MEAN ABSOLUTE PERCENTAGE ERROR

Mean Absolute Error

$$\mathrm{MAE} = \frac{1}{n}\sum^{n}$$

Where:

- n = the number of errors,
- Σ = summation symbol (which means “add them all up”),
- $|x_i - x|$ = the absolute errors.

- The formula may look a little daunting, but the steps are easy:
- Find all of your absolute errors, $x_i - x$.
- Add them all up.
- Divide by the number of errors. For example, if you had 10 measurements, divide by 10.

What is Absolute Error?

Absolute Error is the amount of error in your measurements.

It is the difference between the measured value and “true” value. For example, if a scale states 100 pounds but you know your true weight is 99 pounds, then the scale has an absolute error of 100 lbs – 99 lbs = 1 lbs.

This can be caused by your scale **not measuring the exact amount you are trying to measure**. For example, your scale may be accurate to the nearest pound. If you weigh 99.6 lbs, the scale may “round up” and give you 100 lbs. In this case the absolute error is 100 lbs – 99.6 lbs = .4 lbs.

MEAN ABSOLUTE ERROR

RMSE

- Squaring the residuals.
- Finding the average of the residuals.
- Taking the square root of the result.

Height (X)	Weight (Y)	Estimated (Y')	Error (Y-Y')	Error Squared
43	41	43.6	-2.6	6.76
44	45	44.4	0.6	0.36
45	49	45.2	3.8	14.44
46	47	46	1	1
47	44	46.8	-2.8	7.84
Regression line = y=9.2+0.8x				

Step 5: Add all of the squared errors up:

6.76 + 0.36 + 14.44 + 1 + 7.84 = 30.4

Step 6: Find the mean squared error:

30.4 / 5 = 6.08

Step 7: Root mean Squared error:

√60.8 = 7.7974354758472

Root Mean Square Error

- (RMSE) is the standard deviation of the residuals (prediction errors).

- Residuals are a measure of how far from the regression line data points are.

- RMSE is a measure of how spread out these residuals are. In other words, it tells you how concentrated the data is around the line of best fit.

- Root mean square error is commonly used in climatology, forecasting, and
- regression analysis to verify experimental results.

ROOT MEAN SQUARE ERROR