

Technical Analysis Tutorial

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Introduction

The methods used to analyze securities and make investment decisions fall into two very broad categories: [fundamental analysis](#) and [technical analysis](#). Fundamental analysis involves analyzing the characteristics of a company in order to estimate its value. Technical analysis takes a completely different approach; it doesn't care one bit about the "value" of a company or a commodity. Technicians (sometimes called [chartists](#)) are only interested in the price movements in the market.

Despite all the fancy and exotic tools it employs, technical analysis really just studies [supply](#) and [demand](#) in a market in an attempt to determine what direction, or [trend](#), will continue in the future. In other words, technical analysis attempts to understand the emotions in the market by studying the market itself, as opposed to its components. If you understand the benefits and limitations of technical analysis, it can give you a new set of tools or skills that will enable you to be a better trader or investor.

In this tutorial, we'll introduce you to the subject of technical analysis. It's a broad topic, so we'll just cover the basics, providing you with the foundation you'll need to understand more advanced concepts down the road.

The Basic Assumptions

What Is Technical Analysis?

Technical analysis is a method of evaluating securities by analyzing the statistics generated by market activity, such as past prices and [volume](#). Technical analysts do not attempt to measure a security's [intrinsic value](#), but instead use charts and other tools to identify [patterns](#) that can suggest future activity.

Just as there are many investment styles on the fundamental side, there are also many different types of technical traders. Some rely on chart patterns, others use technical [indicators](#) and [oscillators](#), and most use some combination of the two. In any case, technical analysts' exclusive use of historical price and volume data is what separates them from their fundamental counterparts. Unlike fundamental analysts, technical analysts don't care whether a stock is [undervalued](#) - the only thing that matters is a security's past trading data and what information this data can provide about where the security might move in the future.

The field of technical analysis is based on three assumptions:

1. The market discounts everything.
2. Price moves in trends.
3. History tends to repeat itself.

1. The Market Discounts Everything

A major criticism of technical analysis is that it only considers price movement, ignoring the fundamental factors of the company. However, technical analysis assumes that, at any given time, a stock's price reflects everything that has or could affect the company - including [fundamental factors](#). Technical analysts believe that the company's fundamentals, along with broader economic factors and [market psychology](#), are all priced into the stock, removing the need to actually consider these factors separately. This only leaves the analysis of price movement, which technical theory views as a product of the supply and demand for a particular stock in the market.

2. Price Moves in Trends

In technical analysis, price movements are believed to follow trends. This means that after a trend has been established, the future price movement is more likely to be in the same direction as the trend than to be against it. Most technical trading strategies are based on this assumption.

3. History Tends To Repeat Itself

Another important idea in technical analysis is that history tends to repeat itself, mainly in terms of price movement. The repetitive nature of price movements is attributed to market psychology; in other words, market participants tend to provide a consistent reaction to similar market stimuli over time. Technical analysis uses chart patterns to analyze market movements and understand trends. Although many of these charts have been used for more than 100 years, they are still believed to be relevant because they illustrate patterns in price movements that often repeat themselves.

Not Just for Stocks

Technical analysis can be used on any security with historical trading data. This includes stocks, [futures](#) and [commodities](#), fixed-income securities, [forex](#), etc. In this tutorial, we'll usually analyze stocks in our examples, but keep in mind that these concepts can be applied to any type of security. In fact, technical analysis is more frequently associated with commodities and forex, where the participants are predominantly [traders](#).

Now that you understand the philosophy behind technical analysis, we'll get into explaining how it really works. One of the best ways to understand what technical analysis is (and is not) is to compare it to fundamental analysis. We'll do this in the next section.

For further reading, check out [Defining Active Trading](#), [Day Trading Strategies For Beginners](#) and [What Can Investors Learn From Traders?](#).

Fundamental Vs. Technical Analysis

Technical analysis and fundamental analysis are the two main schools of thought in the financial markets. As we've mentioned, technical analysis looks at the price movement of a security and uses this data to predict its future price movements. Fundamental analysis, on the other hand, looks at economic factors, known as fundamentals. Let's get into the details of how these two approaches differ, the criticisms against technical analysis and how technical and fundamental analysis can be used together to analyze securities.

The Differences

Charts vs. Financial Statements

At the most basic level, a technical analyst approaches a security from the charts, while a fundamental analyst starts with the financial statements. (For further reading, see [Introduction To Fundamental Analysis](#) and [Advanced](#)

[Financial Statement Analysis.](#))

By looking at the [balance sheet](#), [cash flow statement](#) and [income statement](#), a fundamental analyst tries to determine a company's value. In financial terms, an analyst attempts to measure a company's intrinsic value. In this approach, investment decisions are fairly easy to make - if the price of a stock trades below its intrinsic value, it's a good investment. Although this is an oversimplification (fundamental analysis goes beyond just the financial statements) for the purposes of this tutorial, this simple tenet holds true.

Technical traders, on the other hand, believe there is no reason to analyze a company's fundamentals because these are all accounted for in the stock's price. Technicians believe that all the information they need about a stock can be found in its charts.

Time Horizon

Fundamental analysis takes a relatively long-term approach to analyzing the market compared to technical analysis. While technical analysis can be used on a timeframe of weeks, days or even minutes, fundamental analysis often looks at data over a number of years.

The different timeframes that these two approaches use is a result of the nature of the investing style to which they each adhere. It can take a long time for a company's value to be reflected in the market, so when a fundamental analyst estimates intrinsic value, a gain is not realized until the stock's market price rises to its "correct" value. This type of investing is called [value investing](#) and assumes that the short-term market is wrong, but that the price of a particular stock will correct itself over the long run. This "long run" can represent a timeframe of as long as several years, in some cases. (For more insight, read [Warren Buffett: How He Does It](#) and [What Is Warren Buffett's Investing Style?](#))

Furthermore, the numbers that a fundamentalist analyzes are only released over long periods of time. Financial statements are filed quarterly and changes in [earnings per share](#) don't emerge on a daily basis like price and volume information. Also remember that fundamentals are the actual characteristics of a business. New management can't implement sweeping changes overnight and it takes time to create new products, marketing campaigns, supply chains, etc. Part of the reason that fundamental analysts use a long-term timeframe, therefore, is because the data they use to analyze a stock is generated much more slowly than the price and volume data used by technical analysts.

Trading Versus Investing

Not only is technical analysis more short term in nature than fundamental analysis, but the goals of a purchase (or sale) of a stock are usually different for

each approach. In general, technical analysis is used for a [trade](#), whereas fundamental analysis is used to make an [investment](#). Investors buy assets they believe can increase in value, while traders buy assets they believe they can sell to somebody else at a greater price. The line between a trade and an investment can be blurry, but it does characterize a difference between the two schools.

The Critics

Some critics see technical analysis as a form of black magic. Don't be surprised to see them question the validity of the discipline to the point where they mock its supporters. In fact, technical analysis has only recently begun to enjoy some mainstream credibility. While most analysts on Wall Street focus on the fundamental side, just about any major brokerage now employs technical analysts as well.

Much of the criticism of technical analysis has its roots in academic theory - specifically the [efficient market hypothesis](#) (EMH). This theory says that the market's price is always the correct one - any past trading information is already reflected in the price of the stock and, therefore, any analysis to find undervalued securities is useless.

There are three versions of EMH. In the first, called [weak form efficiency](#), all past price information is already included in the current price. According to weak form efficiency, technical analysis can't predict future movements because all past information has already been accounted for and, therefore, analyzing the stock's past price movements will provide no insight into its future movements. In the second, [semi-strong form efficiency](#), fundamental analysis is also claimed to be of little use in finding investment opportunities. The third is [strong form efficiency](#), which states that all information in the market is accounted for in a stock's price and neither technical nor fundamental analysis can provide investors with an edge. The vast majority of academics believe in at least the weak version of EMH, therefore, from their point of view, if technical analysis works, market efficiency will be called into question. (For more insight, read [What Is Market Efficiency?](#) and [Working Through The Efficient Market Hypothesis](#).)

There is no right answer as to who is correct. There are arguments to be made on both sides and, therefore, it's up to you to do the homework and determine your own philosophy.

Can They Co-Exist?

Although technical analysis and fundamental analysis are seen by many as polar opposites - the oil and water of investing - many market participants have experienced great success by combining the two. For example, some fundamental analysts use technical analysis techniques to figure out the best time to enter into an undervalued security. Oftentimes, this situation occurs when

the security is severely [oversold](#). By timing entry into a security, the gains on the investment can be greatly improved.

Alternatively, some technical traders might look at fundamentals to add strength to a technical signal. For example, if a sell signal is given through technical patterns and indicators, a technical trader might look to reaffirm his or her decision by looking at some key fundamental data. Oftentimes, having both the fundamentals and technicals on your side can provide the best-case scenario for a trade.

While mixing some of the components of technical and fundamental analysis is not well received by the most devoted groups in each school, there are certainly benefits to at least understanding both schools of thought.

In the following sections, we'll take a more detailed look at technical analysis.

The Use Of Trend

One of the most important concepts in technical analysis is that of trend. The meaning in finance isn't all that different from the general definition of the term - a trend is really nothing more than the general direction in which a security or market is headed. Take a look at the chart below:

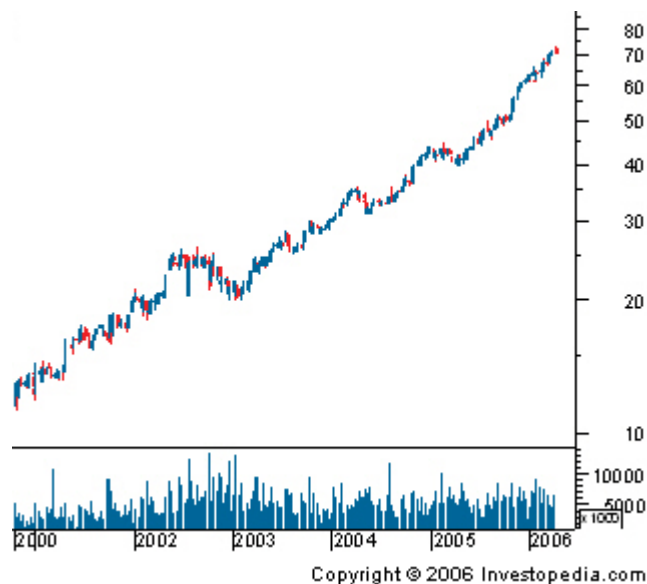


Figure 1

It isn't hard to see that the trend in Figure 1 is up. However, it's not always this easy to see a trend:

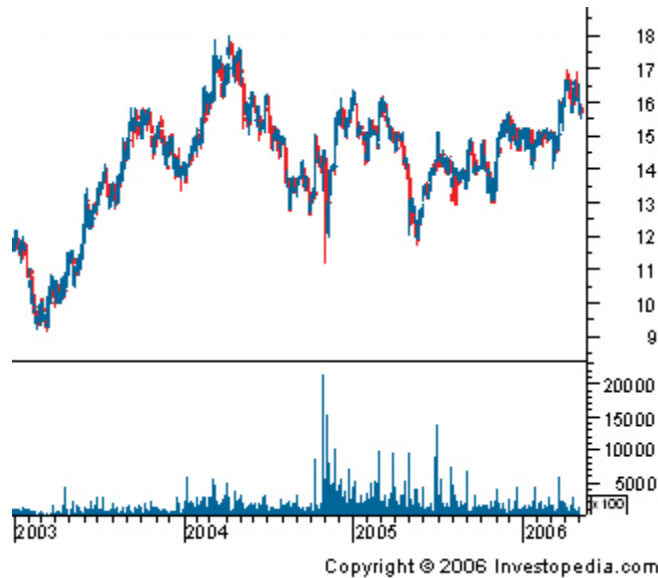


Figure 2

There are lots of ups and downs in this chart, but there isn't a clear indication of which direction this security is headed.

