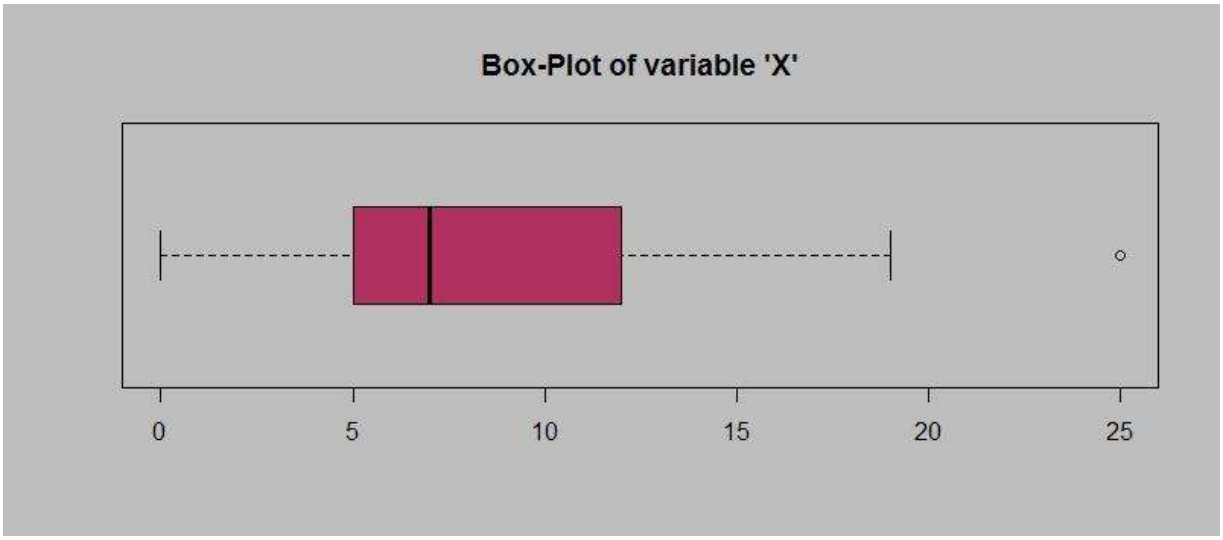
Topics: Descriptive Statistics and Probability

1. Look at the data given below. Plot the data, find the outliers and find out μ, σ, σ^2

Name of company	Measure X
Allied Signal	24.23%
Bankers Trust	25.53%
General Mills	25.41%
ITT Industries	24.14%
J.P.Morgan & Co.	29.62%
Lehman Brothers	28.25%
Marriott	25.81%
MCI	24.39%
Merrill Lynch	40.26%
Microsoft	32.95%
Morgan Stanley	91.36%
Sun Microsystems	25.99%
Travelers	39.42%
US Airways	26.71%
Warner-Lambert	35.00%

2.



Answer the following three questions based on the box-plot above.

(i) What is inter-quartile range of this dataset? (please approximate the numbers) In one line, explain what this value implies .

ANS

Approximate inter quartile range is

The first quartile (Q1) = 5

The third quartile (Q3) = 12

INTER QUARTILE RANGE(IQR) = Q1 – Q2 = 5-12 = 7

Value implies

(ii) What can we say about the skewness of this dataset?

