Fundamentals of Stock Market

(HS408)

VII Semester (July-December 2024)

Course Instructor

Dr. Ankita Sarmah

Assistant Professor

Department of Humanities and Social Sciences

IIIT Guwahati

CONTENTS

Technical Analysis

Introduction to technical analysis for stock price prediction; identifying basic chart patterns and using technical indicators - Moving Average, money flow index, MACD, Bollinger Bands, RSI

What is Technical Analysis?

- A method used to evaluate and predict the future price movements of stocks or other financial assets by analyzing past market data, mainly price and volume.

- A security analysis discipline for forecasting the direction of prices through the study of past market data

- Unlike Fundamental Analysis, which focuses on a company's financial health and business fundamentals, technical analysis centers on market trends and patterns.

- Technical Analysts look at the CHARTS to make a prediction about the FUTURE

- **Price Charts**: The main tool in technical analysis is the price chart, which visually represents an asset's historical price movement. The most common chart types are line charts, bar charts, and candlestick charts

Bearish and Bullish Trends/Signals

Bearish and **Bullish** trends or signals represent market sentiment and price movement direction in the stock market and other financial markets.

Traders and investors use these terms to describe whether prices are expected to rise (bullish) or fall (bearish)

1. Bullish Trend (Uptrend)

A **bullish trend** occurs when the price of a stock, asset moves upward over time. In this phase, market participants are optimistic, expecting prices to continue rising due to positive news, such as economic growth, corporate earnings growth, or favorable policies.

Key Characteristics of a Bullish Trend:

- **Higher Highs and Higher Lows**: Prices consistently make higher peaks (highs) and higher troughs (lows), showing upward momentum.
- **Positive Market Sentiment**: Investors are confident, believing that asset prices will continue to increase.
- **Buying Pressure**: There is strong demand, often with higher trading volume as prices rise.

2. Bearish Trend (Downtrend)

A **bearish trend** occurs when the price of a stock, asset, or market consistently declines. In this phase, market participants are pessimistic, expecting prices to continue falling.

Key Characteristics of a Bearish Trend:

- **Lower Highs and Lower Lows**: Prices make lower peaks (highs) and lower troughs (lows), indicating a downward trend.
- **Negative Market Sentiment**: Investors are wary or expecting prices to fall further, leading to a pessimistic outlook.
- **Selling Pressure**: There is more selling activity than buying, often with increased volume during downward price movement.

In a bear market, investors expect prices to decline. This sentiment may be driven by negative news, such as economic recessions, declining corporate profits, or geopolitical tensions.

Bearish Trends indicate downward price movement and pessimistic sentiment, signaling a potential selling

Principles/Tenets of Technical Analysis

1. Market Discounts Everything (Price Reflects All Information)

- This principle asserts that all available information (economic, political, company-specific news) **is already reflected in the stock's price**.

- All factors that could impact the asset—company-specific (e.g., earnings reports, management changes), sector-specific, or macroeconomic factors (e.g., interest rates, political events)—are already embedded/included in the asset's current price

- Technical analysts believe that market participants, through their buying and selling actions, account for all the fundamental factors affecting an asset (have already priced in this information/information is already included in the price).

- As a result, the price movement itself is the most accurate reflection of the underlying conditions.

Example:

- Suppose there is news of a merger involving a company (Walmart & Flipkart; Adani Group and Ambuja Cement; Tata Digital and BigBasket).

- Before the official announcement, rumors and insider knowledge might have caused some buying activity, and the price might have risen.

- When the announcement is finally made, the price might not move much further because the market has already "discounted" the merger news.

2. Price Moves in Trends

- According to this, asset prices move in trends (uptrend, downtrend, or sideways).
- Once a trend is established, it is more likely to continue than to reverse.
- Technical analysts try to identify the start of a trend and trade in its direction until/if the trend shows signs of reversal.

Types of Trends:

A. **Uptrend**: A pattern in the price movement of a financial asset where the price consistently forms a series of **higher highs and higher lows**. This pattern indicates that demand is greater than supply, pushing the price upward over time.

1. **Higher Highs (HH)**: Each peak in the price is higher than the previous one. This shows that buyers are willing to pay increasingly higher prices for the asset.

2. **Higher Lows (HL)**: Each subsequent low is higher than the previous one, meaning that even after a price pullback, the market finds support at a level higher than before. This suggests that there is buying interest and confidence in the asset.

Uptrend

High C

Higher High B=130

N=115 Higher Low

A=120

Higher High

M=110 Higher Low

W=100 Low
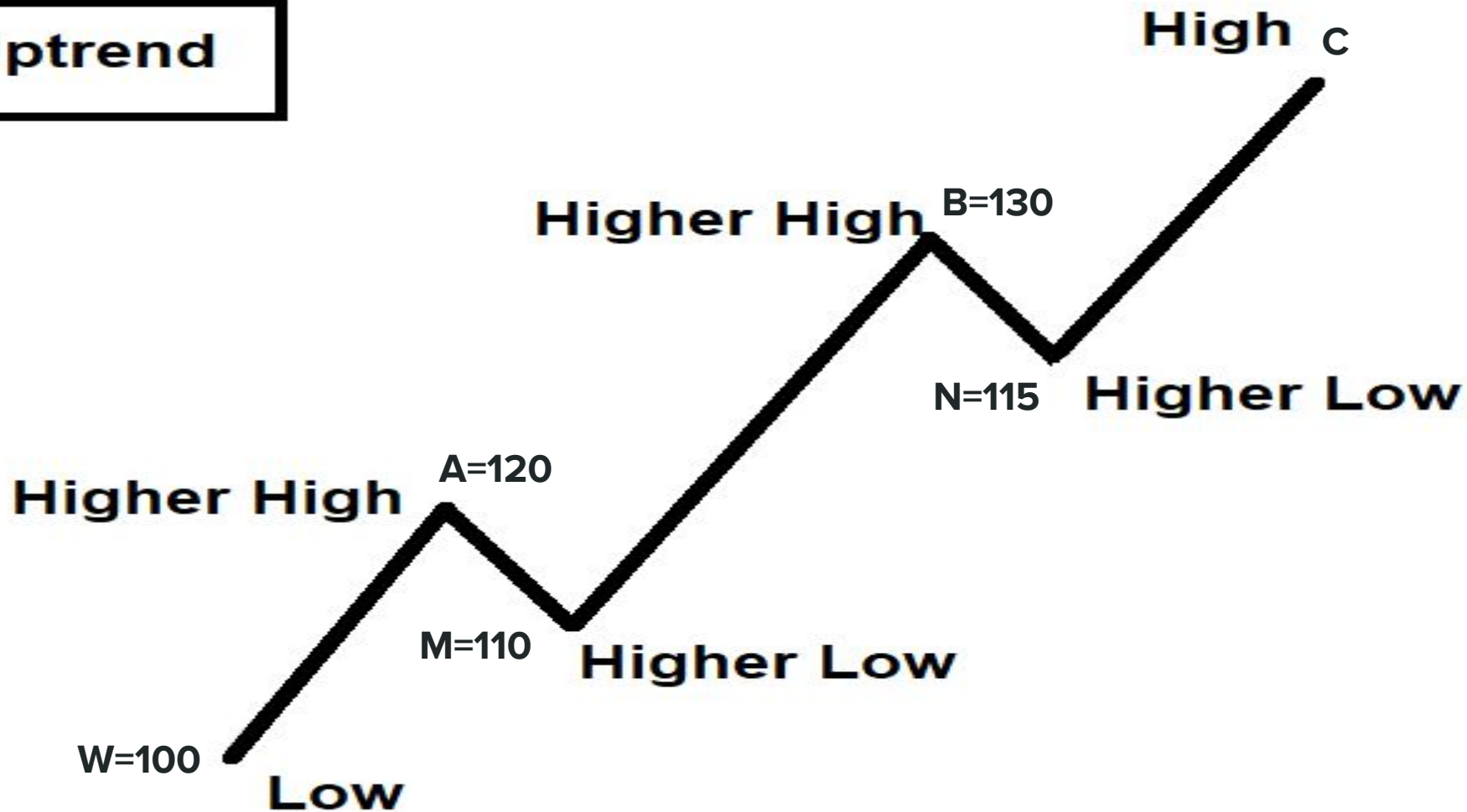
Visualizing an Uptrend:

- Imagine a stock that starts at ₹100. It rises to ₹120 (a **higher high**), pulls back to ₹110 (a **higher low**), then rises again to ₹130 (another **higher high**), and pulls back to ₹115 (a **higher low**). This sequence repeats, creating a clear upward trajectory.

An uptrend is generally seen as a bullish signal, reflecting positive market sentiment and expectations of future price increases

B. Downtrend: A pattern in the price movement of a financial asset where the price consistently forms a series of **lower highs and lower lows**. This indicates that sellers are more dominant than buyers, pushing prices down over time.

1. **Lower Highs (LH)**: Each peak in the price is lower than the previous one. This suggests that buyers are losing interest or strength, and sellers are controlling the market, preventing the price from rising as high as before.

2. **Lower Lows (LL)**: Each subsequent low is lower than the previous one, showing that selling pressure continues to push prices down further with each price drop

High

W=200

Downtrend

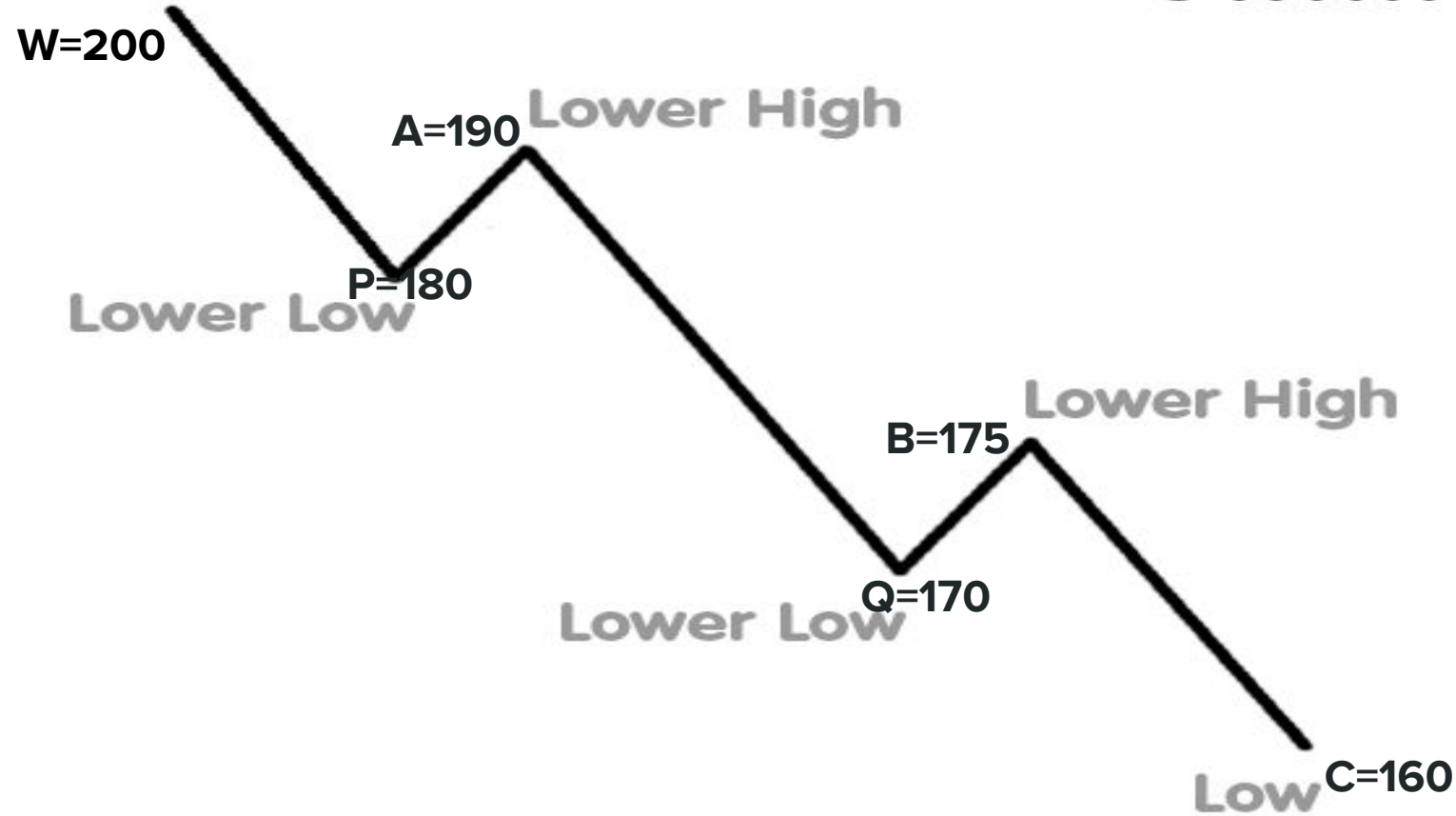A=190 Lower High

P=180

Lower Low

B=175 Lower High

Q=170

Lower Low

Low C=160

Visualizing a Downtrend:

- **High at ₹200** followed by a **low at ₹180**; **Lower high at ₹190** followed by a **lower low at ₹170**; **Lower high at ₹175** followed by a **lower low at ₹160**, following a downward trend

Downtrend reflects bearish sentiment in the market, where selling pressure is strong, and prices are constantly moving lower

C. Sideways Trend: Also known as a **range-bound market** or **horizontal trend**, occurs when the price of a financial asset moves within a narrow, horizontal range, without a clear upward or downward trajectory. In this phase, the asset's price fluctuates between established levels of **support** and **resistance**, but lacks a decisive direction.