A More Formal Definition

Unfortunately, trends are not always easy to see. In other words, defining a trend goes well beyond the obvious. In any given chart, you will probably notice that prices do not tend to move in a straight line in any direction, but rather in a series of highs and lows. In technical analysis, it is the movement of the highs and lows that constitutes a trend. For example, an [uptrend](#) is classified as a series of higher highs and higher lows, while a downtrend is one of lower lows and lower highs.

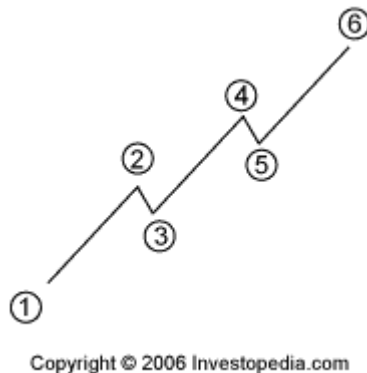


Figure 3

Figure 3 is an example of an uptrend. Point 2 in the chart is the first high, which is determined after the price falls from this point. Point 3 is the low that is established as the price falls from the high. For this to remain an uptrend, each successive low must not fall below the previous lowest point or the trend is deemed a [reversal](#).

Types of Trend

There are three types of trend:

- Uptrends
- [Downtrends](#)
- [Sideways](#)/Horizontal Trends

As the names imply, when each successive [peak](#) and [trough](#) is higher, it's referred to as an upward trend. If the peaks and troughs are getting lower, it's a downtrend. When there is little movement up or down in the peaks and troughs, it's a sideways or horizontal trend. If you want to get really technical, you might even say that a sideways trend is actually not a trend on its own, but a lack of a well-defined trend in either direction. In any case, the market can really only trend in these three ways: up, down or nowhere. (For more insight, see [Peak-And-Trough Analysis](#).)

Trend Lengths

Along with these three trend directions, there are three trend classifications. A trend of any direction can be classified as a long-term trend, intermediate trend or a short-term trend. In terms of the stock market, a major trend is generally categorized as one lasting longer than a year. An intermediate trend is considered to last between one and three months and a near-term trend is anything less than a month. A long-term trend is composed of several intermediate trends, which often move against the direction of the major trend. If the major trend is upward and there is a downward correction in price movement followed by a continuation of the uptrend, the correction is considered to be an intermediate trend. The short-term trends are components of both major and intermediate trends. Take a look at Figure 4 to get a sense of how these three trend lengths might look.



Figure 4

When analyzing trends, it is important that the chart is constructed to best reflect the type of trend being analyzed. To help identify long-term trends, weekly charts or daily charts spanning a five-year period are used by chartists to get a better idea of the long-term trend. Daily data charts are best used when analyzing both intermediate and short-term trends. It is also important to remember that the longer the trend, the more important it is; for example, a one-month trend is not as significant as a five-year trend. (To read more, see [Short-, Intermediate- And Long-Term Trends](#).)

Trendlines

A [trendline](#) is a simple charting technique that adds a line to a chart to represent the trend in the market or a stock. Drawing a trendline is as simple as drawing a straight line that follows a general trend. These lines are used to clearly show the trend and are also used in the identification of trend reversals.

As you can see in Figure 5, an upward trendline is drawn at the lows of an upward trend. This line represents the [support](#) the stock has every time it moves from a high to a low. Notice how the price is propped up by this support. This type of trendline helps traders to anticipate the point at which a stock's price will begin moving upwards again. Similarly, a downward trendline is drawn at the highs of the downward trend. This line represents the [resistance level](#) that a stock faces every time the price moves from a low to a high. (To read more, see [Support & Resistance Basics](#) and [Support And Resistance Zones - Part 1](#) and [Part 2](#).)

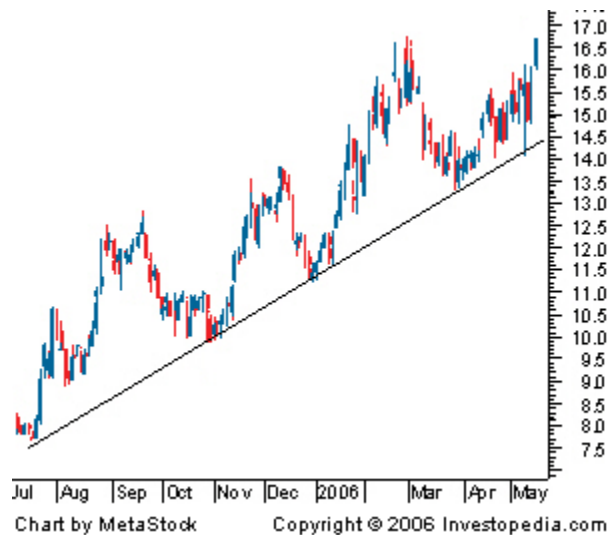


Figure 5

Channels

A [channel](#), or channel lines, is the addition of two parallel trendlines that act as strong areas of support and resistance. The upper trendline connects a series of highs, while the lower trendline connects a series of lows. A channel can slope [upward](#), [downward](#) or [sideways](#) but, regardless of the direction, the interpretation remains the same. Traders will expect a given security to trade between the two levels of support and resistance until it breaks beyond one of the levels, in which case traders can expect a sharp move in the direction of the break. Along with clearly displaying the trend, channels are mainly used to illustrate important areas of support and resistance.

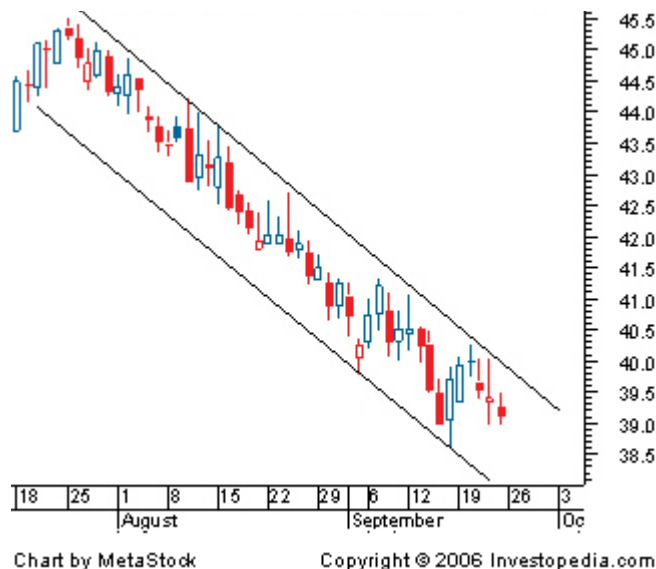


Figure 6

Figure 6 illustrates a descending channel on a stock chart; the upper trendline has been placed on the highs and the lower trendline is on the lows. The price has bounced off of these lines several times, and has remained range-bound for several months. As long as the price does not fall below the lower line or move beyond the upper resistance, the range-bound downtrend is expected to continue.

The Importance of Trend

It is important to be able to understand and identify trends so that you can trade with rather than against them. Two important sayings in technical analysis are "the trend is your friend" and "don't buck the trend," illustrating how important trend analysis is for technical traders.

Support And Resistance

Once you understand the concept of a trend, the next major concept is that of support and resistance. You'll often hear technical analysts talk about the ongoing battle between the [bulls](#) and the [bears](#), or the struggle between buyers (demand) and sellers (supply). This is revealed by the prices a security seldom moves above (resistance) or below (support).

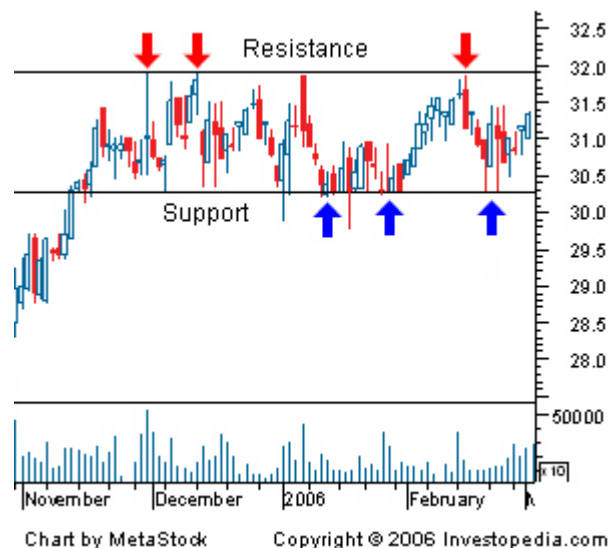


Figure 1

As you can see in Figure 1, support is the price level through which a stock or market seldom falls (illustrated by the blue arrows). Resistance, on the other hand, is the price level that a stock or market seldom surpasses (illustrated by the red arrows).

Why Does it Happen?

These support and resistance levels are seen as important in terms of market psychology and supply and demand. Support and resistance levels are the levels at which a lot of traders are willing to buy the stock (in the case of a support) or sell it (in the case of resistance). When these trendlines are broken, the supply and demand and the psychology behind the stock's movements is thought to have shifted, in which case new levels of support and resistance will likely be established.

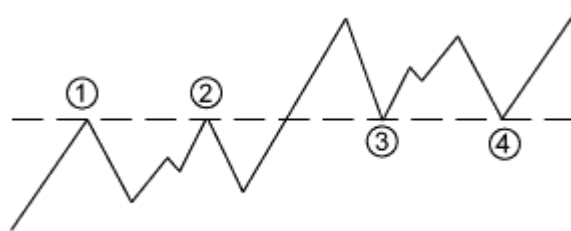
Round Numbers and Support and Resistance

One type of universal support and resistance that tends to be seen across a large number of securities is round numbers. Round numbers like 10, 20, 35, 50, 100 and 1,000 tend to be important in support and resistance levels because they often represent the major psychological turning points at which many traders will make buy or sell decisions.