ANS

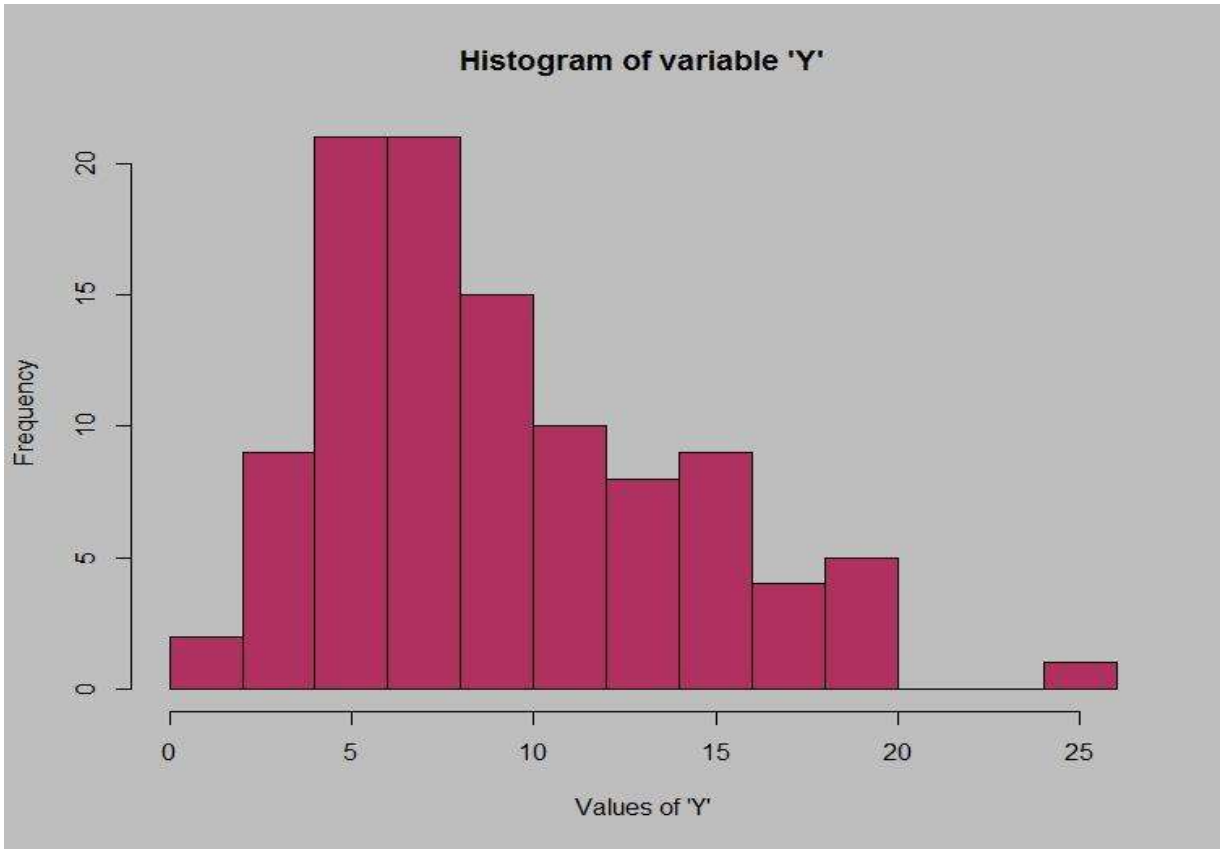
Positive skewness

(iii) If it was found that the data point with the value 25 is actually 2.5, how would the new box-plot be affected?

ANS

Their will not be any change in skew their maybe change in the box-plot but it will not affect the box plot

3.



Answer the following three questions based on the histogram above.

(i) Where would the mode of this dataset lie?

ANS

Mode lise 4 to 10

(ii) Comment on the skewness of the dataset.

ANS

Right skew because mode > median > mean

(iii) Suppose that the above histogram and the box-plot in question 2 are plotted for the same dataset. Explain how these graphs complement each other in providing information about any dataset.

ANS

The both above graph are a right skew

Both graph median will be same

4. AT&T was running commercials in 1990 aimed at luring back customers who had switched to one of the other long-distance phone service providers. One such commercial shows a businessman trying to reach Phoenix and mistakenly getting Fiji, where a half-naked native on a beach responds incomprehensibly in Polynesian. When asked about this advertisement, AT&T admitted that the portrayed incident did not actually take place but added that this was an enactment of something that "could happen." Suppose that one in 200 long-distance telephone calls is misdirected. What is the probability that at least one in five attempted telephone calls reaches the wrong number? (Assume independence of attempts.)

   ANS

   1 in 200 long distance is misdirected
   Probability of success rate (= 199/200 = 0.995
   Probability of misdirected = 1/200 = 0.005
   Probability that at least one in five attempted
   No of calls = 5
   Probability = (Total no of probability of misdirected) / (Total no of probability)
   Probability = 5 / 200 = 0.025

5. Returns on a certain business venture, to the nearest $1,000, are known to follow the following probability distribution

x	P(x)
-2,000	0.1
-1,000	0.1
0	0.2
1000	0.2
2000	0.3
3000	0.1

   (i) What is the most likely monetary outcome of the business venture?

   ANS

   The most monetary outcome of the business venture is 2000 and it have higher return ratio of 0.3

   (ii) Is the venture likely to be successful? Explain

   ANS

   Yes probability of x>0 is higher than x<0 so the venture will be having higher ratio of successful

   (iii) What is the long-term average earning of business ventures of this kind? Explain

   ANS

   The long-term average is Expected value = Sum (X * P(X)) = 800$ which means on an average the returns will be + 800$

   (iv) What is the good measure of the risk involved in a venture of this kind? Compute this measure

   ANS

   Var (X) = E(X^2) –(E(X))^2
   = 2800000 – 800^2
   = 2160000