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

Ans. A probability distribution is a list of all of the possible outcomes of a random variable, along with its corresponding probability values. A probability distribution links each outcome of a random variable or process with its probability of occurrence.

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

Ans. The difference between true random number generators(TRNGs) and pseudo-random number generators(PRNGs) is that TRNGs use an unpredictable physical means to generate numbers (like atmospheric noise), and PRNGs use mathematical algorithms (completely computer-generated). PRNGs can be portable to different computers and languages. Their implementations are easy to validate. They have a mathematical security definition, and it's easy to make fast PRNGs that experimentally match it (on the other hand, we don't know how to prove that).

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

Ans. Normal Probability Distribution are influenced by two factors mean and the variance.

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

Ans. A Real-life example of a normal distribution are heights or blood pressure measurements.

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?

Ans. Variance will decrease with number of trials.

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

Ans. lists (list), strings (str) and tuples (tuple) objects can be shuffled by using random.shuffle.

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

Ans. The Math package's general categories of functions 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?

Ans. Exponentiation and logarithms are inverse of each other.

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

Ans. The Three Logarithmic Functions that Python supports are:

log2(x) - logarithmic value of x to base 2

log10(x) - logarithmic value of x to base 10

log1p(a) - This function is used to compute logarithm(1+a) .