Buyers will often purchase large amounts of stock once the price starts to fall toward a major round number such as \$50, which makes it more difficult for shares to fall below the level. On the other hand, sellers start to sell off a stock as it moves toward a round number peak, making it difficult to move past this upper level as well. It is the increased buying and selling pressure at these levels that makes them important points of support and resistance and, in many cases, major psychological points as well.

Role Reversal

Once a resistance or support level is broken, its role is reversed. If the price falls below a support level, that level will become resistance. If the price rises above a resistance level, it will often become support. As the price moves past a level of support or resistance, it is thought that supply and demand has shifted, causing the breached level to reverse its role. For a true reversal to occur, however, it is important that the price make a strong move through either the support or resistance. (For further reading, see [Retracement Or Reversal: Know The Difference.](#))



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Figure 2

For example, as you can see in Figure 2, the dotted line is shown as a level of resistance that has prevented the price from heading higher on two previous occasions (Points 1 and 2). However, once the resistance is broken, it becomes a level of support (shown by Points 3 and 4) by propping up the price and preventing it from heading lower again.

Many traders who begin using technical analysis find this concept hard to believe and don't realize that this phenomenon occurs rather frequently, even with some of the most well-known companies. For example, as you can see in Figure 3, this phenomenon is evident on the Wal-Mart Stores Inc. (WMT) chart between 2003 and 2006. Notice how the role of the \$51 level changes from a strong level of support to a level of resistance.

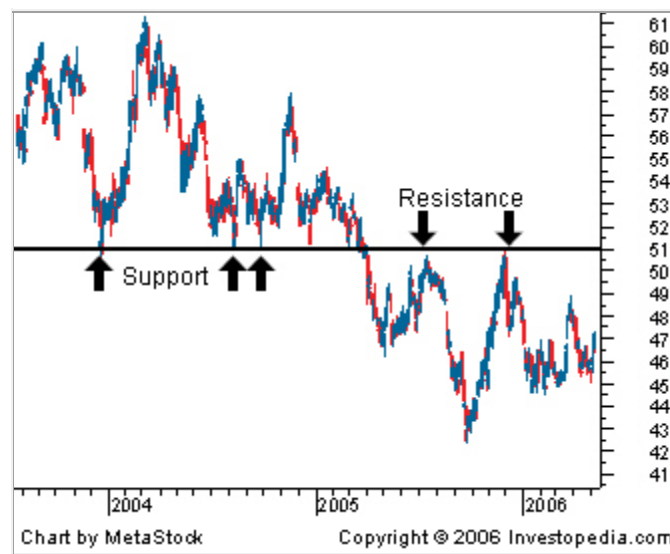


Figure 3

In almost every case, a stock will have both a level of support and a level of resistance and will trade in this range as it bounces between these levels. This is most often seen when a stock is trading in a generally sideways manner as the price moves through successive peaks and troughs, testing resistance and support.

The Importance of Support and Resistance

Support and resistance analysis is an important part of trends because it can be used to make trading decisions and identify when a trend is reversing. For example, if a trader identifies an important level of resistance that has been tested several times but never broken, he or she may decide to take profits as the security moves toward this point because it is unlikely that it will move past this level.

Support and resistance levels both test and confirm trends and need to be monitored by anyone who uses technical analysis. As long as the price of the share remains between these levels of support and resistance, the trend is likely to continue. It is important to note, however, that a break beyond a level of support or resistance does not always have to be a reversal. For example, if prices moved above the resistance levels of an upward trending channel, the trend has accelerated, not reversed. This means that the price appreciation is expected to be faster than it was in the channel.

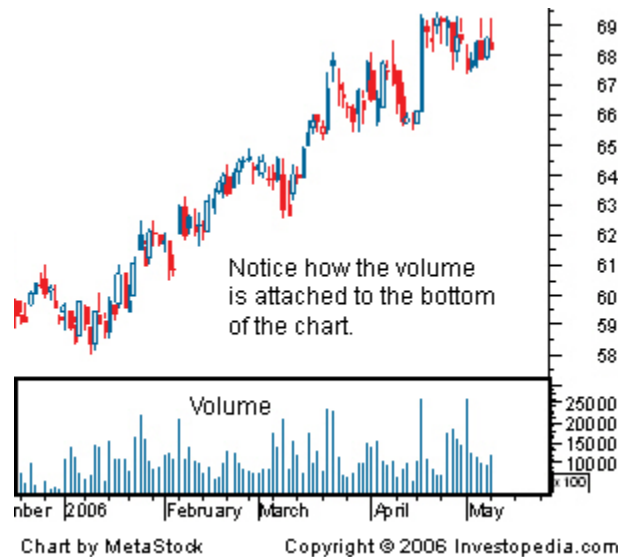
Being aware of these important support and resistance points should affect the way that you trade a stock. Traders should avoid placing orders at these major points, as the area around them is usually marked by a lot of [volatility](#). If you feel confident about making a trade near a support or resistance level, it is important that you follow this simple rule: do not place orders directly at the support or resistance level. This is because in many cases, the price never actually reaches the whole number, but flirts with it instead. So if you're bullish on a stock that is moving toward an important support level, do not place the trade at the support level. Instead, place it above the support level, but within a few points. On the other hand, if you are placing [stops](#) or [short selling](#), set up your trade price at or below the level of support.

The Importance Of Volume

To this point, we've only discussed the price of a security. While price is the primary item of concern in technical analysis, volume is also extremely important.

What is Volume?

Volume is simply the number of shares or contracts that trade over a given period of time, usually a day. The higher the volume, the more active the security. To determine the movement of the volume (up or down), chartists look at the volume bars that can usually be found at the bottom of any chart. Volume bars illustrate how many shares have traded per period and show trends in the same way that prices do. (For further reading, see [Price Patterns - Part 3, Gauging Support And Resistance With Price By Volume](#).)



Why Volume is Important

Volume is an important aspect of technical analysis because it is used to confirm trends and chart patterns. Any price movement up or down with relatively high volume is seen as a stronger, more relevant move than a similar move with weak volume. Therefore, if you are looking at a large price movement, you should also examine the volume to see whether it tells the same story.

Say, for example, that a stock jumps 5% in one trading day after being in a long downtrend. Is this a sign of a trend reversal? This is where volume helps traders. If volume is high during the day relative to the average daily volume, it is a sign that the reversal is probably for real. On the other hand, if the volume is below average, there may not be enough conviction to support a true trend reversal. (To read more, check out [Trading Volume - Crowd Psychology](#).)

Volume should move with the trend. If prices are moving in an upward trend, volume should increase (and vice versa). If the previous relationship between volume and price movements starts to deteriorate, it is usually a sign of weakness in the trend. For example, if the stock is in an uptrend but the up trading days are marked with lower volume, it is a sign that the trend is starting to lose its legs and may soon end.

When volume tells a different story, it is a case of [divergence](#), which refers to a contradiction between two different indicators. The simplest example of divergence is a clear upward trend on declining volume. (For additional insight, read [Divergences, Momentum And Rate Of Change](#).)

Volume and Chart Patterns

The other use of volume is to confirm chart patterns. Patterns such as [head and](#)

[shoulders](#), [triangles](#), [flags](#) and other price patterns can be confirmed with volume, a process which we'll describe in more detail later in this tutorial. In most chart patterns, there are several pivotal points that are vital to what the chart is able to convey to chartists. Basically, if the volume is not there to confirm the pivotal moments of a chart pattern, the quality of the signal formed by the pattern is weakened.

Volume Precedes Price

Another important idea in technical analysis is that price is preceded by volume. Volume is closely monitored by technicians and chartists to form ideas on upcoming trend reversals. If volume is starting to decrease in an uptrend, it is usually a sign that the upward run is about to end.

Now that we have a better understanding of some of the important factors of technical analysis, we can move on to charts, which help to identify trading opportunities in prices movements.

What Is A Chart?

In technical analysis, charts are similar to the charts that you see in any business setting. A chart is simply a graphical representation of a series of prices over a set time frame. For example, a chart may show a stock's price movement over a one-year period, where each point on the graph represents the [closing price](#) for each day the stock is traded:

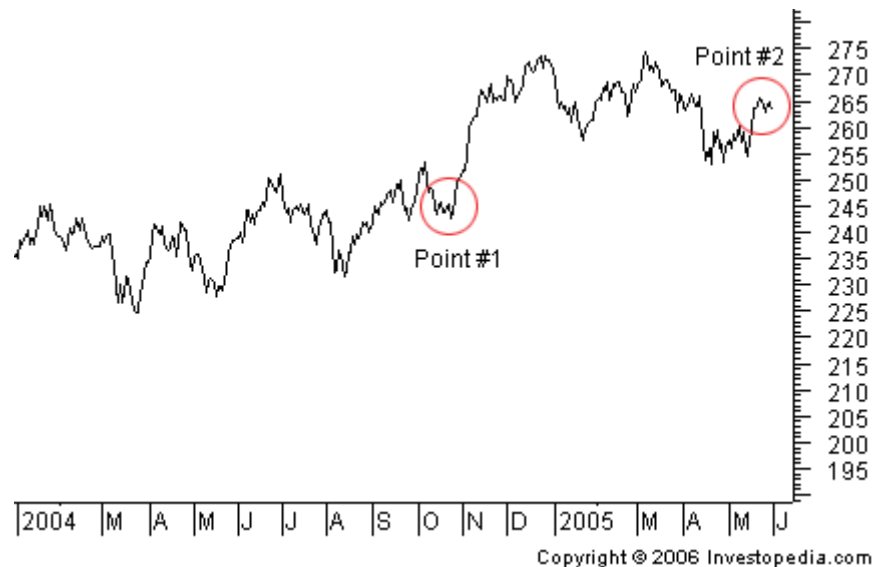


Figure 1

Figure 1 provides an example of a basic chart. It is a representation of the price

movements of a stock over a 1.5 year period. The bottom of the graph, running horizontally (x-axis), is the date or time scale. On the right hand side, running vertically (y-axis), the price of the security is shown. By looking at the graph we see that in October 2004 (Point 1), the price of this stock was around \$245, whereas in June 2005 (Point 2), the stock's price is around \$265. This tells us that the stock has risen between October 2004 and June 2005.

Chart Properties

There are several things that you should be aware of when looking at a chart, as these factors can affect the information that is provided. They include the time scale, the price scale and the price point properties used.

The Time Scale

The time scale refers to the range of dates at the bottom of the chart, which can vary from decades to seconds. The most frequently used time scales are [intraday](#), daily, weekly, monthly, [quarterly](#) and annually. The shorter the time frame, the more detailed the chart. Each data point can represent the closing price of the period or show the open, the high, the low and the close depending on the chart used.

