are less than 37.2?

(e) What percent of the measurements are between 36.8 and 37.2?

(f) What percent of the measurements are within 0.2 of 35.8? In other words, what percent of measurements satisfy $|x - 35.8| \leq 0.2$?

(g) Of the measurements greater than 36.8, what percent are less than 37.2?

(h) Estimate the value of the 76th percentile. In other words, determine a value such that 76% of the measurements are less than or equal to it.

7. **Problem**
   Please make a frequency table and a dot plot from the following (unsorted) data.

2	8	8	6	2	4
2	8	2	3	1	3
1	2	7	2	5	5
4	6	6	6	8	4