Recap

In this lesson, you got a glimpse at the ways that we can measure how well our models are performing.

Training & Testing Data

First, it is important to **always** split your data into training and testing. Then you will measure how well your model performs on the test set of data after being fit training data.

Classification Measures

If you are fitting your model to predict categorical data (spam not spam), there are different measures to understand how well your model is performing than if you are predicting numeric values (the price of a home).

As we look at classification metrics, note that the wikipedia page on this topic is wonderful, but also a bit daunting. I frequently use it to remember which metric does what.

Specifically, you saw how to calculate:

- **Accuracy**

Accuracy is often used to compare models, as it tells us the proportion of observations we correctly labeled.

		Actual: Spam (Positive)	Actual: Not Spam (Negative)
Predicted	Spam (Positive)	True Positive (TP)	False Positive (FP)
Predicted	Not Spam (Negative)	False Negative (FN)	True Negative (TN)

$$\text{Accuracy} = \frac{\text{True Positives + True Negatives}}{\text{TP + FP + FN + TN}}$$

Often accuracy is not the only metric you should be optimizing on. This is especially the case when you have class imbalance in your data. Optimizing on only accuracy can be misleading in how well your model is truly performing. With that in mind, you saw some additional metrics.

- **Precision**

Precision focuses on the **predicted** "positive" values in your dataset. By optimizing based on precision values, you are determining if you are doing a good job of predicting the positive values, as compared to predicting negative values as positive.