Intraday charts plot price movement within the period of one day. This means that the time scale could be as short as five minutes or could cover the whole trading day from the [opening bell](#) to the [closing bell](#).

Daily charts are comprised of a series of price movements in which each price point on the chart is a full day's trading condensed into one point. Again, each point on the graph can be simply the closing price or can entail the open, high, low and close for the stock over the day. These data points are spread out over weekly, monthly and even yearly time scales to monitor both short-term and intermediate trends in price movement.

Weekly, monthly, quarterly and yearly charts are used to analyze longer term trends in the movement of a stock's price. Each data point in these graphs will be a condensed version of what happened over the specified period. So for a weekly chart, each data point will be a representation of the price movement of the week. For example, if you are looking at a chart of weekly data spread over a five-year period and each data point is the closing price for the week, the price that is plotted will be the closing price on the last trading day of the week, which is usually a Friday.

The Price Scale and Price Point Properties

The price scale is on the right-hand side of the chart. It shows a stock's current price and compares it to past data points. This may seem like a simple concept in that the price scale goes from lower prices to higher prices as you move along

the scale from the bottom to the top. The problem, however, is in the structure of the scale itself. A scale can either be constructed in a [linear](#) (arithmetic) or [logarithmic](#) way, and both of these options are available on most charting services.

If a price scale is constructed using a linear scale, the space between each price point (10, 20, 30, 40) is separated by an equal amount. A price move from 10 to 20 on a linear scale is the same distance on the chart as a move from 40 to 50. In other words, the price scale measures moves in absolute terms and does not show the effects of percent change.

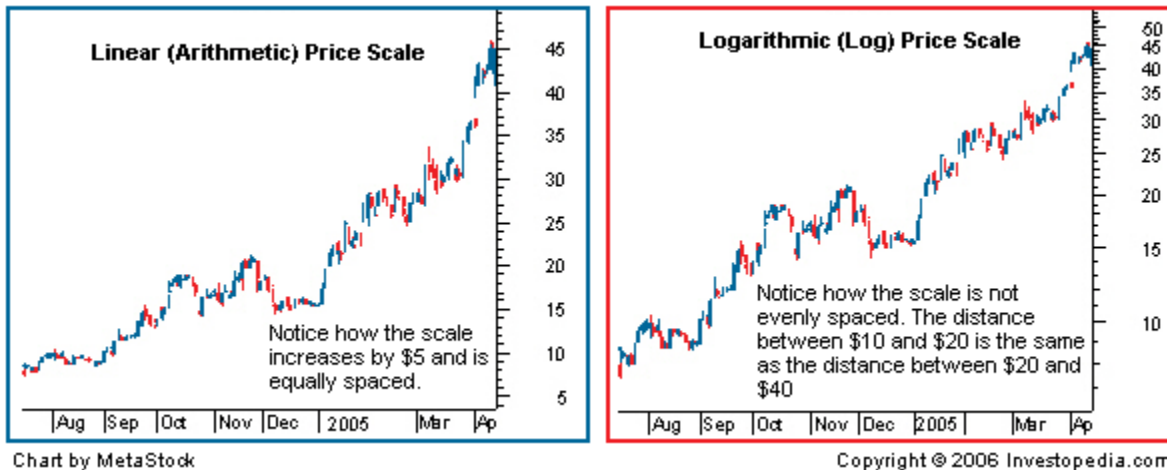


Figure 2

If a price scale is in logarithmic terms, then the distance between points will be equal in terms of percent change. A price change from 10 to 20 is a 100% increase in the price while a move from 40 to 50 is only a 25% change, even though they are represented by the same distance on a linear scale. On a logarithmic scale, the distance of the 100% price change from 10 to 20 will not be the same as the 25% change from 40 to 50. In this case, the move from 10 to 20 is represented by a larger space on the chart, while the move from 40 to 50, is represented by a smaller space because, percentage-wise, it indicates a smaller move. In Figure 2, the logarithmic price scale on the right leaves the same amount of space between 10 and 20 as it does between 20 and 40 because these both represent 100% increases.

Chart Types

There are four main types of charts that are used by investors and traders depending on the information that they are seeking and their individual skill levels. The chart types are: the line chart, the bar chart, the candlestick chart and

the point and figure chart. In the following sections, we will focus on the [S&P 500 Index](#) during the period of January 2006 through May 2006. Notice how the data used to create the charts is the same, but the way the data is plotted and shown in the charts is different.

Line Chart

The most basic of the four charts is the [line chart](#) because it represents only the closing prices over a set period of time. The line is formed by connecting the closing prices over the time frame. Line charts do not provide visual information of the trading range for the individual points such as the high, low and opening prices. However, the closing price is often considered to be the most important price in stock data compared to the high and low for the day and this is why it is the only value used in line charts.

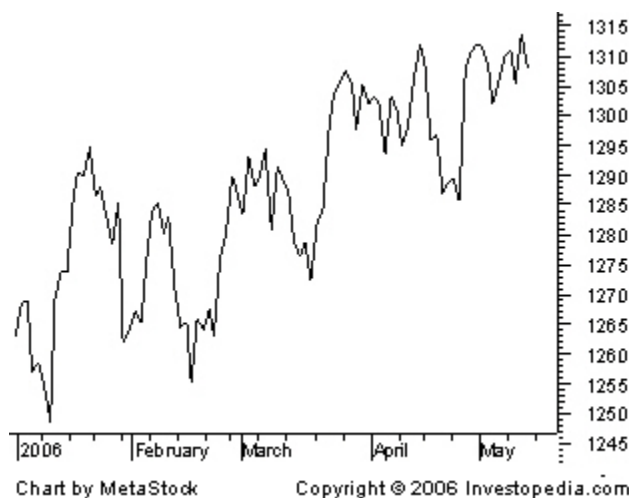


Figure 1: A line chart

Bar Charts

The [bar chart](#) expands on the line chart by adding several more key pieces of information to each data point. The chart is made up of a series of vertical lines that represent each data point. This vertical line represents the high and low for the trading period, along with the closing price. The close and open are represented on the vertical line by a horizontal dash. The opening price on a bar chart is illustrated by the dash that is located on the left side of the vertical bar. Conversely, the close is represented by the dash on the right. Generally, if the left dash (open) is lower than the right dash (close) then the bar will be shaded black, representing an up period for the stock, which means it has gained value. A bar that is colored red signals that the stock has gone down in value over that period. When this is the case, the dash on the right (close) is lower than the dash on the left (open).

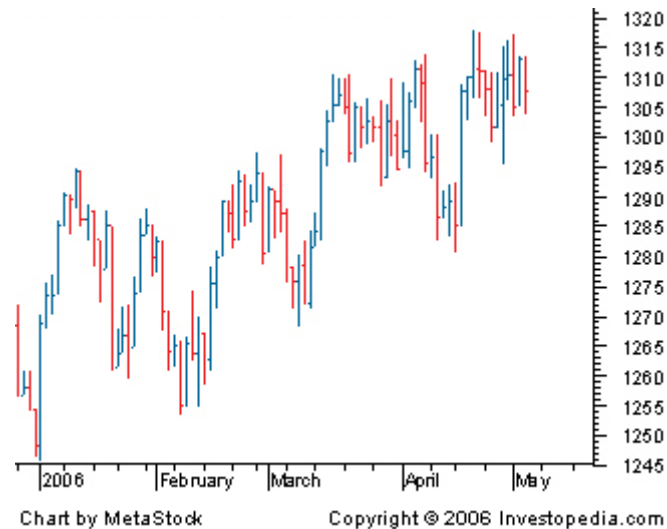


Figure 2: A bar chart

Candlestick Charts

The [candlestick](#) chart is similar to a bar chart, but it differs in the way that it is visually constructed. Similar to the bar chart, the candlestick also has a thin vertical line showing the period's trading range. The difference comes in the formation of a wide bar on the vertical line, which illustrates the difference between the open and close. And, like bar charts, candlesticks also rely heavily on the use of colors to explain what has happened during the trading period. A major problem with the candlestick color configuration, however, is that different sites use different standards; therefore, it is important to understand the candlestick configuration used at the chart site you are working with. There are two color constructs for days up and one for days that the price falls. When the price of the stock is up and closes above the opening trade, the candlestick will usually be white or clear. If the stock has traded down for the period, then the candlestick will usually be red or black, depending on the site. If the stock's price has closed above the previous day's close but below the day's open, the candlestick will be black or filled with the color that is used to indicate an up day. (To read more, see [The Art Of Candlestick Charting - Part 1](#), [Part 2](#), [Part 3](#) and [Part 4](#).)

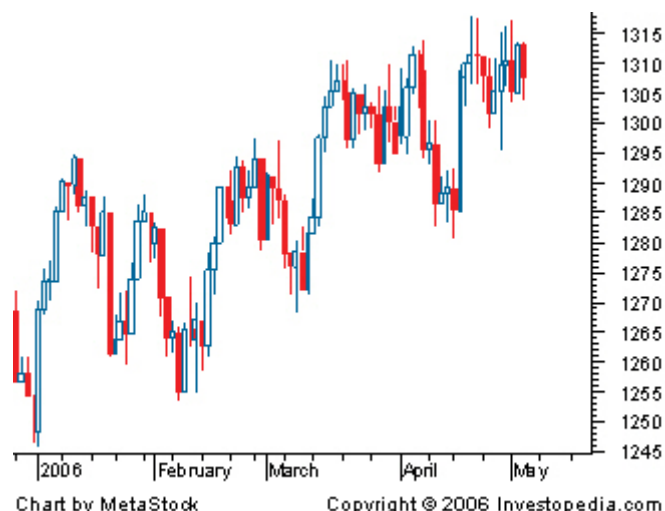


Figure 3: A candlestick chart

Point and Figure Charts

The [point and figure chart](#) is not well known or used by the average investor but it has had a long history of use dating back to the first technical traders. This type of chart reflects price movements and is not as concerned about time and volume in the formulation of the points. The point and figure chart removes the [noise](#), or insignificant price movements, in the stock, which can distort traders' views of the price trends. These types of charts also try to neutralize the [skewing](#) effect that time has on chart analysis. (For further reading, see [Point And Figure Charting](#).)

