

Logarithmic Price Scale vs. Linear Price Scale: What's the Difference?

By CASEY MURPHY

Fact checked by MARCUS REEVES

Reviewed by CHARLES POTTERS on July 29, 2021

Logarithmic Price Scale vs. Linear Price Scale: An Overview

The interpretation of a stock chart can vary among different traders depending on the type of price scale used when viewing the data. Most online and brokerage charting software can display different styles of charts. The two most common types of price scales used to analyze price movements are:

1. Logarithmic price scale—also referred to as log—represents price spacing on the vertical or y-axis dependent on the percentage of change in the underlying asset's price. This is usually the default chart style.
2. Linear price scale—also referred to as arithmetic—represents price on the y-axis using equidistant spacing between the designated prices. Linear charts display absolute values.

KEY TAKEAWAYS

- The interpretation of a stock chart can vary among different traders depending on the type of price scale used when viewing the data.
- A logarithmic price scale uses the percentage of change to plot data points, so, the scale prices are not positioned equidistantly.
- A linear price scale uses an equal value between price scales providing an equal distance between values.

Logarithmic Price Scale

A [logarithmic price scale](#) is plotted so that the prices in the scale are *not* positioned equidistantly—equally from one another. Instead, the measure is plotted in such a way that two equal percent changes are plotted as the same vertical distance on the scale.

Most [technical analysts](#) and traders use logarithmic price scales. Commonly recurring percent changes are represented by an equal spacing between the numbers in the scale. For example, the distance between \$10 and \$20 is equal to the distance between \$20 and \$40 because both scenarios represent a 100% increase in price.


Logarithmic price scales are better than linear price scales at showing less severe price increases or decreases. They can help you visualize how far the price must move to reach a buy or sell [target](#). However, if prices are close together, logarithmic price scales may render congested and hard to read.

As an example, if an asset price has collapsed from \$100.00 to \$10.00, the distance between each dollar would be very small on a linear price scale, making it impossible to see a big move from \$15.00 to \$10.00.

Linear Price Scale

A linear price scale is also known as an arithmetic chart. It does not depict or scale movements in any relation to their percent change. Rather, a linear price scale plots price level changes with each unit change according to a constant unit value. Each change in value is constant on the grid, making linear price scales easier to draw manually.

A [linear price scale](#) is plotted on the y-axis—vertical—side of the chart. There is an equal distance between the listed prices. Also, each unit of a price change on the chart is represented by the same vertical distance—or movement up—the scale, regardless of the asset's price level when the change happened.

 **Important:** The difference between linear and logarithmic price scales is important to understand when reading charts, but there are many other forms of [technical analysis](#) that you can use to identify and capitalize on price trends.

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Key Differences

An increase in price from \$10 to \$15 is represented by the same upward movement as is an increase between \$20 and \$25 on the linear chart. Both increases are \$5, and the linear chart represents the price in equal segments. However, a logarithmic price scale will show different vertical movements for the changes in price between \$10 and \$15 and the change in price between \$20 to \$25.

While both are the same dollar amount move, the first \$5 change represents a 50% increase in the asset's price. The second \$5 change represents a 25% increase in the asset's price. Since a 50% gain is more significant than 25%, chartists will use a larger distance between the prices to clearly show the magnitude—known as the orders of magnitude—of the changes.

When using a logarithmic scale, the vertical distance between the prices on the scale will be equal when the percent change between the values is the same. Using the above example, the distance between \$10 and \$15 would be equal to the distance between \$20 and \$30 because they both represent a price increase of 50%.

In general, most traders and charting programs use the logarithmic scale, but it is always a good idea to explore other approaches to determine which is the most suitable for your trading style.