

Root Mean Square Error = RMSE

@wikipedia

Synonym: [Root Mean Square Deviation \(RMSD\)](#) = [Root Mean Square Error \(RMSE\)](#)

[Statistical metric](#) characterizing the [model](#) prediction quality ([goodness of fit](#)) between the [datasets](#) of a given variable x and its [estimator](#) $\hat{x}$:

(1)
$$RMSD(x, \hat{x}) = \sqrt{MSD(x, \hat{x})} = \sqrt{\frac{1}{n} \sum_{i=1}^n (x_i - \hat{x}_i)^2}$$

where

x	a variable represented by data set
$\hat{x}$	estimator of variable x
$\{x_1, x_2, x_3, \dots x_N\}$	discrete set of numerical samples of variable x
$\{\hat{x}_1, \hat{x}_2, \hat{x}_3, \dots \hat{x}_N\}$	discrete set of predictors for the corresponding samples of variable x
$MSD(x, \hat{x})$	Mean Square Deviation (MSD)

The [RMSE](#) is a square root of [Mean Square Deviation \(MSD\)](#) between the [datasets](#) of a given variable x and its [estimator](#) $\hat{x}$.

The key benefit of using [RMSE](#) instead of [MSD](#) is that it is expressed in the same units as the base property (x) while [MSD](#) is expressed in square units of the base property.

The terms [RMSE](#) and [RMSE](#) are used in mathematics and engineering interchangeably.

See also

[Human](#) / [Science](#) / [Formal Science](#) / [System](#) / [Model](#) / [Model Validation](#) / [Goodness of fit](#)

[[Mathematics](#) / [Statistics](#) / [Statistical Metric](#)]

[[Natural Science](#)]