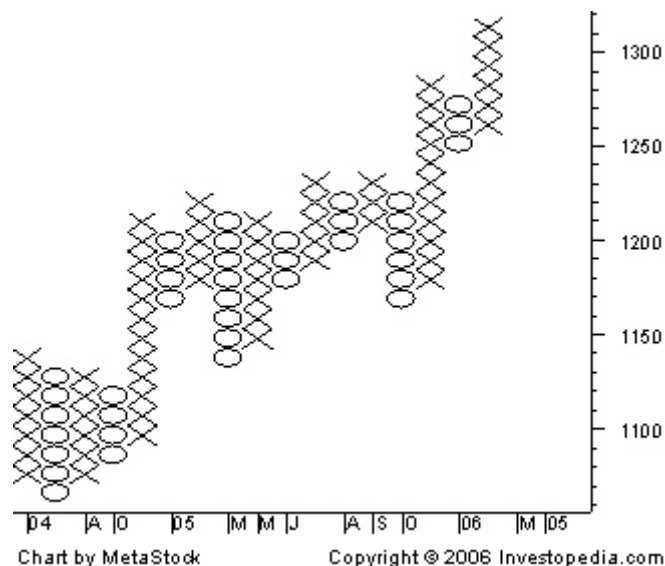


Figure 4: A point and figure chart

When first looking at a point and figure chart, you will notice a series of Xs and Os. The Xs represent upward price trends and the Os represent downward price trends. There are also numbers and letters in the chart; these represent months, and give investors an idea of the date. Each box on the chart represents the price scale, which adjusts depending on the price of the stock: the higher the stock's price the more each box represents. On most charts where the price is between \$20 and \$100, a box represents \$1, or 1 point for the stock. The other critical point of a point and figure chart is the reversal criteria. This is usually set at three but it can also be set according to the chartist's discretion. The reversal criteria set how much the price has to move away from the high or low in the price trend to create a new trend or, in other words, how much the price has to move in order for a column of Xs to become a column of Os, or vice versa. When the price trend has moved from one trend to another, it shifts to the right, signaling a trend change.

Conclusion

Charts are one of the most fundamental aspects of technical analysis. It is important that you clearly understand what is being shown on a chart and the information that it provides. Now that we have an idea of how charts are constructed, we can move on to the different types of chart patterns.

Chart Patterns

A chart pattern is a distinct formation on a stock chart that creates a trading signal, or a sign of future price movements. Chartists use these patterns to identify current trends and trend reversals and to trigger buy and sell signals.

In the first section of this tutorial, we talked about the three assumptions of technical analysis, the third of which was that in technical analysis, history repeats itself. The theory behind chart patterns is based on this assumption. The idea is that certain patterns are seen many times, and that these patterns signal a certain high probability move in a stock. Based on the historic trend of a chart pattern setting up a certain price movement, chartists look for these patterns to identify trading opportunities.

While there are general ideas and components to every chart pattern, there is no chart pattern that will tell you with 100% certainty where a security is headed. This creates some leeway and debate as to what a good pattern looks like, and is a major reason why charting is often seen as more of an art than a science. (For more insight, see [*Is finance an art or a science?*](#))

There are two types of patterns within this area of technical analysis, [reversal](#)

and [continuation](#). A reversal pattern signals that a prior trend will reverse upon completion of the pattern. A continuation pattern, on the other hand, signals that a trend will continue once the pattern is complete. These patterns can be found over charts of any timeframe. In this section, we will review some of the more popular chart patterns. (To learn more, check out [Continuation Patterns - Part 1](#), [Part 2](#), [Part 3](#) and [Part 4](#).)

Head and Shoulders

This is one of the most popular and reliable chart patterns in technical analysis. [Head and shoulders](#) is a reversal chart pattern that when formed, signals that the security is likely to move against the previous trend. As you can see in Figure 1, there are two versions of the head and shoulders chart pattern. Head and shoulders top (shown on the left) is a chart pattern that is formed at the high of an upward movement and signals that the upward trend is about to end. Head and shoulders bottom, also known as [inverse head and shoulders](#) (shown on the right) is the lesser known of the two, but is used to signal a reversal in a downtrend.



Figure 1: Head and shoulders top is shown on the left. Head and shoulders bottom, or inverse head and shoulders, is on the right.

Both of these head and shoulders patterns are similar in that there are four main parts: two shoulders, a head and a [neckline](#). Also, each individual head and shoulder is comprised of a high and a low. For example, in the head and shoulders top image shown on the left side in Figure 1, the left shoulder is made up of a high followed by a low. In this pattern, the neckline is a level of support or resistance. Remember that an upward trend is a period of successive rising highs and rising lows. The head and shoulders chart pattern, therefore, illustrates a weakening in a trend by showing the deterioration in the successive movements of the highs and lows. (To learn more, see [Price Patterns - Part 2](#).)

Cup and Handle

A [cup and handle](#) chart is a bullish continuation pattern in which the upward trend has paused but will continue in an upward direction once the pattern is confirmed.

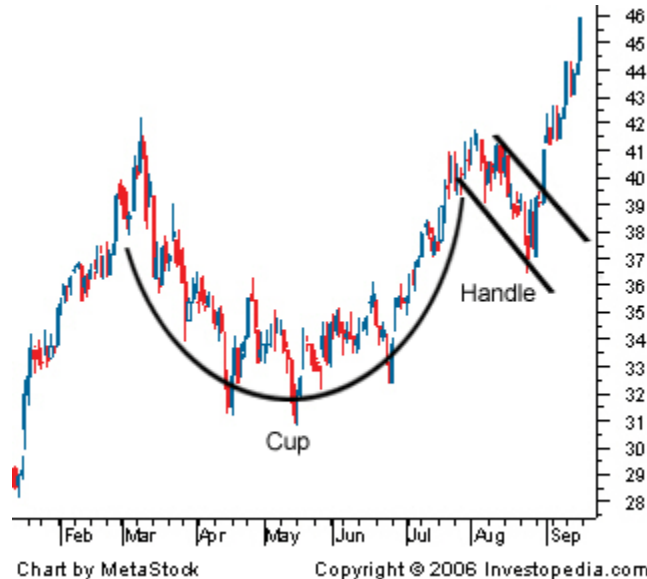


Figure 2

As you can see in Figure 2, this price pattern forms what looks like a cup, which is preceded by an upward trend. The handle follows the cup formation and is formed by a generally downward/sideways movement in the security's price. Once the price movement pushes above the resistance lines formed in the handle, the upward trend can continue. There is a wide ranging time frame for this type of pattern, with the span ranging from several months to more than a year.

Double Tops and Bottoms

This chart pattern is another well-known pattern that signals a trend reversal - it is considered to be one of the most reliable and is commonly used. These patterns are formed after a sustained trend and signal to chartists that the trend is about to reverse. The pattern is created when a price movement tests support or resistance levels twice and is unable to break through. This pattern is often used to signal intermediate and long-term trend reversals.

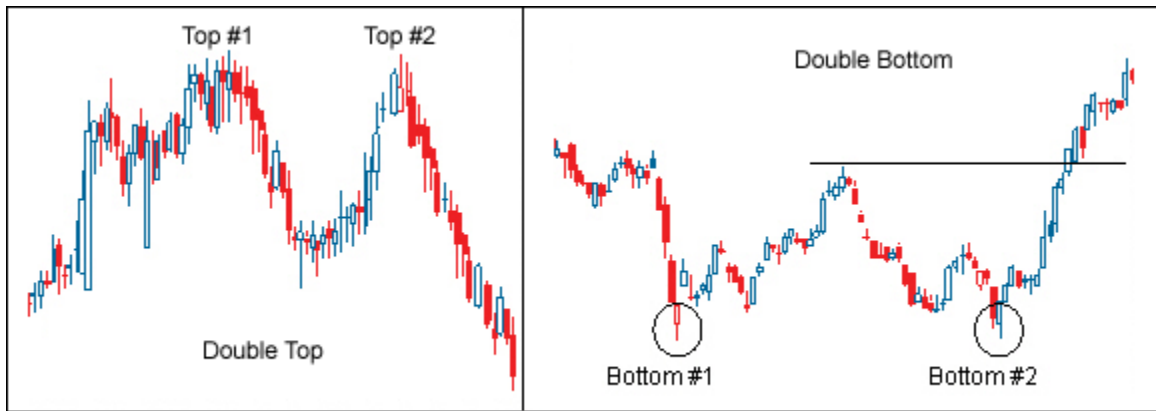


Chart by MetaStock

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Figure 3: A double top pattern is shown on the left, while a double bottom pattern is shown on the right.

In the case of the [double top](#) pattern in Figure 3, the price movement has twice tried to move above a certain price level. After two unsuccessful attempts at pushing the price higher, the trend reverses and the price heads lower. In the case of a [double bottom](#) (shown on the right), the price movement has tried to go lower twice, but has found support each time. After the second bounce off of the support, the security enters a new trend and heads upward. (For more in-depth reading, see [The Memory Of Price](#) and [Price Patterns - Part 4](#).)

Triangles

[Triangles](#) are some of the most well-known chart patterns used in technical analysis. The three types of triangles, which vary in construct and implication, are the [symmetrical triangle](#), [ascending](#) and [descending triangle](#). These chart patterns are considered to last anywhere from a couple of weeks to several months.

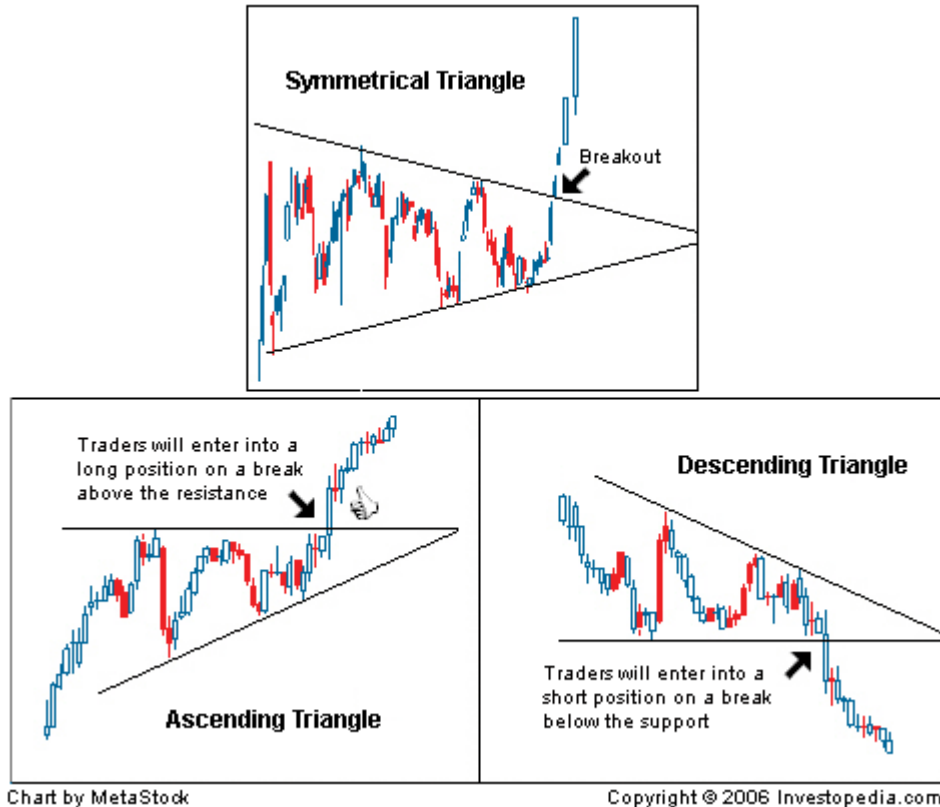


Figure 4

The symmetrical triangle in Figure 4 is a pattern in which two trendlines converge toward each other. This pattern is neutral in that a breakout to the upside or downside is a confirmation of a trend in that direction. In an ascending triangle, the upper trendline is flat, while the bottom trendline is upward sloping. This is generally thought of as a bullish pattern in which chartists look for an upside breakout. In a descending triangle, the lower trendline is flat and the upper trendline is descending. This is generally seen as a bearish pattern where chartists look for a downside breakout.

