1)What does symmetric distribution mean?

A symmetric distribution is a type of distribution where the left side of the distribution mirrors the right side. a symmetric distribution is a distribution in which the left and right sides mirror each other.

The most well-known symmetric distribution is the normal distribution, which has a distinct bell-shape. For symmetric distributions, the skewness is zero. In a symmetrical distribution, the mean, median, and mode are all equal.

2) What is left skewed distribution and right skewed distribution?

A left-skewed distribution has a long left tail. Left-skewed distributions are also called negatively-skewed distributions. That's because there is a long tail in the negative direction on the number line. The mean is also to the left of the peak.

A right-skewed distribution has a long right tail. Right-skewed distributions are also called positive-skew distributions. That's because there is a long tail in the positive direction on the number line. The mean is also to the right of the peak.

3) Where are long tailed distributions used?

A long tail distribution has tails that taper off gradually rather than drop off sharply. They are a subset of heavy-tailed distributions. Commerce and marketing schemes often find that there sales can best be modelled by long tail distributions. For instance, an internet store may have certain items with very high sales (modelled by the center of the distribution curve) and a large number of items with much lower sales (modeled by the long tail).

4) What is the central limit theorem?

The central limit theorem states that if you have a population with mean μ and standard deviation σ and take sufficiently large random samples from the population with replacement , then the distribution of the sample means will be approximately normally distributed. This will hold true regardless of whether the source population is normal or skewed, provided the sample size is sufficiently large (usually $n > 30$).

5) What are observational and experimental data in statistics?

Two things are required of an observational study. First, the variables must be observed and the data must be collected through observation. A researcher can't add in any extra information, or guesses. All of the information must be evidence in the observational study. Second, the researcher can only observe, they cannot interfere with the study in any way.

Observational studies have explanatory and response variables only. Observational data correlates to the data that is obtained from observational studies, where variables are observed to see if there is any correlation between them.

Experimental data is derived from experimental studies, where certain variables are held constant to see if any discrepancy is raised in the working.