Q1) Identify the Data type for the Following:

Activity	Data Type
Number of beatings from Wife	Discrete
Results of rolling a dice	Discrete
Weight of a person	Continuous
Weight of Gold	Continuous
Distance between two places	Continuous
Length of a leaf	Continuous
Dog's weight	Continuous
Blue Color	Nominal
Number of kids	Discrete
Number of tickets in Indian railways	Discrete
Number of times married	Discrete
Gender (Male or Female)	Nominal

Q2) Identify the Data types, which were among the following

Nominal, Ordinal, Interval, Ratio.

Data	Data Type
Gender	Nominal
High School Class Ranking	Ordinal
Celsius Temperature	Ratio
Weight	Ratio
Hair Color	Nominal
Socioeconomic Status	Ordinal
Fahrenheit Temperature	Ratio
Height	Ratio
Type of living accommodation	Nominal
Level of Agreement	Ordinal
IQ(Intelligence Scale)	Ratio
Sales Figures	Ratio
Blood Group	Nominal
Time Of Day	Ratio
Time on a Clock with Hands	Ratio
Number of Children	Nominal
Religious Preference	Nominal

Barometer Pressure	ratio
SAT Scores	Ratio
Years of Education	Nominal

Q3) Three Coins are tossed, find the probability that two heads and one tail are obtained?

3/8

Q4) Two Dice are rolled, find the probability that sum is

a) Equal to 1 = **0**
b) Less than or equal to 4 = **1/12**
c) Sum is divisible by 2 and 3 = **66.6%**

Q5) A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?

10/21

Q6) Calculate the Expected number of candies for a randomly selected child

Below are the probabilities of count of candies for children (ignoring the nature of the child-Generalized view)

CHILD	Candies count	Probability
A	1	0.015
B	4	0.20
C	3	0.65
D	5	0.005
E	6	0.01
F	2	0.120

Child A – probability of having 1 candy = 0.015.

Child B – probability of having 4 candies = 0.20

3.09

Q7) Calculate Mean, Median, Mode, Variance, Standard Deviation, Range & comment about the values / draw inferences, for the given dataset

- For Points,Score,Weigh>
  Find Mean, Median, Mode, Variance, Standard Deviation, and Range and also Comment about the values/ Draw some inferences.

Use Q7.csv file

For answer please refer to the jupyter notebook file

Q8) Calculate Expected Value for the problem below

a) The weights (X) of patients at a clinic (in pounds), are
108, 110, 123, 134, 135, 145, 167, 187, 199

Assume one of the patients is chosen at random. What is the Expected Value of the Weight of that patient?

Ans: 145.33

Q9) Calculate Skewness, Kurtosis & draw inferences on the following data

Cars speed and distance

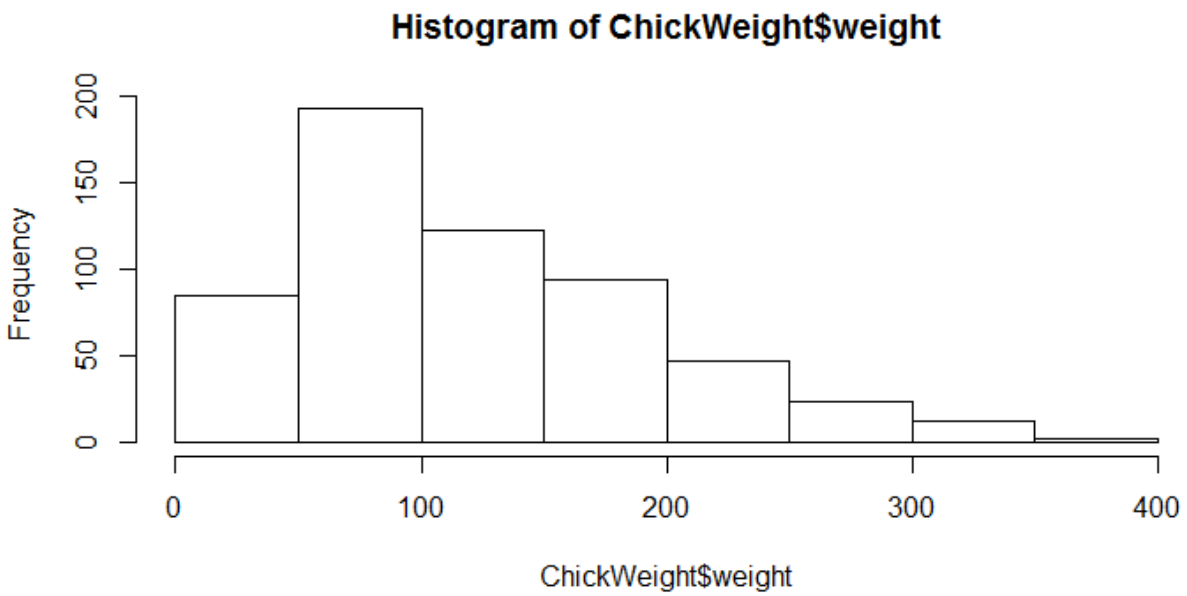
Use Q9_a.csv

SP and Weight(WT)

