How can I use the FORECAST and FORECAST.LINEAR functions in Excel to predict future values based on existing data?

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The FORECAST and FORECAST.LINEAR functions in Excel are powerful tools that allow users to predict future values based on existing data. These functions use mathematical algorithms to analyze past data and generate a forecast for future values. By inputting the known data points and selecting a desired time period, users can easily generate accurate predictions for future values. This can be particularly useful in financial and business contexts, where accurate forecasting is crucial for decision making. With the ability to quickly and easily predict future values, the FORECAST and FORECAST.LINEAR functions in Excel are valuable tools for businesses and individuals alike.

This article describes the formula syntax and usage of the **FORECAST.LINEAR** and **FORECAST** functions in Microsoft Excel.

Note: In Excel 2016, the FORECAST function was replaced with FORECAST.LINEAR as part of the new Forecasting functions. The syntax and usage of the two functions are the same, but the older FORECAST function will eventually be deprecated. It's still available for backward compatibility, but consider using the new FORECAST.LINEAR function instead.

Description

Calculate, or predict, a future value by using existing values. The future value is a y-value for a given x-value. The existing values are known x-values and y-values, and the future value is predicted by using linear regression. You can use these functions to predict future sales, inventory requirements, or consumer trends.

Syntax

FORECAST.LINEAR(x, known_y's, known_x's)

- or -

FORECAST(x, known_y's, known_x's)

The FORECAST/FORECAST.LINEAR function syntax has the following arguments:

Argument	Required	Refers to
x	yes	The data point for which you want to predict a value.
known_y's	yes	The dependent array or range of data.
known_x's	yes	The independent array or range of data.

Remarks

If **x** is nonnumeric, FORECAST and FORECAST.LINEAR return the #VALUE! error value.

If **known_y's** or **known_x's** is empty or one has more data points than the other, FORECAST and FORECAST.LINEAR return the #N/A error value.

If the variance of **known_x's** equals zero, then FORECAST and FORECAST.LINEAR return the #DIV/0! error value.

The equation for FORECAST and FORECAST.LINEAR is a+bx, where:

$$a = \bar{y} - b\bar{x}$$

and:

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$

and where x and y are the sample means AVERAGE(known_x's) and AVERAGE(known y's).

Forecasting functions (reference)