1. Prior Probability:

* It's the probability of an event occurring before any new evidence is considered.
* Example: The probability of rain in Seattle on a random day, based on historical data, is a prior probability.

2. Posterior Probability:

* It's the updated probability of an event after considering new evidence.
* Example: The probability of rain in Seattle today, given that the sky is overcast and the humidity is high, is a posterior probability.

3. Likelihood Probability:

* It's the probability of observing new evidence given a specific hypothesis.
* Example: The probability of observing an overcast sky and high humidity if it's going to rain is a likelihood probability.

4. Naïve Bayes Classifier:

* It's a probabilistic classification algorithm based on Bayes' Theorem, assuming that features are independent given the class label.
* It's called "naïve" because this assumption is often unrealistic but often works well in practice.

5. Optimal Bayes Classifier:

* It's the classifier that minimizes the probability of misclassification, providing the lowest possible error rate.

6. Features of Bayesian Learning Methods:

* Probabilistic nature: They model uncertainty using probabilities.
* Iterative learning: They can update beliefs as new data becomes available.

7. Consistent Learners:

* They are learning algorithms that converge to the optimal Bayes classifier as the amount of training data increases.

8. Strengths of Bayes Classifier:

* Simplicity and efficiency: They are relatively simple to implement and train.
* Robustness to irrelevant features: They can handle irrelevant features without significantly impacting performance.

9. Weaknesses of Bayes Classifier:

* Independence assumption: The assumption of feature independence can be unrealistic.
* Sensitivity to feature distribution: They can be sensitive to the distribution of features in the training data.

10. Applications of Naïve Bayes Classifier:

* Text Classification: Used for tasks like spam filtering, sentiment analysis, and topic categorization.
* Spam Filtering: Filters emails based on their content and characteristics.
* Market Sentiment Analysis: Analyses text data from social media, news articles, or financial reports to gauge market sentiment.