1. **Range-Bound Movement**: Prices oscillate between a defined **support level** (where buying tends to increase) and a **resistance level** (where selling tends to increase). The price fails to break out of this range in either direction.

2. **Lack of Clear Trend**: Neither buyers nor sellers are in control. The market lacks momentum, and prices move sideways without forming higher highs (uptrend) or lower lows (downtrend).

3. **Low Volatility**: Sideways trends typically involve lower volatility compared to trending markets, as price fluctuations are confined within a smaller range.
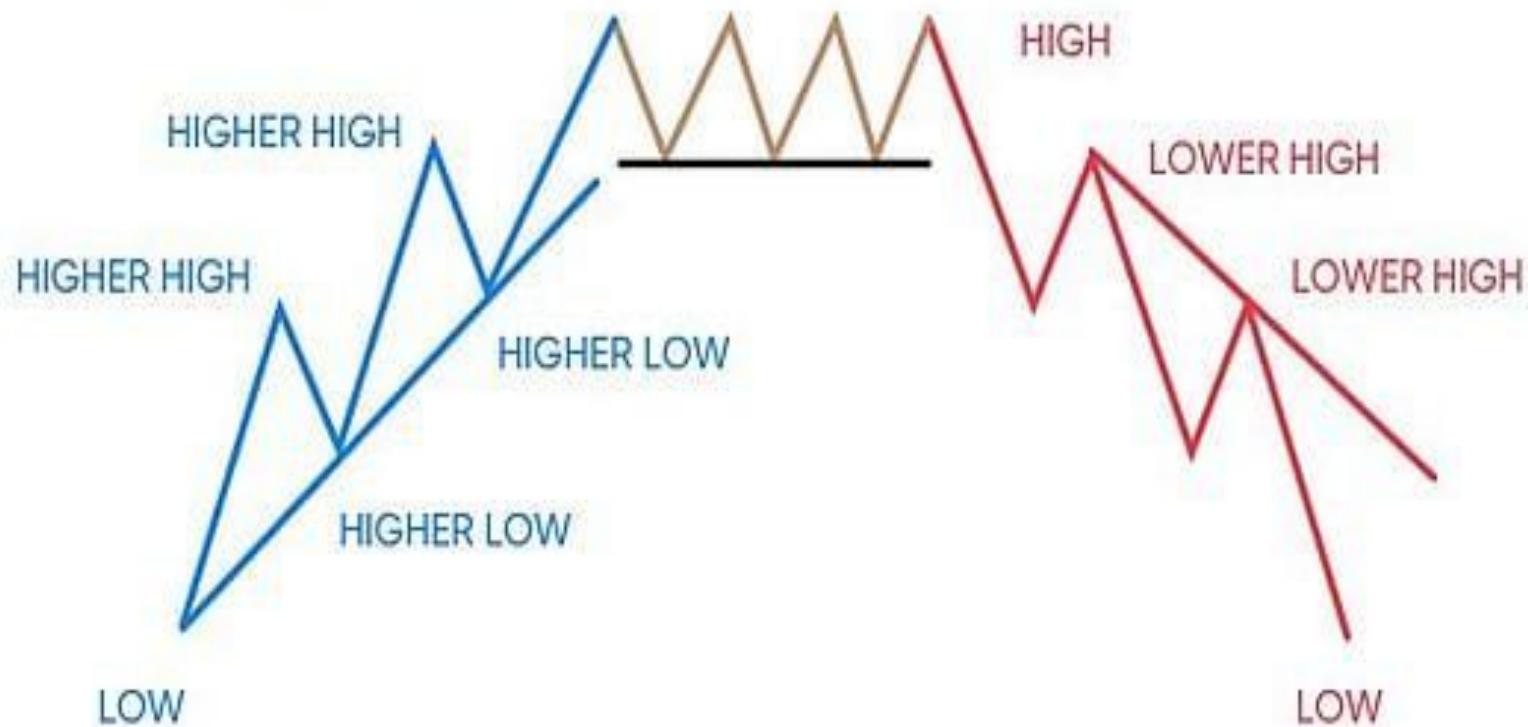
UPTREND SIDEWAYS TREND DOWNTREND

HIGHER HIGH

HIGHER HIGH

HIGHER LOW

HIGHER LOW

LOW

HIGH

LOWER HIGH

LOWER HIGH

LOW

Support: Support is an imaginary price level that is difficult for a stock to move below because there are so many investors willing to buy at that level.

It may be a horizontal or diagonal price level

Resistance: It is the opposite of support. It is an imaginary price level that is difficult for a stock to penetrate/move on the upside.

It may be either a horizontal or diagonal price level.

Resistance is created when the bears gain enough momentum to overwhelm the bulls and stop or reverse upward movement

Horizontal Support

Diagonal Support

Horizontal Resistance

Diagonal Resistance

- Market psychology is assumed to be consistent over time, meaning that price patterns from the past are likely to recur in the future.
- This belief is based on the idea that traders and investors tend to react in similar ways to similar market conditions over time, leading to the repetition of chart patterns and trends.
- Patterns like **head and shoulders**, **double tops and bottoms**, and **triangles** are expected to recur because human behavior in financial markets remains constant.

A. **Head & Shoulders**: A reversal pattern that indicates a potential shift from an uptrend to a downtrend.

- Specific chart formation that predicts a bullish-to-bearish trend reversal.
- The pattern appears as a baseline with three peaks, where the outside two are close in height, and the middle is highest
- Considered one of the most reliable trend reversal patterns
- There are two types: **Head and Shoulders Top** (bearish) and **Inverse Head and Shoulders** (bullish)

- The neckline rests at the support or resistance lines, depending on the pattern direction

A1. Head and Shoulders Top (Bearish Reversal)

- **Structure**: This pattern has three peaks:
  - **Left Shoulder**: A price peak followed by a decline.
  - **Head**: A higher peak followed by a decline.
  - **Right Shoulder**: A lower peak compared to the head but similar to the left shoulder.
- **Neckline**: A horizontal or slightly sloped line that connects the lows/troughs after the left and right shoulders.
- After long bullish trends, the price rises to a peak and subsequently declines to form a trough/low
- The price rises again to form a second high substantially above the initial peak and declines again.
- The price rises a third time, but only to the first peak level, before declining again.
- The neckline, drawn at the two troughs or peaks

Head & Shoulders Pattern

The opposite of a head and shoulders chart is the inverse head and shoulders, also called a head and shoulders bottom.

It is inverted with the head and shoulders bottoms used to predict reversals in downtrends

- **Structure**: The pattern is the mirror image of the Head and Shoulders Top, with three troughs/low (instead of peaks):

    - **Left Shoulder**: A trough/low followed by a rise.

