Freq-distn $\Rightarrow$ Construct the Histogram. [Skewness of the Distribution]

$$\mu_o < \tilde{\mu} < \mu$$
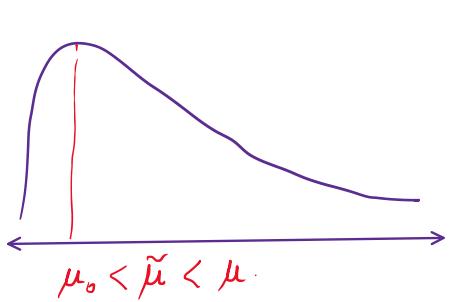
Left-skewed / Positively skewed distribution.

$$\mu = \tilde{\mu} = \mu_o$$
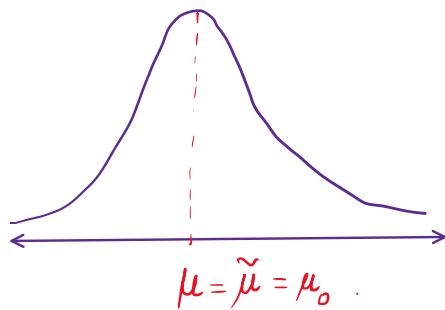
Symmetrical distribution.

$$\mu > \tilde{\mu} > \mu_o$$
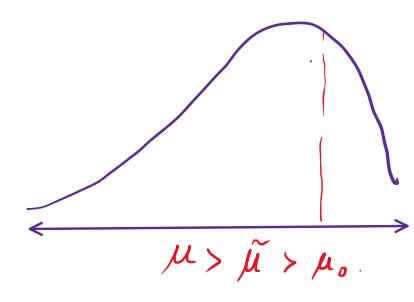
Right-skewed / Negatively skewed distribution

μ = Mean, $\tilde{\mu}$ = Median, μ_o = Mode.

No. of bins = $1 + 3.3 \times \log_{10}(31) = 5.92 \simeq 6$.

Lowest $x = 36$.

$\hookrightarrow$ No. of intervals = 5

Highest $x = 99$.

Length of each interval = $\dfrac{99 - 36}{5} = \dfrac{63}{5} = 12 \ldots$

36 - 48
48 - 60
60 - 72
72 - 84
84 - 99

How old is the oldest person you know who is currently alive? 31 responses from a statistics class were as follows.

(75) 90, 60, 95, 85, 84, 76, 74, 92, 62, 83, 80, 90, 65, 72, 79, 36, 78, 65, 98, 70, 88, 99, 60, 82, 65, 79, 76, 80, 52, 75

   (i) Draw a histogram for the age data.
   (ii) Plot Kernel density estimates on the histogram.
   (iii) Plot the empirical distribution function for the age data

$$\therefore \quad \left(\hat{f}(x)\right) = \frac{1}{2nh}\left\{\#\, X_i \in (x-h, x+h)\right\}$$

$n = 5$.

$h = 12$.

$$\hat{f}(75) = \frac{1}{2 \times 5 \times 12}\left\{\#\, X_i \in (75-12, \; 75+12)\right\}$$

$$= \frac{1}{120}\left\{\#\, X_i \in (63, \; 87)\right\}.$$

$$= \frac{19}{120} =$$

$$F_n(x) = \frac{1}{n}\left\{\#\, X_i \leq x\right\}$$

$$F_n(75) = \frac{1}{31}\left\{\#\, X_i \leq 75\right\}$$