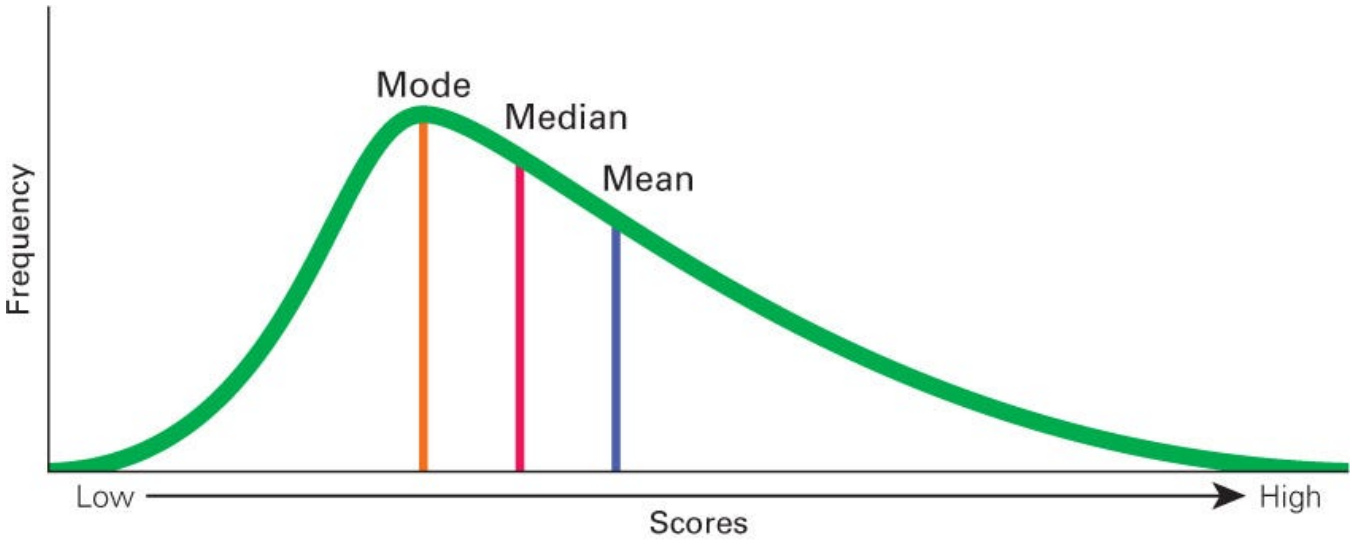
51. What are left-skewed and right-skewed distributions?

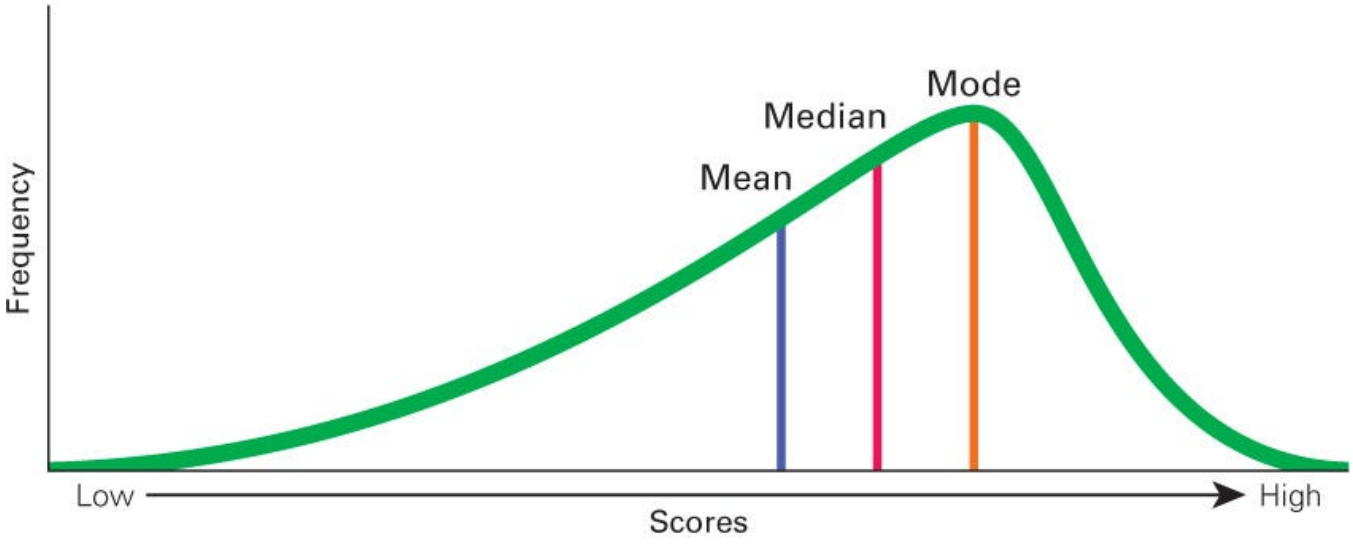
Ans.

