Q1. What is a probability distribution, exactly? If the values are meant to be random, how can you predict them at all?

Answer:

The distribution of a random variable is described by a probability distribution, which also indicates which values are more and less likely to occur. We can forecast the result in terms of probability based on the historical data and the occurrences of the random event.

Q2. Is there a distinction between true random numbers and pseudo-random numbers, if there is one? Why are the latter considered “good enough”?

Answer:

True random numbers (TRNs) and pseudo-random numbers (PRNs) vary in that TRNs are unpredictably created by physical processes, but PRNs are entirely produced by computer methods. The PRNs are adequate since they have a uniform distribution and their source is an erratic and unknown seed.

Q3. What are the two main factors that influence the behaviour of a "normal" probability distribution?

Answer:

The mean and the variance are the two factors that determine a normal distribution. A standard normal distribution is a normal distribution with a mean of 0 and a standard deviation of 1.

Q4. Provide a real-life example of a normal distribution.

Answer:

Population height is a real-life example of a normal distribution.

Q5. In the short term, how can you expect a probability distribution to behave? What do you think will happen as the number of trials grows?

Answer:

The variation will be high if the trails are few. The variance will decrease as the number of trials rises.

Q6. What kind of object can be shuffled by using random.shuffle?

Answer:

* random.shuffle can be used to shuffle list, string, and tuple objects

Q7. Describe the math package's general categories of functions.

Answer:

The general categories of functions in math packages are:

-> Trigonometric functions

-> Quadratic functions

-> Exponential functions

-> Hyperbolic functions

-> Periodic functions

-> Arithmetic functions

-> Logarithimic functions

-> Conversions to Integer

Q8. What is the relationship between exponentiation and logarithms?

Answer:

* The exponential function is given by ƒ(x) = ex and the logarithmic function is given by f(x) = logax
* The logarithmic function is the inverse of the exponential functions.

Q9. What are the three logarithmic functions that Python supports?

Answer:

* log2(x) -> this is used to obtain the base-2 logarithm of a given number x
* log10(x) -> this is used to obtain the base-10 logarithm of a given number x
* log1p(x) -> this is used to calculate natural logarithmic value of (1 + x)