Flag and Pennant

These two short-term chart patterns are continuation patterns that are formed when there is a sharp price movement followed by a generally sideways price movement. This pattern is then completed upon another sharp price movement in the same direction as the move that started the trend. The patterns are generally thought to last from one to three weeks.

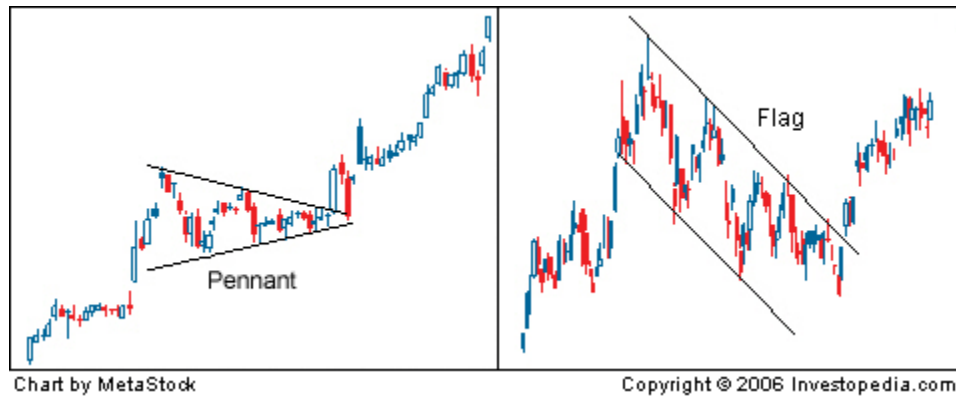


Figure 5

As you can see in Figure 5, there is little difference between a [pennant](#) and a [flag](#). The main difference between these price movements can be seen in the middle section of the chart pattern. In a pennant, the middle section is characterized by converging trendlines, much like what is seen in a symmetrical triangle. The middle section on the flag pattern, on the other hand, shows a channel pattern, with no convergence between the trendlines. In both cases, the trend is expected to continue when the price moves above the upper trendline.

Wedge

The [wedge](#) chart pattern can be either a continuation or reversal pattern. It is similar to a symmetrical triangle except that the wedge pattern slants in an upward or downward direction, while the symmetrical triangle generally shows a sideways movement. The other difference is that wedges tend to form over longer periods, usually between three and six months.



Figure 6

The fact that wedges are classified as both continuation and reversal patterns can make reading signals confusing. However, at the most basic level, a falling

wedge is bullish and a rising wedge is bearish. In Figure 6, we have a falling wedge in which two trendlines are converging in a downward direction. If the price was to rise above the upper trendline, it would form a continuation pattern, while a move below the lower trendline would signal a reversal pattern.

Gaps

A [gap](#) in a chart is an empty space between a trading period and the following trading period. This occurs when there is a large difference in prices between two sequential trading periods. For example, if the trading range in one period is between \$25 and \$30 and the next trading period opens at \$40, there will be a large gap on the chart between these two periods. Gap price movements can be found on bar charts and candlestick charts but will not be found on point and figure or basic line charts. Gaps generally show that something of significance has happened in the security, such as a better-than-expected earnings announcement.

There are three main types of gaps, [breakaway](#), [runaway](#) (measuring) and [exhaustion](#). A breakaway gap forms at the start of a trend, a runaway gap forms during the middle of a trend and an exhaustion gap forms near the end of a trend. (For more insight, read [Playing The Gap](#).)

Triple Tops and Bottoms

[Triple tops](#) and [triple bottoms](#) are another type of reversal chart pattern in chart analysis. These are not as prevalent in charts as head and shoulders and double tops and bottoms, but they act in a similar fashion. These two chart patterns are formed when the price movement tests a level of support or resistance three times and is unable to break through; this signals a reversal of the prior trend.

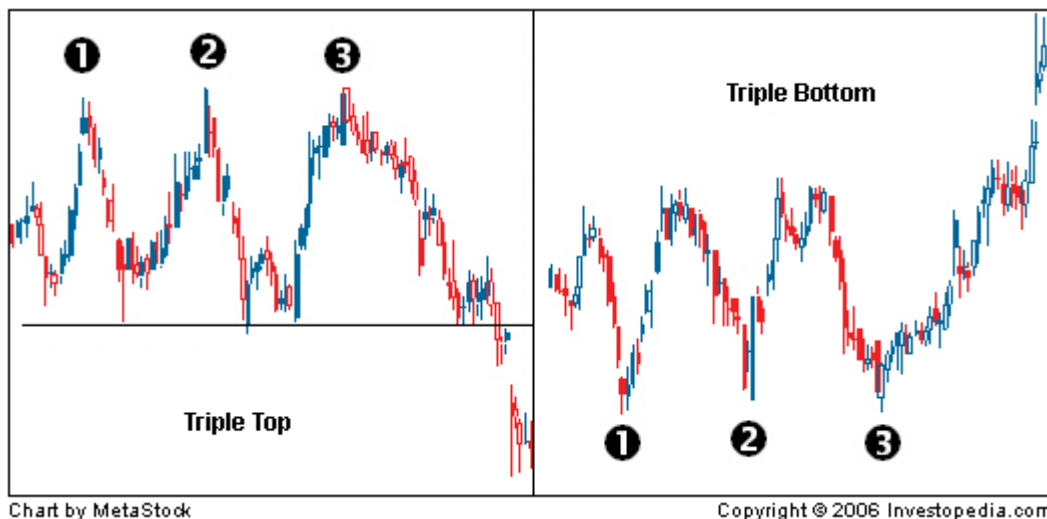


Figure 7

Confusion can form with triple tops and bottoms during the formation of the pattern because they can look similar to other chart patterns. After the first two support/resistance tests are formed in the price movement, the pattern will look like a double top or bottom, which could lead a chartist to enter a reversal position too soon.

Rounding Bottom

A rounding bottom, also referred to as a [saucer bottom](#), is a long-term reversal pattern that signals a shift from a downward trend to an upward trend. This pattern is traditionally thought to last anywhere from several months to several years.

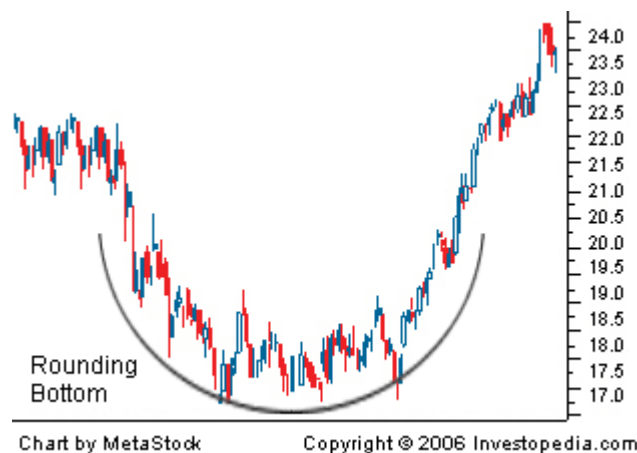


Figure 8

A rounding bottom chart pattern looks similar to a cup and handle pattern but without the handle. The long-term nature of this pattern and the lack of a confirmation trigger, such as the handle in the cup and handle, makes it a difficult pattern to trade.

We have finished our look at some of the more popular chart patterns. You should now be able to recognize each chart pattern as well the signal it can form for chartists. We will now move on to other technical techniques and examine how they are used by technical traders to gauge price movements.

Moving Averages

Most chart patterns show a lot of variation in price movement. This can make it difficult for traders to get an idea of a security's overall trend. One simple method traders use to combat this is to apply [moving averages](#). A moving average is the average price of a security over a set amount of time. By plotting a

security's average price, the price movement is smoothed out. Once the day-to-day fluctuations are removed, traders are better able to identify the true trend and increase the probability that it will work in their favor. (To learn more, read the [Moving Averages](#) tutorial.)

Types of Moving Averages

There are a number of different types of moving averages that vary in the way they are calculated, but how each average is interpreted remains the same. The calculations only differ in regards to the weighting that they place on the price data, shifting from equal weighting of each price point to more weight being placed on recent data. The three most common types of moving averages are [simple](#), linear and [exponential](#).

Simple Moving Average (SMA)

This is the most common method used to calculate the moving average of prices. It simply takes the sum of all of the past closing prices over the time period and divides the result by the number of prices used in the calculation. For example, in a 10-day moving average, the last 10 closing prices are added together and then divided by 10. As you can see in Figure 1, a trader is able to make the average less responsive to changing prices by increasing the number of periods used in the calculation. Increasing the number of time periods in the calculation is one of the best ways to gauge the strength of the long-term trend and the likelihood that it will reverse.

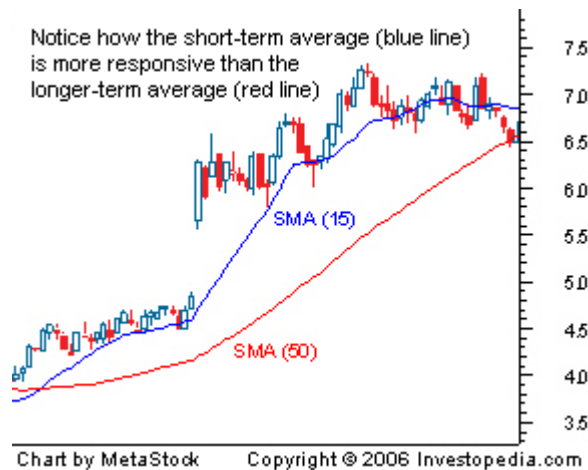


Figure 1

Many individuals argue that the usefulness of this type of average is limited because each point in the data series has the same impact on the result regardless of where it occurs in the sequence. The critics argue that the most recent data is more important and, therefore, it should also have a higher

weighting. This type of criticism has been one of the main factors leading to the invention of other forms of moving averages.