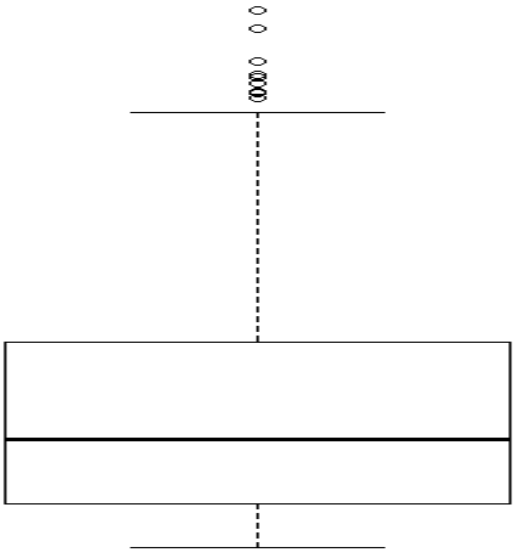
Use Q9_b.csv

For answer please refer to the jupyter notebook file

Q10) Draw inferences about the following boxplot & histogram



- Right skewed
- most of the chick weight is between 50-120
- 50% of chick weight is between 50-170



Since it is right skewed most of the outliers are on the top

Q11) Suppose we want to estimate the average weight of an adult male in Mexico. We draw a random sample of 2,000 men from a population of 3,000,000 men and weigh them. We find that the average person in our

sample weighs 200 pounds, and the standard deviation of the sample is 30 pounds. Calculate 94%,98%,96% confidence interval?

For answer please refer to the attached jupyter notebook file

Q12) Below are the scores obtained by a student in tests

34,36,36,38,38,39,39,40,40,41,41,41,41,42,42,45,49,56

1) Find mean, median, variance, standard deviation.
2) What can we say about the student marks?

For answer please refer to the attached jupyter notebook file

Q13) What is the nature of skewness when mean, median of data are equal?

Symmetrical distribution

Q14) What is the nature of skewness when mean > median ?

Distribution is positively skewed

Q15) What is the nature of skewness when median > mean?

Distribution is negatively skewed

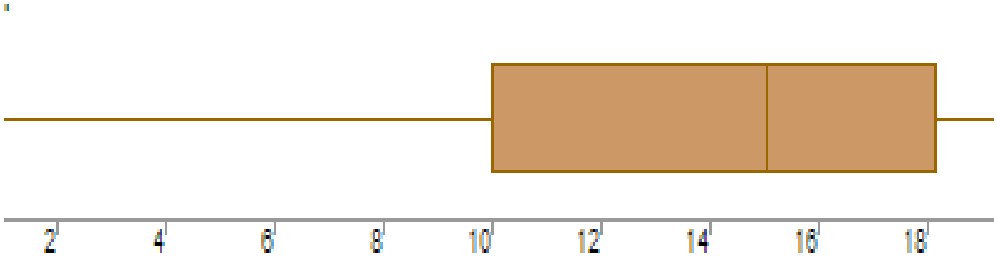
Q16) What does positive kurtosis value indicates for a data ?

Positive kurtosis indicates a distribution where more of the numbers are located in the tails of the distribution instead of around the mean

Q17) What does negative kurtosis value indicates for a data?

Negative kurtosis indicates a distribution where more number are located around the mean instead of around tails

Q18) Answer the below questions using the below boxplot visualization.



What can we say about the distribution of the data?

What is nature of skewness of the data?

Distribution is right skewed

What will be the IQR of the data (approximately)?

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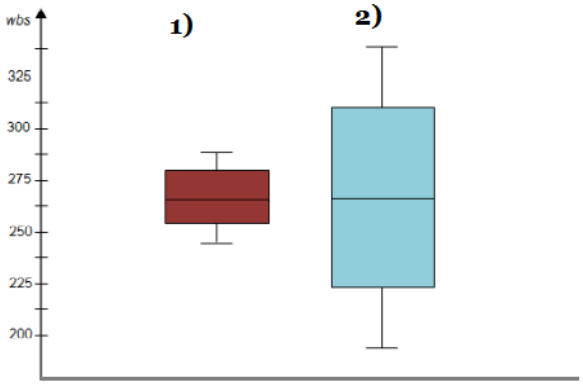
Q19) Comment on the below Boxplot visualizations?



Normal distribution (perfectly Symmetric)

Draw an Inference from the distribution of data for Boxplot 1 with respect Boxplot 2.

Q 20) Calculate probability from the given dataset for the below cases

Data _set: Cars.csv

Calculate the probability of MPG of Cars for the below cases.

MPG <- Cars$MPG

a. P(MPG>38) = 0.347
b. P(MPG<40) = 0.729
c. P (20<MPG<50) = $1.24*10^{-5}$

For output please refer the attached jupyter notebook

Q 21) Check whether the data follows normal distribution

a) Check whether the MPG of Cars follows Normal Distribution
Dataset: Cars.csv

b) Check Whether the Adipose Tissue (AT) and Waist Circumference(Waist) from wc-at data set follows Normal Distribution
Dataset: wc-at.csv

For output please refer the attached jupyter notebook

Q 22) Calculate the Z scores of 90% confidence interval,94% confidence interval, 60% confidence interval

For output please refer the attached jupyter notebook

Q 23) Calculate the t scores of 95% confidence interval, 96% confidence interval, 99% confidence interval for sample size of 25

Q 24**)** A Government company claims that an average light bulb lasts 270 days. A researcher randomly selects 18 bulbs for testing. The sampled bulbs last an average of 260 days, with a standard deviation of 90 days. If the CEO's claim were true, what is the probability that 18 randomly selected bulbs would have an average life of no more than 260 days

Hint:

rcode → pt(tscore,df)

df → degrees of freedom

For output please refer the attached jupyter notebook