# Model Evaluation - Questions and Answers

## 44. What are the common metrics used for evaluating classification models?

Common metrics include accuracy, precision, recall, F1-score, ROC-AUC, and confusion matrix. Each metric provides different insights into model performance, especially in imbalanced datasets.

## 45. Explain precision, recall, and F1-score.

Precision is the ratio of true positives to the sum of true and false positives. Recall is the ratio of true positives to the sum of true positives and false negatives. F1-score is the harmonic mean of precision and recall, providing a balance between the two.

## 46. What is ROC curve analysis, and what does it measure?

ROC (Receiver Operating Characteristic) curve plots the true positive rate against the false positive rate at various threshold settings. It measures the model's ability to distinguish between classes.

## 47. How do you choose the appropriate evaluation metric for a regression problem?

For regression, common metrics include Mean Absolute Error (MAE), Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and R-squared. The choice depends on the business context and the importance of penalizing large errors.

## 48. Describe the concept of confusion matrix.

A confusion matrix is a table used to describe the performance of a classification model. It shows the true positives, true negatives, false positives, and false negatives, helping to calculate various performance metrics.

## 49. What is cross-entropy loss, and how is it used in classification problems?

Cross-entropy loss measures the difference between the actual and predicted probability distributions. It is commonly used in classification tasks to penalize incorrect predictions more heavily.

## 50. Explain the concept of AUC-ROC.

AUC-ROC stands for Area Under the ROC Curve. It quantifies the overall ability of the model to discriminate between positive and negative classes. A higher AUC indicates better model performance.