Linear Weighted Average

This moving average indicator is the least common out of the three and is used to address the problem of the equal weighting. The linear weighted moving average is calculated by taking the sum of all the closing prices over a certain time period and multiplying them by the position of the data point and then dividing by the sum of the number of periods. For example, in a five-day linear weighted average, today's closing price is multiplied by five, yesterday's by four and so on until the first day in the period range is reached. These numbers are then added together and divided by the sum of the multipliers.

Exponential Moving Average (EMA)

This moving average calculation uses a smoothing factor to place a higher weight on recent data points and is regarded as much more efficient than the linear weighted average. Having an understanding of the calculation is not generally required for most traders because most charting packages do the calculation for you. The most important thing to remember about the exponential moving average is that it is more responsive to new information relative to the simple moving average. This responsiveness is one of the key factors of why this is the moving average of choice among many technical traders. As you can see in Figure 2, a 15-period EMA rises and falls faster than a 15-period SMA. This slight difference doesn't seem like much, but it is an important factor to be aware of since it can affect returns.

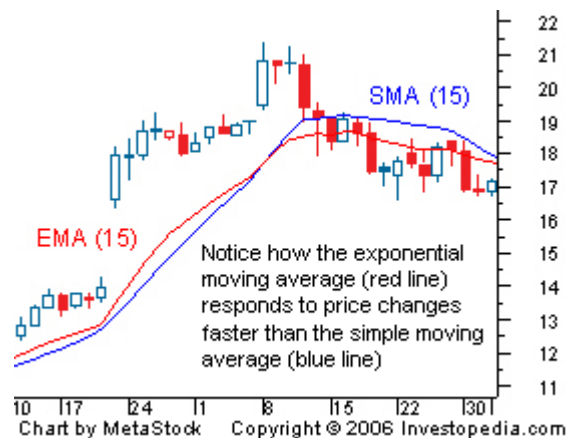


Figure 2

Major Uses of Moving Averages

Moving averages are used to identify current trends and trend reversals as well as to set up support and resistance levels.

Moving averages can be used to quickly identify whether a security is moving in

an uptrend or a downtrend depending on the direction of the moving average. As you can see in Figure 3, when a moving average is heading upward and the price is above it, the security is in an uptrend. Conversely, a downward sloping moving average with the price below it can be used to signal a downtrend.



Figure 3

Another method of determining momentum is to look at the order of a pair of moving averages. When a short-term average is above a longer-term average, the trend is up. On the other hand, a long-term average above a shorter-term average signals a downward movement in the trend.

Moving average trend reversals are formed in two main ways: when the price moves through a moving average and when it moves through moving average [crossovers](#). The first common signal is when the price moves through an important moving average. For example, when the price of a security that was in an uptrend falls below a 50-period moving average, like in Figure 4, it is a sign that the uptrend may be reversing.



Figure 4

The other signal of a trend reversal is when one moving average crosses through another. For example, as you can see in Figure 5, if the 15-day moving average crosses above the 50-day moving average, it is a positive sign that the price will start to increase.



Figure 5

If the periods used in the calculation are relatively short, for example 15 and 35, this could signal a short-term trend reversal. On the other hand, when two averages with relatively long time frames cross over (50 and 200, for example), this is used to suggest a long-term shift in trend.

Another major way moving averages are used is to identify support and resistance levels. It is not uncommon to see a stock that has been falling stop its decline and reverse direction once it hits the support of a major moving average. A move through a major moving average is often used as a signal by technical traders that the trend is reversing. For example, if the price breaks through the

200-day moving average in a downward direction, it is a signal that the uptrend is reversing.



Figure 6

Moving averages are a powerful tool for analyzing the trend in a security. They provide useful support and resistance points and are very easy to use. The most common time frames that are used when creating moving averages are the 200-day, 100-day, 50-day, 20-day and 10-day. The 200-day average is thought to be a good measure of a trading year, a 100-day average of a half a year, a 50-day average of a quarter of a year, a 20-day average of a month and 10-day average of two weeks.

Moving averages help technical traders smooth out some of the [noise](#) that is found in day-to-day price movements, giving traders a clearer view of the price trend. So far we have been focused on price movement, through charts and averages. In the next section, we'll look at some other techniques used to confirm price movement and patterns.

Indicators And Oscillators

[Indicators](#) are calculations based on the price and the volume of a security that measure such things as money flow, trends, volatility and momentum. Indicators are used as a secondary measure to the actual price movements and add additional information to the analysis of securities. Indicators are used in two main ways: to confirm price movement and the quality of chart patterns, and to form buy and sell signals.

There are two main types of indicators: [leading](#) and [lagging](#). A leading indicator precedes price movements, giving them a predictive quality, while a lagging indicator is a confirmation tool because it follows price movement. A leading indicator is thought to be the strongest during periods of sideways or non-trending trading ranges, while the lagging indicators are still useful during

trending periods.

There are also two types of indicator constructions: those that fall in a bounded [range](#) and those that do not. The ones that are bound within a range are called [oscillators](#) - these are the most common type of indicators. Oscillator indicators have a range, for example between zero and 100, and signal periods where the security is overbought (near 100) or oversold (near zero). Non-bounded indicators still form buy and sell signals along with displaying strength or weakness, but they vary in the way they do this.

The two main ways that indicators are used to form buy and sell signals in technical analysis is through [crossovers](#) and [divergence](#). Crossovers are the most popular and are reflected when either the price moves through the moving average, or when two different moving averages cross over each other. The second way indicators are used is through divergence, which happens when the direction of the price trend and the direction of the indicator trend are moving in the opposite direction. This signals to indicator users that the direction of the price trend is weakening.

Indicators that are used in technical analysis provide an extremely useful source of additional information. These indicators help identify momentum, trends, volatility and various other aspects in a security to aid in the technical analysis of trends. It is important to note that while some traders use a single indicator solely for buy and sell signals, they are best used in conjunction with price movement, chart patterns and other indicators.

Accumulation/Distribution Line

The [accumulation/distribution](#) line is one of the more popular volume indicators that measures money flows in a security. This indicator attempts to measure the ratio of buying to selling by comparing the price movement of a period to the volume of that period.

Calculated:

$$\text{Acc/Dist} = ((\text{Close} - \text{Low}) - (\text{High} - \text{Close})) / (\text{High} - \text{Low}) * \text{Period's Volume}$$

This is a non-bounded indicator that simply keeps a running sum over the period of the security. Traders look for trends in this indicator to gain insight on the amount of purchasing compared to selling of a security. If a security has an accumulation/distribution line that is trending upward, it is a sign that there is more buying than selling.

Average Directional Index

The [average directional index](#) (ADX) is a trend indicator that is used to measure the strength of a current trend. The indicator is seldom used to identify the direction of the current trend, but can identify the momentum behind trends.

The ADX is a combination of two price movement measures: the positive directional indicator (+DI) and the negative directional indicator (-DI). The ADX measures the strength of a trend but not the direction. The +DI measures the strength of the upward trend while the -DI measures the strength of the downward trend. These two measures are also plotted along with the ADX line. Measured on a scale between zero and 100, readings below 20 signal a weak trend while readings above 40 signal a strong trend.

Aroon

The [Aroon indicator](#) is a relatively new technical indicator that was created in 1995. The Aroon is a trending indicator used to measure whether a security is in an uptrend or downtrend and the magnitude of that trend. The indicator is also used to predict when a new trend is beginning.

The indicator is comprised of two lines, an "Aroon up" line (blue line) and an "Aroon down" line (red dotted line). The Aroon up line measures the amount of time it has been since the highest price during the time period. The Aroon down line, on the other hand, measures the amount of time since the lowest price during the time period. The number of periods that are used in the calculation is dependent on the time frame that the user wants to analyze.

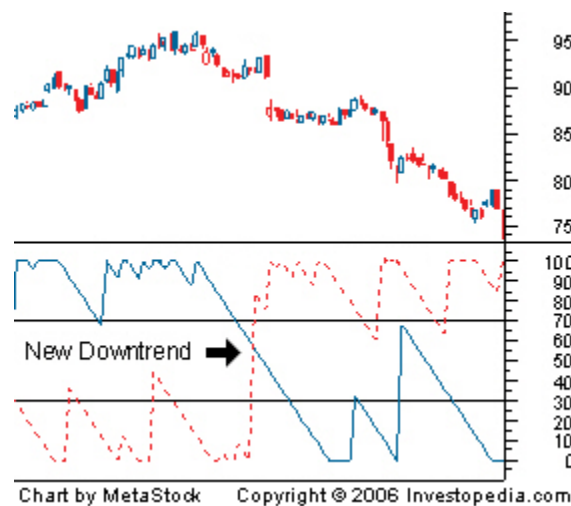


Figure 1

Aroon Oscillator

An expansion of the Aroon is the oscillator, which simply plots the difference

between the Aroon up and down lines by subtracting the two lines. This line is then plotted between a range of -100 and 100. The centerline at zero in the oscillator is considered to be a major signal line determining the trend. The higher the value of the oscillator from the centerline point, the more upward strength there is in the security; the lower the oscillator's value is from the centerline, the more downward pressure. A trend reversal is signaled when the oscillator crosses through the centerline. For example, when the oscillator goes from positive to negative, a downward trend is confirmed. Divergence is also used in the oscillator to predict trend reversals. A reversal warning is formed when the oscillator and the price trend are moving in an opposite direction.

The Aroon lines and Aroon oscillators are fairly simple concepts to understand but yield powerful information about trends. This is another great indicator to add to any technical trader's arsenal.

Moving Average Convergence

The [moving average convergence divergence](#) (MACD) is one of the most well known and used indicators in technical analysis. This indicator is comprised of two exponential moving averages, which help to measure [momentum](#) in the security. The MACD is simply the difference between these two moving averages plotted against a centerline. The centerline is the point at which the two moving averages are equal. Along with the MACD and the centerline, an exponential moving average of the MACD itself is plotted on the chart. The idea behind this momentum indicator is to measure short-term momentum compared to longer term momentum to help signal the current direction of momentum.

$$\text{MACD} = \text{shorter term moving average} - \text{longer term moving average}$$

When the MACD is positive, it signals that the shorter term moving average is above the longer term moving average and suggests upward momentum. The opposite holds true when the MACD is negative - this signals that the shorter term is below the longer and suggest downward momentum. When the MACD line crosses over the centerline, it signals a crossing in the moving averages. The most common moving average values used in the calculation are the 26-day and 12-day exponential moving averages. The signal line is commonly created by using a nine-day exponential moving average of the MACD values. These values can be adjusted to meet the needs of the technician and the security. For more volatile securities, shorter term averages are used while less volatile securities should have longer averages.