    - **Head**: A deeper trough/low followed by a rise.

    - **Right Shoulder**: A shallower trough/low.

- **Neckline**: Connects the highs after the left and right shoulders.

- The price falls to a trough/low, then rises

- The price falls below the former trough, then rises again

- The price falls again but not as far as the second trough/low

- Once the final trough/low is made, the price heads upward toward the resistance (the neckline) found near the top of the previous troughs
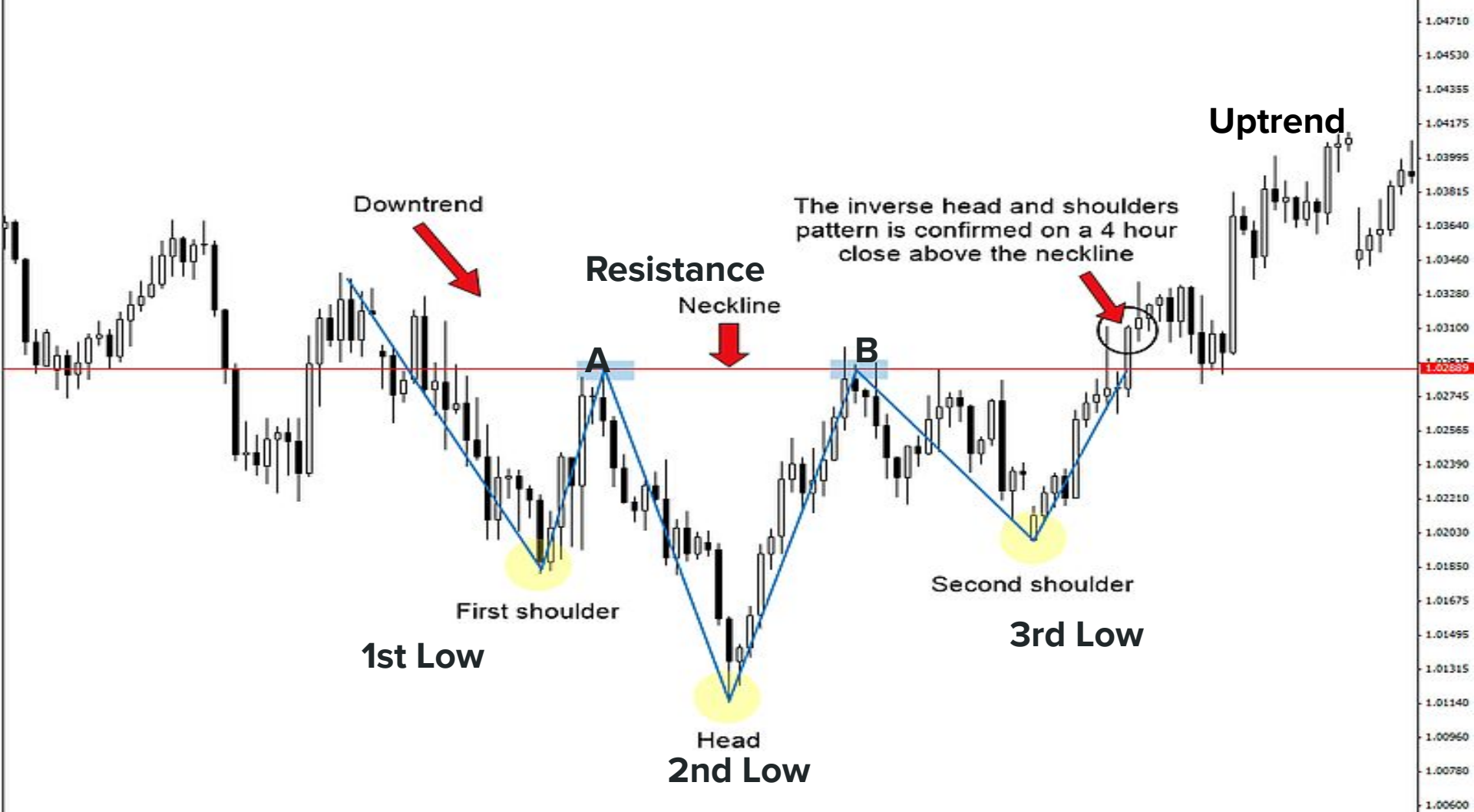
B. Double Tops and Double Bottoms: Also reversal chart patterns which occur when the price (underlying investment) moves in a pattern similar to "W" or "M".

Double top and bottom patterns typically evolve over a longer period of time, and do not always present an ideal visual of a pattern because the shifts in prices don't necessarily resemble a clear "M" or "W".

When reviewing the chart pattern, it is important for investors to note that the peaks and troughs/lows do not have to reach the same points in order for the "M" or "W" pattern to appear.

Double Top (Bearish Reversal)

Double Bottom (Bullish Reversal)

B1. Double Top (Bearish Reversal): Has an 'M' shape and indicates a bearish reversal in trend

- The Double Top pattern consists of two consecutive peaks (rounding tops) at roughly the same price level, with a trough/low in between

- Double top is an extremely bearish technical reversal pattern that forms after an asset reaches a high price two consecutive times with a moderate decline between the two highs.

- It is confirmed once the asset's price falls below a support level equal to the low between the two prior highs

- If a double top occurs, the second peak will usually be slightly below the first peak indicating resistance and exhaustion.

- It can be rare occurrences with their formation often indicating that investors are seeking to obtain final profits from a bullish trend.

- Double tops often lead to a bearish reversal in which traders can profit from selling the stock on a downtrend.

1st Top

2nd Top

Uptrend

Breakout

Neckline

Support

Double Top
Chart Pattern

Downtrend

B2. Double Bottom (Bullish Reversal): Has a 'W' shape and is a signal for a bullish price movement

- It's opposite of the Double Top and features two troughs/lows at around the same price level, with a peak in between

- If the price breaks above the resistance level (formed by the peak between the two troughs), it indicates a bullish reversal, signaling the end of a downtrend and the start of an uptrend

- A double bottom will typically indicate a bullish reversal which provides an opportunity for investors to obtain profits from a bullish/uptrend.

- After a double bottom, common trading strategies include long positions (holding longer period of time) that will profit from a rising security price

Double Bottom Chart Pattern

Downtrend

Uptrend

Resistance

Neckline

Breakout

1st Bottom

2nd Bottom

4 Jun 2013   14 Jun 2013   26 Jun 2013   8 Jul 2013   18 Jul 2013   30 Jul 2013   9 Aug 2013   21 Aug 2013   2 Sep 2013   12 Sep 2013   24 Sep 2013   4 Oct 2013   16 Oct 2013

C. Triangles: A continuation pattern on a chart that forms a triangle-like shape

- Technical analysts read the triangle as an indicator of a continuation of an existing trend or reversal

- It is important for every trader to recognize patterns as they form in the market.