Skewness is a way to describe the symmetry of a distribution.

- Similarly, right-skewed (Positively Skew) distribution is one in which the right tail is longer than the left one. For this distribution, mean > median > mode.
- A left-skewed (Negative Skew) distribution is one in which the left tail is longer than that of the right tail. For this distribution, mean < median < mode.



(a) Right-skewed distribution



(b) Left-skewed distribution

52. If a distribution is skewed to the right and has a median of 20, will the mean be greater than or less than 20?

Ans.

If a distribution is skewed to the right and has a median of 20, the mean will be greater than 20.

53. Given a left-skewed distribution that has a median of 60, what conclusions can we draw about the mean and the mode of the data?

Ans.

In left-skewed distribution that has a median of 60, the mean will be lesser than 60 and mode will be greater than 60.

54. Imagine that Jeremy took part in an examination. The test has a mean score of 160, and it has a standard deviation of 15. If Jeremy's z-score is 1.20, what would be his score on the test?

Ans.

Here, mean = 160, std = 15, z = 1.20

$$Z = \frac{x - \mu}{\sigma}$$

X = z * sigma + mean

X = 1.20 * 15 + 160

X = 178

Jeremy's score in the test is 178.

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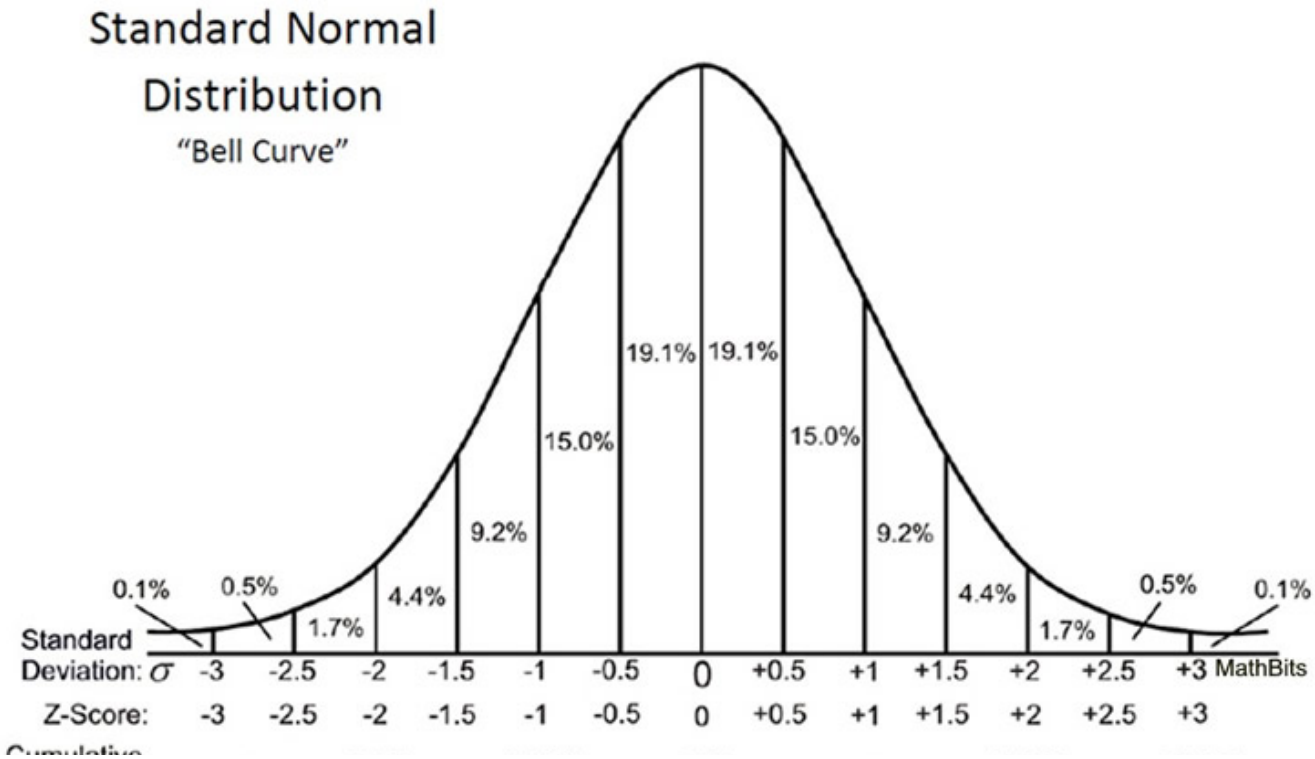
55. The standard normal curve has a total area to be under one, and it is symmetric around zero. True or False?

