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

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”?

Random is “truly random” - completely unpredictable. What comes before gives you no indication of what will come next whatsoever. Pseudorandom sequences meet the statistical descriptions of randomness, but in fact arise from an algorithm, such that you can predict every single value

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

*The* normal *distribution is a continuous* probability distribution *that is symmetrical around its mean with most values near the central peak.*

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

A fair rolling of dice is also a good example of normal distribution. In an experiment, it has been found that when a dice is rolled 100 times, chances to get '1' are 15-18% and if we roll the dice 1000 times, the chances to get '1' is, again, the same, which averages to 16.7% (1/6).

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?

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

The shuffle() method takes a sequence, like a list, and reorganize the order of the items

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

Based on the domain, the types of functions are **algebraic, exponential, logarithmic, and trigonometric**. The functions based on the range are modulus, rational, signum, even and odd, periodic, greatest integer, smallest integer, inverse and composite functions.

Q8. What is the relationship between exponentiation and logarithms?

An exponential function has the form ax, where a is a constant; examples are 2x, 10x, ex. **The logarithmic functions are the inverses of the exponential functions**, that is, functions that "undo'' the exponential functions, just as, for example, the cube root function "undoes'' the cube function: 3√23=2.

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

* log2(x)
* log10(x)
* log1p(x)