

Assignment_7.11476

Problem Statement 1:

$$\text{Mean} =: \bar{X} = \frac{1}{20} \sum X_i = \frac{1}{20} (6 + 7 + 5 + 7 + 7 + \dots + 8) = \frac{137}{20} = \mathbf{6.85}$$

Median is given by the number in the middle of the ordered data set.

In this case there are two in the middle and will average the two numbers i.e.

4 4 5 5 6 6 6 6 7 7 7 7 7 8 8 8 8 9 9 10

$$\text{Median} = \frac{1}{2} (7 + 7) = 7$$

Mode is the number which has the highest frequency

$$\text{Mode} = 7$$

$$\text{Standard Dev} = \sigma = \sqrt{\sum \frac{(x - \bar{X})^2}{n}} = 1.631$$

Problem Statement 2:

$$\text{Mean} =: \bar{X} = \frac{1}{35} \sum X_i = \frac{1}{35} (28 + 122 + 217 + \dots + 109) = 107.51$$

Median is given by the number in the middle of the ordered data set below

28 40 68 70 75 75 75 75 80 86 89 90 90 97 97 100 100 **100** 104 104 109 113 120 120 120 122 123 123 130 140 145 170 174
194 217

$$\text{Median} = 100$$

Mode is the number which has the highest frequency

$$\text{Mode} = 75$$

$$\text{Standard Dev} = \sigma = \sqrt{\sum \frac{(x - \bar{X})^2}{n}} = 39.339$$

Problem Statement 3:

Mean

$$\begin{aligned} E[X] &= \sum X_i f(X) = 0(0.09) + 1(0.15) + 2(0.40) + 3(0.25) + 4(0.10) + 5(0.01) \\ &= 0 + 0.15 + 0.80 + 0.75 + 0.40 + 0.05 \\ &= 2.15 \end{aligned}$$

$$\text{Variance} = E(x)^2 - E^2(x)$$

$$E(x)^2 = 0(0.09) + 1(0.15) + 4(0.40) + 9(0.25) + 16(0.10) + 25(0.01) = 5.85$$

$$\text{Variance} = 5.85 - 4.6225 = \mathbf{1.23}$$

Problem Statement 4:

The variable of interest D is not included in the PROBABILITY DENSITY FUNCTION