- Patterns are vital for traders to spot trends and predict future outcomes so that they can trade more successfully and profitably.

- Triangle patterns are important because they help indicate the continuation of a bullish or bearish market.

- They can also assist a trader in spotting a market reversal

- Named for its resemblance to a series of triangles, the triangle chart pattern is created by drawing trendlines

- Trendlines: Are easily recognizable lines that traders draw on charts to connect a series of prices together or show some data's best fit

- There are three main types: Ascending Triangle, Descending Triangle, & Symmetrical Triangle

4. Price Action is More Important than Fundamental Factors

- Technical analysis is entirely price-driven, meaning that analysts focus on the historical price data and ignore the underlying fundamentals of the asset (such as earnings, revenue, etc.).

- The belief is that price movements provide a comprehensive and immediate indicator of how the market values the stock or security.

5. Volume Confirms Trends

- Volume refers to the number of shares or contracts traded during a given period.

- Higher volume indicates stronger conviction and suggests that a trend is likely to continue. Conversely, if a trend occurs with declining volume, it may signal weakness or an upcoming reversal.

6. Support and Resistance Levels are Key

- **Support**: A level where the price tends to stop falling, as demand increases.

- **Resistance**: A level where the price tends to stop rising, as selling pressure increases.

- When these levels are broken, the asset often experiences significant movement in the direction of the breakout, which traders attempt to capitalize on.

7. Market Cycles Exist

- Technical analysts recognize that markets move in cycles, typically influenced by economic events, market sentiment, or government policies. These cycles can be long-term (years) or short-term (days, weeks).

- Identifying where the market is within its cycle can help traders make better-informed decisions.

Types of Charts in Technical Analysis

In Technical Analysis, different chart types are used to visualize price action and reveal potential trading patterns

1. Line Chart:

- Line charts are a basic tool for visualizing an asset's price history and are commonly used by traders and investors

- They show the price of a security over a period of time, usually using **closing prices**, thus reducing noise from less critical times in the trading day, such as the open, high, and low prices

- When several line charts are overlaid, you can compare different assets and economic and financial data far more easily

- This is particularly useful for comparing an asset or sector's performance against a benchmark

- They typically focus on end-of-period prices and do not have the granular details required for intraperiod data, such as the high and low, which may be crucial for trader

- Best for long-term analysis/general price trends and identifying overall direction without the distraction of daily fluctuations

- By only plotting the last closing price of each month, the chart provides a simplified, long-term view of price trends while filtering out daily fluctuations

- This is useful for analysts focused on bigger-picture trends rather than short-term volatility

Process:

1. **Daily Closing Data**: Throughout each month, the stock or asset has a closing price at the end of each trading day.

2. **End-of-Month Closing Price**: For a monthly line chart, only the **closing price on the last trading day of each month** is used as the data point.

3. **Connecting Monthly Points**: Each end-of-month closing price is plotted on the chart, then connected with a line to the next month's closing point, creating a smooth trend line across months.

Product Trends by Month
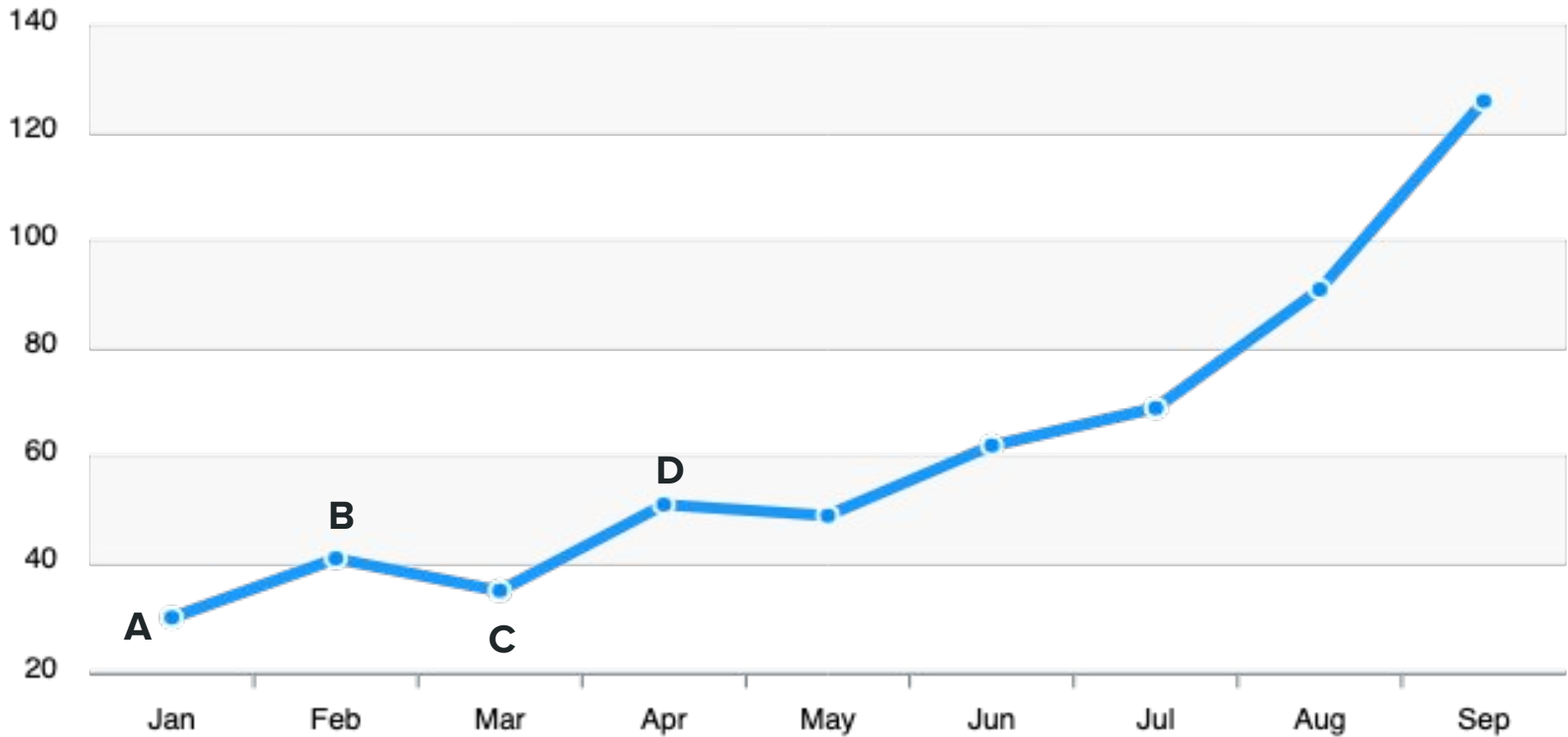
2. Bar Chart: A visual representation of an asset's price movement over time, which can help traders identify trends and make informed decisions