Ans.

True

As normal curve are symmetric to their mean (0) and total area under normal curve is 1.



56. Briefly explain the procedure to measure the length of all sharks in the world.

Ans.

The following steps can be used to determine the length of all sharks

i. Define the confidence interval (around 95%)

ii. Take n number of samples (n>=30 for better accuracy)

iii. Calculate mean and standard deviation of the length

iv. Determine t-statistics value

v. Determine the confidence interval in which mean length lies

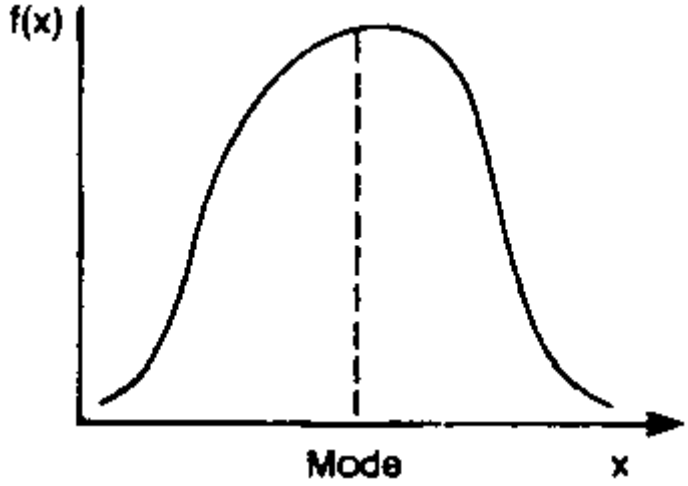
57. Can you tell me the difference between unimodal bimodal and bell-shaped curves?

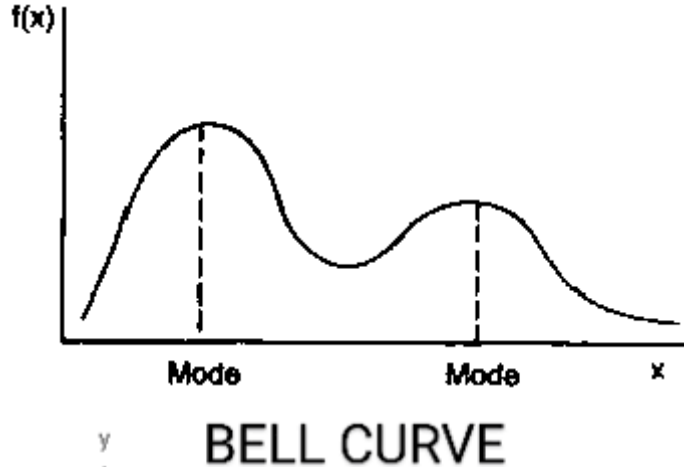
Ans.

The distribution has one peak called unimodal.

