|  |  |
| --- | --- |
| 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 | Discrete |
| Number of kids | Discrete |
| Number of tickets in Indian railways | Discrete |
| Number of times married | Discrete |
| Gender (Male or Female) | Discrete |

**Q1) Identify the Data type for the Following:**

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

**Nominal, Ordinal, Interval, Ratio.**

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

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

**Ans--**

= Probability = Favourable outcomes/Total no of outcomes

= {(HHH),(HHT),(HTH),(THH),(HTT),(THT),(TTH),(TTT)}

= 3/8

= 0.375

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

1. **Equal to 1**
2. **Less than or equal to 4**
3. **Sum is divisible by 2 and 3**

**Ans-**

The set of possible outcomes when we roll a die are {1, 2, 3, 4, 5, 6}

So, when we roll two dice there are 6 × 6 = 36 possibilities.

When we roll two dice, the possibility of getting number 4 is (1, 3), (2, 2), and (3, 1) So,

* The number of favourable outcomes = 3
* Total number of possibilities = 36
* Probability = The number of favourable outcomes / Total number of possibilities = 3 / 36 = 1/12.
* Thus, 1/12 is the probability of rolling two dice and getting a sum of 4.

**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?**

**Ans-** Total number of balls = (2R + 3G + 2B) = 7  
Let S be the sample space.  
Then, n(S) = Number of ways of drawing 2 balls out of 7  
=7C2​  
=(2×1)(7×6)​  
=21  
Let E = Event of drawing 2 balls, none of which is blue.  
∴n(E)= Number of ways of drawing 2 balls out of (2 + 3) balls.  
=5C2​  
=(2×1)(5×4)​  
=10  
∴P(E)=n(S)n(E)​=21/10​

**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

**Ans –** Expected number of candies for a randomly selected child

=  1 \* 0.015  + 4\*0.20   + 3 \*0.65  + 5\*0.005  + 6 \*0.01  + 2 \* 0.12

= 0.015 + 0.8  + 1.95 + 0.025 + 0.06 + 0.24

=   3.090

***# # # Que from (7) to (9) and (11, 12, and 20 to 24 is in python file***

**Q10) Draw inferences about the following boxplot & histogram**



**Histogram Inference ----**

1. Chick Weight data is positive skewed or right skewed
2. More than 50% Chick weight is between 50-150.
3. Most of the click weight is between 50-100

**Boxplot inference---** This is also right skewed and outliers are at upper side.



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

**Answer**- When the distribution is symmetric then the mean is equal to the median so the skewness is zero.

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

**Answer**- When the mean>median then the skewness is positively distributed.

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

**Answer** - When the median>mean then the skewness is negatively distributed.

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

**Answer** - Positive values of kurtosis indicate that distribution is peaked and possesses thick tails.

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

**Answer** - Negative excess values of kurtosis indicate that a distribution is flat and has thin tails.

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



**What can we say about the distribution of the data?**

**Ans---** This boxplot is in the distributed form of De-assigned.

**What is nature of skewness of the data?**

**Ans---**Left Skewed

**What will be the IQR of the data (approximately)?   
Ans---** Q3 – Q1 = 18 – 10 = 8

**Q19) Comment on the below Boxplot visualizations?**



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

**Answer - ---**

The boxplot 1) range is 3

The boxplot 2) range is 1.5