Provides more **detailed information** with OHLC

Each bar typically shows opening, high, low, and closing (OHLC) prices and are also known as OHLC chart

Each Bar chart has 2 types of lines, viz., vertical & horizontal

- **Vertical bar**: The range in which the price fluctuates during the time interval (shows the highest and lowest prices)

- **Horizontal lines**: The opening and closing prices of the stock in the interval

- **Left horizontal line**: The **opening price** is marked by a small horizontal line on the left of the vertical line

- **Right horizontal line**: The **closing price** is marked by a small horizontal line on the right of the vertical line

- **Top end**: The highest price during a trading day

- **Bottom point**: The lowest price during a trading day

Vertical Height: The vertical height of an OHLC bar (big price difference between the high and low of the period) is indicative of the volatility during the period

- If the line height is great, then traders know that there's a lot of volatility and indecision in the market

- When a bar has very small vertical bars, it means there is little volatility

Horizontal Line Position: The position of the left and right horizontal lines tell technical traders where the asset opened and closed relative to its high and low prices

- If there is a large distance between the open and close it means the price made a significant move

- If the close is far above the open, it shows buyers were very active during the period, which may indicate more buying in future periods is forthcoming

- If the close is very near the open, it shows there was not a lot of conviction in the price movement during the period

- An overall uptrend is typically represented by more green/black bars.

- Downtrends, are typically represented by more red bars

Bar chart
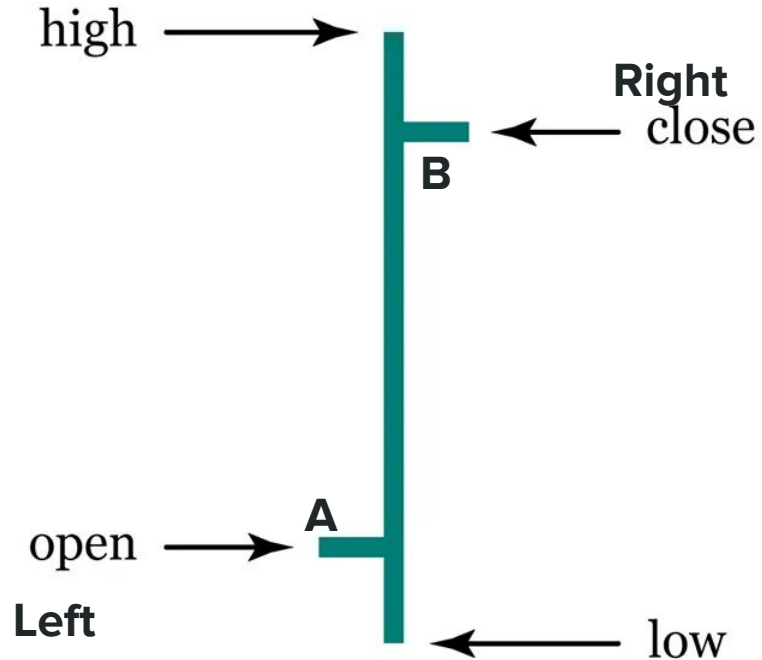
up day
BULLISH
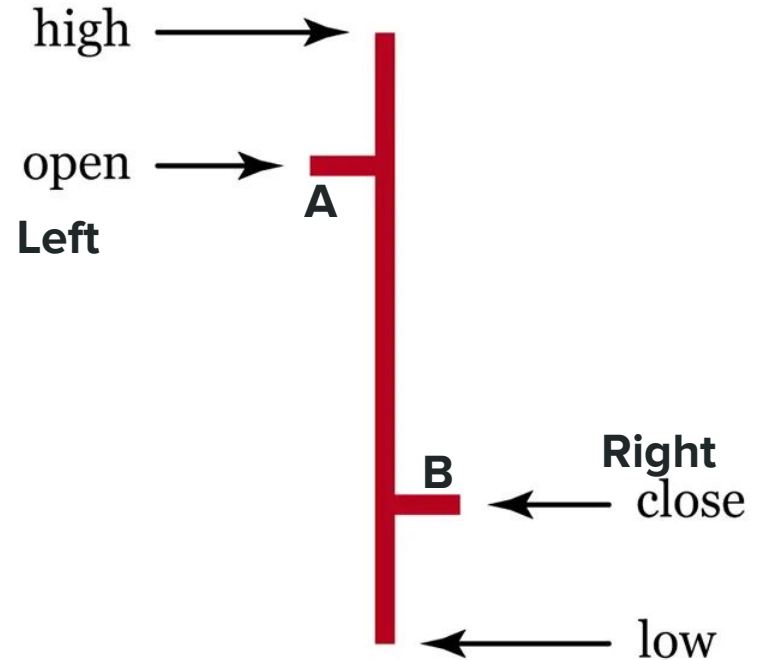
down day
BEARISH

3. Candlestick Chart: Candlestick charts originated in Japan in the 1700s, by Homma who discovered that, while there was a link between price and the supply and demand of rice, the markets were also strongly influenced by the emotions of traders

- Candlestick charts show those emotions by visually representing the size of price moves with different colors

- These sticks display the asset's opening, closing, high, and low (OHCL) prices during said time frame

- Candlestick charts are widely used by traders and analysts to identify patterns, trends, possible price movement and potential reversals in market prices, aiding in informed decision-making based on past patterns

- Emotion often dictates trading, which can be read in candlestick charts

- The main body of the candlestick, known as the **"real body**," illustrates the **price range between the opening and closing prices**

- When the real body is filled in or black or red (Bearish), it means the close was lower than the open

- If the upper wick on a red candle is short, then it indicates that the stock opened near the high of the day

- If the real body is white or green (Bullish), it means the close was higher than the open

- If the upper wick on a green candle is short, then it indicates that the stock closed near the high of the day

- The "wicks" or "shadows" extend from the real body, indicate the full price range

- "Wick" or "shadow" above the real body indicates the highest price reached, while the wick below it represents the lowest price during the same time frame

A candle has four points of data:
1. Open – the first trade during the period specified by the candle
2. High – the highest traded price
3. Low – the lowest traded price
4. Close – the last trade during the period specified by the candle

- **Bullish Candlesticks:** A bullish candlestick forms when the closing price is higher than the opening price, signifying that buyers have dominated the market during the given period. This suggests optimism, as the asset's value increased over the timeframe.

