# Model Evaluation

Finally, we need to check to see how well our model is performing on the test data. Regression Evaluation Metrics:

## 1. Mean Squared Error (MSE):

MSE or Mean Squared Error is one of the most preferred metrics for regression problems. It is simply the average of the squared difference between the target value and the value predicted by the regression model.
As it squares the differences, it penalizes even a small error which leads to over-estimation of how bad the model is. It is preferred more than other metrics because it is differentiable and hence can be optimized better.

$$MSE = \frac{1}{n} \Sigma \underbrace{\left( y - \hat{y} \right)^2}_{\text{The square of the difference between actual and predicted}}$$

### 2.RMSE:Root Mean Square Error:

RMSE is the square root of the averaged squared difference between the target value and the value predicted by the model. It is preferred more in some cases because the errors are first squared before averaging which poses a high penalty on large errors. This implies that RMSE is useful when large errors are undesired.

$$RMSE = \sqrt{\frac{\sum_{i=1}^{N} (Predicted_i - Actual_i)^2}{N}}$$

```
##Transformback to original form
train_predict=scaler.inverse_transform(train_predict)
test_predict=scaler.inverse_transform(test_predict)


### Calculate RMSE performance metrics
import math
from sklearn.metrics import mean_squared_error
math.sqrt(mean_squared_error(y_train,train_predict))


28.804182105455187
```