Another aspect to the MACD indicator that is often found on charts is the MACD histogram. The histogram is plotted on the centerline and represented by bars. Each bar is the difference between the MACD and the signal line or, in most cases, the nine-day exponential moving average. The higher the bars are in either direction, the more momentum behind the direction in which the bars point. (For more on this, see [Moving Average Convergence Divergence - Part 1](#) and [Part 2](#), and [Trading The MACD Divergence](#).)

As you can see in Figure 2, one of the most common buy signals is generated when the MACD crosses above the signal line (blue dotted line), while sell signals often occur when the MACD crosses below the signal.

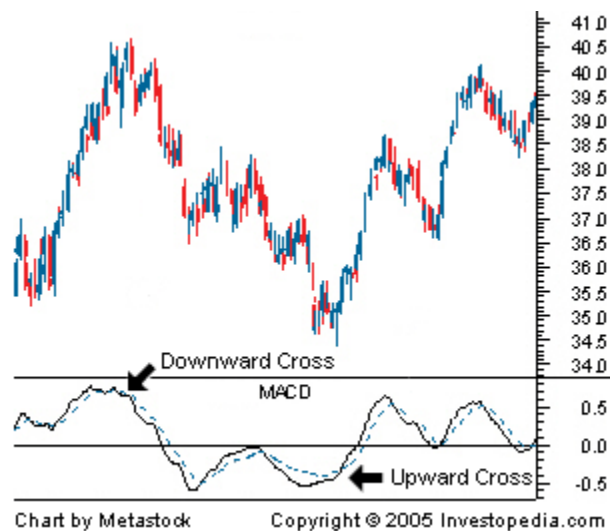
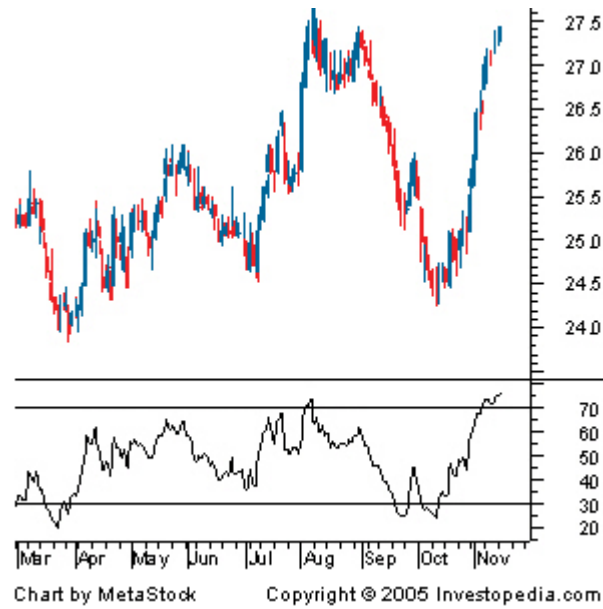


Figure 2

Relative Strength Index

The [relative strength index](#) (RSI) is another one of the most used and well-known momentum indicators in technical analysis. RSI helps to signal overbought and oversold conditions in a security. The indicator is plotted in a range between zero and 100. A reading above 70 is used to suggest that a security is overbought, while a reading below 30 is used to suggest that it is oversold. This indicator helps traders to identify whether a security's price has been unreasonably pushed to current levels and whether a reversal may be on the way.



The standard calculation for RSI uses 14 trading days as the basis, which can be adjusted to meet the needs of the user. If the trading period is adjusted to use fewer days, the RSI will be more volatile and will be used for shorter term trades. (To read more, see [Momentum And The Relative Strength Index](#), [Relative Strength Index And Its Failure-Swing Points](#) and [Getting To Know Oscillators - Part 1](#) and [Part 2](#).)

On-Balance Volume

The [on-balance volume](#) (OBV) indicator is a well-known technical indicator that reflect movements in volume. It is also one of the simplest volume indicators to compute and understand.

The OBV is calculated by taking the total volume for the trading period and assigning it a positive or negative value depending on whether the price is up or down during the trading period. When price is up during the trading period, the volume is assigned a positive value, while a negative value is assigned when the price is down for the period. The positive or negative volume total for the period is then added to a total that is accumulated from the start of the measure.

It is important to focus on the trend in the OBV - this is more important than the actual value of the OBV measure. This measure expands on the basic volume measure by combining volume and price movement. (For more insight, see [Introduction To On-Balance Volume](#).)

Stochastic Oscillator

The [stochastic oscillator](#) is one of the most recognized momentum indicators

used in technical analysis. The idea behind this indicator is that in an uptrend, the price should be closing near the highs of the trading range, signaling upward momentum in the security. In downtrends, the price should be closing near the lows of the trading range, signaling downward momentum.

The stochastic oscillator is plotted within a range of zero and 100 and signals overbought conditions above 80 and oversold conditions below 20. The stochastic oscillator contains two lines. The first line is the %K, which is essentially the raw measure used to formulate the idea of momentum behind the oscillator. The second line is the %D, which is simply a moving average of the %K. The %D line is considered to be the more important of the two lines as it is seen to produce better signals. The stochastic oscillator generally uses the past 14 trading periods in its calculation but can be adjusted to meet the needs of the user. (To read more, check out [Getting To Know Oscillators - Part 3](#).)

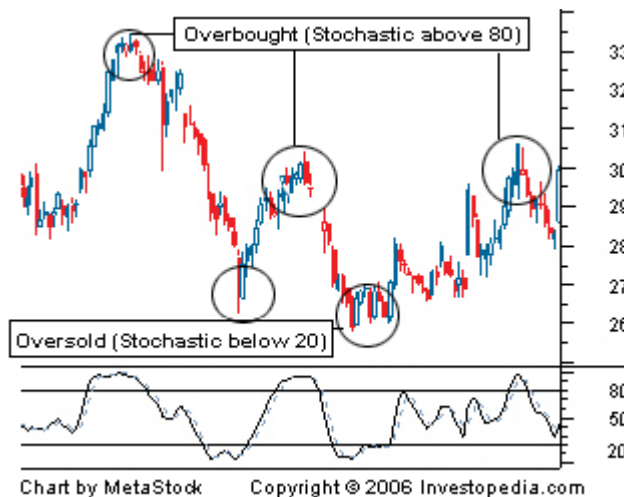


Figure 4

Conclusion

This introductory section of the technical analysis tutorial has provided a broad overview of technical analysis.

Here's a brief summary of what we've covered:

- [Technical analysis](#) is a method of evaluating securities by analyzing the statistics generated by market activity. It is based on three assumptions: 1) the market discounts everything, 2) price moves in trends and 3) history tends to repeat itself.

- Technicians believe that all the information they need about a stock can be found in its charts.
- Technical traders take a short-term approach to analyzing the market.
- Criticism of technical analysis stems from the [efficient market hypothesis](#), which states that the market price is always the correct one, making any historical analysis useless.
- One of the most important concepts in technical analysis is that of a [trend](#), which is the general direction that a security is headed. There are three types of trends: [uptrends](#), [downtrends](#) and [sideways/horizontal trends](#).
- A [trendline](#) is a simple charting technique that adds a line to a chart to represent the trend in the market or a stock.
- A [channel](#), or channel lines, is the addition of two parallel trendlines that act as strong areas of support and resistance.
- [Support](#) is the price level through which a stock or market seldom falls. [Resistance](#) is the price level that a stock or market seldom surpasses.
- [Volume](#) is the number of shares or contracts that trade over a given period of time, usually a day. The higher the volume, the more active the security.
- A chart is a graphical representation of a series of prices over a set time frame.
- The time scale refers to the range of dates at the bottom of the chart, which can vary from decades to seconds. The most frequently used time scales are [intraday](#), daily, weekly, monthly, [quarterly](#) and annually.
- The price scale is on the right-hand side of the chart. It shows a stock's current price and compares it to past data points. It can be either [linear](#) or [logarithmic](#).
- There are four main types of charts used by investors and traders: [line charts](#), [bar charts](#), [candlestick charts](#) and [point and figure charts](#).
- A chart pattern is a distinct formation on a stock chart that creates a trading signal, or a sign of future price movements. There are two types: [reversal](#) and [continuation](#).
- A [head and shoulders pattern](#) is reversal pattern that signals a security is likely to move against its previous trend.
- A [cup and handle pattern](#) is a bullish continuation pattern in which the upward trend has paused but will continue in an upward direction once the pattern is confirmed.
- [Double tops](#) and [double bottoms](#) are formed after a sustained trend and signal to chartists that the trend is about to reverse. The pattern is created when a price movement tests support or resistance levels twice and is unable to break through.
- A [triangle](#) is a technical analysis pattern created by drawing trendlines along a price range that gets narrower over time because of lower tops and higher bottoms. Variations of a triangle include [ascending](#) and [descending](#) triangles.

- [Flags](#) and [pennants](#) are short-term continuation patterns that are formed when there is a sharp price movement followed by a sideways price movement.
- The [wedge](#) chart pattern can be either a continuation or reversal pattern. It is similar to a symmetrical triangle except that the wedge pattern slants in an upward or downward direction.
- A [gap](#) in a chart is an empty space between a trading period and the following trading period. This occurs when there is a large difference in prices between two sequential trading periods.
- [Triple tops](#) and [triple bottoms](#) are reversal patterns that are formed when the price movement tests a level of support or resistance three times and is unable to break through, signaling a trend reversal.
- A [rounding bottom](#) (or saucer bottom) is a long-term reversal pattern that signals a shift from a downward trend to an upward trend.
- A [moving average](#) is the average price of a security over a set amount of time. There are three types: [simple](#), linear and [exponential](#).
- Moving averages help technical traders smooth out some of the [noise](#) that is found in day-to-day price movements, giving traders a clearer view of the price trend.
- [Indicators](#) are calculations based on the price and the volume of a security that measure such things as money flow, trends, volatility and momentum. There are two types: [leading](#) and [lagging](#).
- The [accumulation/distribution](#) line is a volume indicator that attempts to measure the ratio of buying to selling of a security.
- The [average directional index](#) (ADX) is a trend indicator that is used to measure the strength of a current trend.
- The [Aroon indicator](#) is a trending indicator used to measure whether a security is in an uptrend or downtrend and the magnitude of that trend.
- The Aroon oscillator plots the difference between the Aroon up and down lines by subtracting the two lines.
- The [moving average convergence divergence](#) (MACD) is comprised of two exponential moving averages, which help to measure a security's [momentum](#).
- The [relative strength index](#) (RSI) helps to signal overbought and oversold conditions in a security.
- The [on-balance volume](#) (OBV) indicator is one of the most well-known technical indicators that reflects movements in volume.
- The [stochastic oscillator](#) compares a security's closing price to its price range over a given time period.