- **Bearish Candlesticks:** A bearish candlestick emerges when the closing price is lower than the opening price. This indicates that sellers have had the upper hand, implying a pessimistic sentiment and a decline in the asset's value

- Candlestick charts are pivotal in understanding market sentiment, as they vividly depict the battle between buyers and sellers over a given period. They help analysts identify shifts in supply and demand, aiding in predicting trend reversals, continuations, and potential price levels

ZILLOW GROUP INC, 5, Cboe BZX
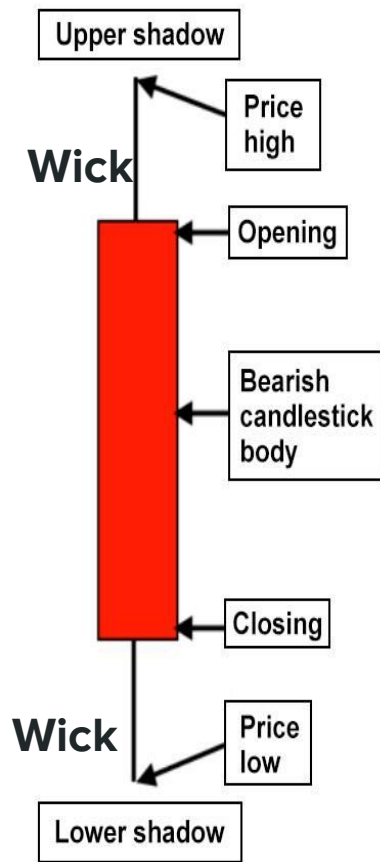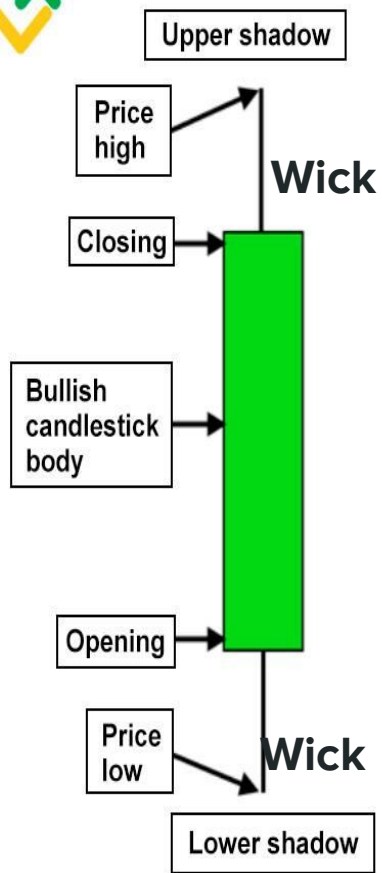
Technical Indicators

- An indicator mathematically derived from price, trading volume, investor sentiments, and applied to interpret stock market trends and investment decisions using past price and volume trends

- A technical indicator is usually shown graphically and compared with the corresponding price chart for analysis

- The mechanics of a technical indicator captures the behavior and sometimes the investors' psychology to provide a clue of future trends of price activity

- Technical indicators filter complex market data into easily interpretable signals, guiding traders on market trends, potential reversals, and the strength of price moves

- Traders typically combine multiple indicators to get a comprehensive view of market conditions, balancing various perspectives to make more informed trading decisions

Types of Technical Indicators:

1. **Trend Indicators**- These are tools used in technical analysis to help identify the **direction of the overall market trend**.

- They show whether an asset is in an **uptrend/Bullish** (rising prices), **downtrend/Bearish** (falling prices), or **sideways trend** (little price movement in either direction)

- These indicators are helpful in spotting trend directions, confirming trends, and assessing the strength of trends, which can guide traders on when to enter or exit trades

a. **Simple Moving Average (SMA)**: Moving averages are one of the core indicators in technical analysis, and there are a variety of different versions

- SMA is the easiest moving average to construct

- It is simply the **average price over the specified *period***

- The average is called "moving" because it is plotted on the chart bar by bar, forming a line that moves along the chart as the average value changes

- It's one of the most widely used tools in technical analysis for identifying trends by smoothing out price fluctuations and providing a clearer view of price direction over time

- The SMA is calculated by adding up the closing prices of an asset over a certain number of periods (such as days or weeks) and then dividing that sum by the number of periods

SMA= (Closing Prices for N Periods)/N

N is the number of periods

Suppose: calculate the simple moving average of a security with the following closing prices over a 15-day period.

Week One (5 days): 20, 22, 24, 25, 23
Week Two (5 days): 26, 28, 26, 29, 27
Week Three (5 days): 28, 30, 27, 29, 28
20 + 22 + 24 + 25 + 23 + 26 + 28 + 26 + 29 + 27 + 28 + 30 + 27 + 29 + 28 = 392

$$SMA=392 / 15 = 26.13$$

The 15-day simple moving average for this asset/share would be Rs. 26.13

Interprete:

- SMA value of Rs. 26.13 suggests that the average closing price over this period is Rs. 26.13. This figure can be compared to the current closing price of the security to get a sense of market direction.

- If the current closing price is **above** Rs. 26.13, it could indicate bullish sentiment, as the price is trading higher than its recent average, potentially suggesting an upward trend.

- If the current closing price is **below** Rs. 26.13, it might indicate bearish sentiment, as the price is below its recent average, possibly indicating a downward trend

b. Exponential Moving Average (EMA): A type of moving average that gives more weight to **recent prices**, making it more responsive to recent price changes than the **Simple Moving Average (SMA)**

- EMA is a type of moving average that places a greater weight and significance on the **most recent data points**

- EMA is also referred to as the exponentially weighted moving average

- An exponentially weighted moving average reacts more significantly to recent price changes than a SMA, which applies an equal weight to all observations in the period

- EMA calculation assigns more significance to recent prices compared to older ones

- This helps the EMA react faster to changes in price, which is particularly valuable for identifying trend reversals sooner than the SMA might

- EMAs place a higher weighting on recent data than on older data, they are more responsive to the latest price changes than SMAs

- That makes the results from EMAs more timely and explains why they are preferred by many traders

- EMA reacts faster to recent price changes than SMA

- EMA gives higher weights to recent prices, while the SMA assigns equal weights to all values

- The two averages are similar because they are interpreted in the same manner and are both commonly used by technical traders to smooth out price fluctuations

C. Moving Average Convergence Divergence (MACD): MACD is a technical indicator to help investors identify price trends, measure trend momentum, and identify entry points for buying or selling.

- MACD is a trend-following momentum indicator that shows the relationship between **two EMA** of a security/asset/shares' price.

