Basic Terms:

**True Positives (TP)** - These are the correctly predicted positive value which means that the value of actual class is **yes** and the value of predicted class is also **yes.** E.g. if actual class value indicates that a passenger survived and predicted class tells you the same thing.

**True Negatives (TN)** - These are the correctly predicted negative values which means that the value of actual class is **no** and value of predicted class is also **no**. E.g. if actual class says a passenger did not survive and predicted class tells you the same thing.

False positives and false negatives, these values occur when your actual class contradicts with the predicted class.

**False Positives (FP)** – When actual class is **no** and predicted class is **yes**. E.g. if actual class says a passenger did not survive but predicted class tells you that a passenger will survive.

**False Negatives (FN)** – When actual class is **yes** but predicted class in **no**. E.g. if actual class value indicates that a passenger survived, and predicted class tells you that passenger will die.

**Accuracy** - Accuracy is the most intuitive performance measure and it is simply a ratio of correctly predicted observation to the total observations. One may think that, if we have high accuracy then our model is best. Yes, accuracy is a great measure but only when you have symmetric datasets where values of false positive and false negatives are almost same. Therefore, you have to look at other parameters to evaluate the performance of your model. Accuracy = TP+TN/TP+FP+FN+TN

**Precision** - Precision is the ratio of correctly predicted positive observations to the total predicted positive observations. The question that this metric answer is of all passengers that labeled as survived, how many actually survived? High precision relates to the low false positive rate.

Precision = TP/TP+FP

**Recall**(Sensitivity) - Recall is the ratio of correctly predicted positive observations to the all observations in actual class - yes. The question recall answers is: Of all the passengers that truly survived, how many did we label?

Recall = TP/TP+FN

**F1 score** - F1 Score is the weighted average of Precision and Recall. Therefore, this score takes both false positives and false negatives into account. Intuitively it is not as easy to understand as accuracy, but F1 is usually more useful than accuracy, especially if you have an uneven class distribution. Accuracy works best if false positives and false negatives have similar cost. If the cost of false positives and false negatives are very different, it’s better to look at both Precision and Recall.

F1 Score = 2\*(Recall \* Precision) / (Recall + Precision)