The distribution has two peaks called bimodal.

Normal distribution is symmetric to the mean and form bell curve. So it is called unimodal.





BELL CURVE

58. Does symmetric distribution need to be unimodal?

Ans.

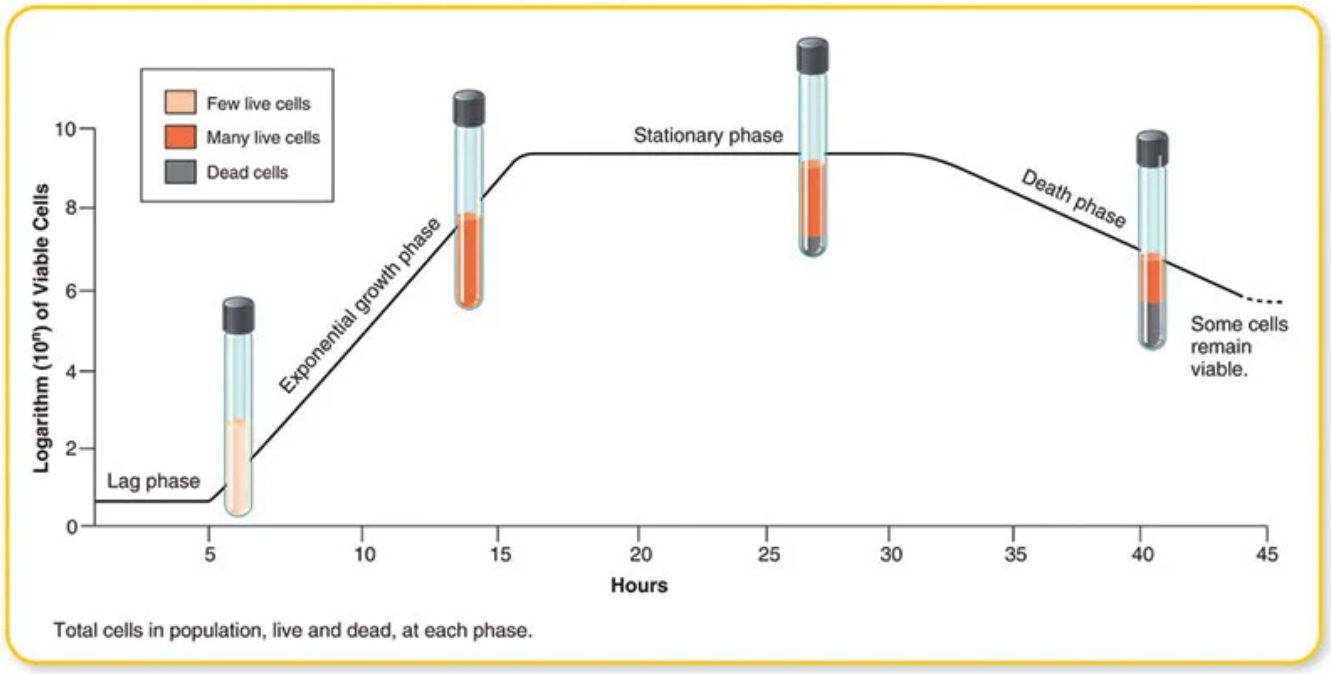
No, it is not required that that symmetric distribution should be unimodal. It can be bimodal also.

Symmetric
Double-peaked (Bimodal) Distribution

59. What are some examples of data sets with non-Gaussian distributions?

Ans.

When data follows a non-normal distribution, it is frequently non-Gaussian. A non-Gaussian distribution is often seen in many statistics processes. This occurs when data is naturally clustered on one side or the other on a graph. For instance, bacterial growth follows an exponential or non-Gaussian distribution, which is non-normal.



60. What is the Binomial Distribution Formula?

Ans.

Binomial Distribution Formula

$$P(X) = {}_nC_x p^x (1-p)^{n-x}$$

P(X) = binomial probability

x = number of times for a specific outcome within n trials

nCx = number of combinations

p = probability of success on a single trial

q = probability of failure on a single trial

n = number of trials

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Thanks

Github: https://github.com/saisubhasish (https://github.com/saisubhasish)

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