- MACD was developed in the 1970s by Gerald Appel, and is one of the most popular technical tools, readily available on most trading platforms offered by online stock brokers

- It helps traders identify changes in a stock's price direction, strength, and momentum by examining the relationship between two moving averages of a stock's price

- MACD is particularly useful for spotting potential buy or sell signals and is widely used due to its simplicity and reliability in tracking trends

- MACD line is calculated by **subtracting** the **26-period EMA** from the **12-period EMA**

Components of MACD:

1. **MACD Line**: MACD Line=12-day EMA−26-day EMA

2. **Signal Line**: The signal line (slow line) is a 9-day EMA of the MACD line. It is plotted alongside the MACD line and acts as a trigger for buy and sell signals

3. **Zero Line**: Base line or the center line

4. **MACD Histogram**: Bars above & below the zero line. MACD histogram represents the difference between the MACD line and the signal line

- MACD Histogram=MACD Line−Signal Line

- When the histogram is above the zero line, it indicates bullish momentum (the MACD line is above the signal line). When it's below, it indicates bearish momentum

MACD

Daily Chart - Nasdaq 100 ETF (QQQQ)

MACD
12-period EMA minus
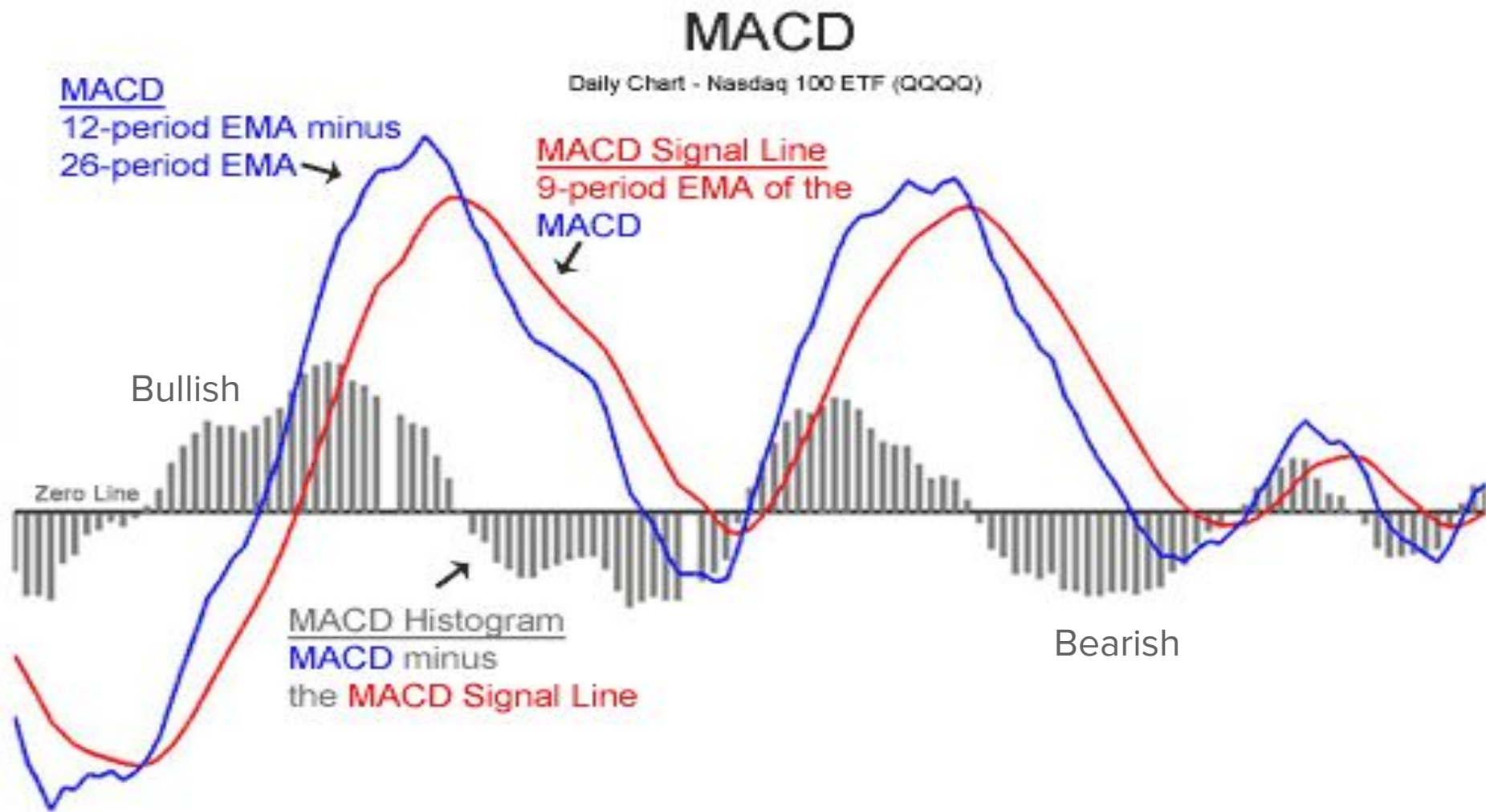26-period EMA

MACD Signal Line
9-period EMA of the
MACD

Bullish

Zero Line

MACD Histogram
MACD minus
the MACD Signal Line

Bearish

MACD Signals

1. **MACD Line and Signal Line Crossovers**:
    ○ When the MACD line crosses **above** the signal line, it is a bullish signal, suggesting a potential buying opportunity- **Positive Crossover**.

    ○ When the MACD line crosses **below** the signal line, it is a bearish signal, suggesting a potential selling opportunity- **Negative Crossover**.

2. **Centerline Crossovers**:
    ○ When the MACD line crosses above the **zero line**, it indicates a shift from negative to positive momentum, suggesting a bullish trend.

    ○ When the MACD line crosses below the **zero line**, it indicates a shift from positive to negative momentum, suggesting a bearish trend.

Example of MACD Interpretation:

● Suppose a stock's MACD line crosses above its signal line while the MACD line is below the zero line. This could be interpreted as an early signal of bullish momentum forming, and traders might watch for further strength before confirming a buy position.

● Alternatively, if the MACD line crosses below the signal line when it is above the zero line, it could suggest a weakening uptrend and a potential sell signal bearish momentum

d. Bollinger Bands: A technical indicator created by John Bollinger that consists of a moving average (SMA) and two standard deviation lines (bands) plotted above and below the SMA

- Bollinger Bands are used to **measure market volatility** and identify potential overbought and oversold conditions

- They are particularly useful in helping traders visualize price volatility and spot potential trend reversals

- Price envelopes define upper and lower price range levels

- Bollinger Bands are envelopes plotted at a **standard deviation level** above and below a simple moving average of the price

- **Standard deviation is a measure of volatility**, when the markets become more **volatile the bands widen**; during **less volatile** periods, the **bands' contract**

- Because the distance of the bands is based on **standard deviation**, they adjust to **volatility swings**

- Shows the levels of **different highs and lows** that a security/share price has reached and also its **relative strength**, where highs are near to the upper line and lows are near to lower line

- **Squeeze**- a central concept of Bollinger Bands

- When the bands come close together, **constricting the moving average**, it is called a squeeze. A squeeze signals a **period of low volatility**

- On the contrary, the **wider apart** the **bands move**, the more likely the chance of a **decrease in volatility** and the greater the possibility of exiting a trade

- These conditions are **not trading signals**

- The bands **do not indicate when the change** may take place or in **which direction** the price could move

- In the context of **Bollinger Bands**, **volatility** refers to the degree of price variation or fluctuation in an asset over time
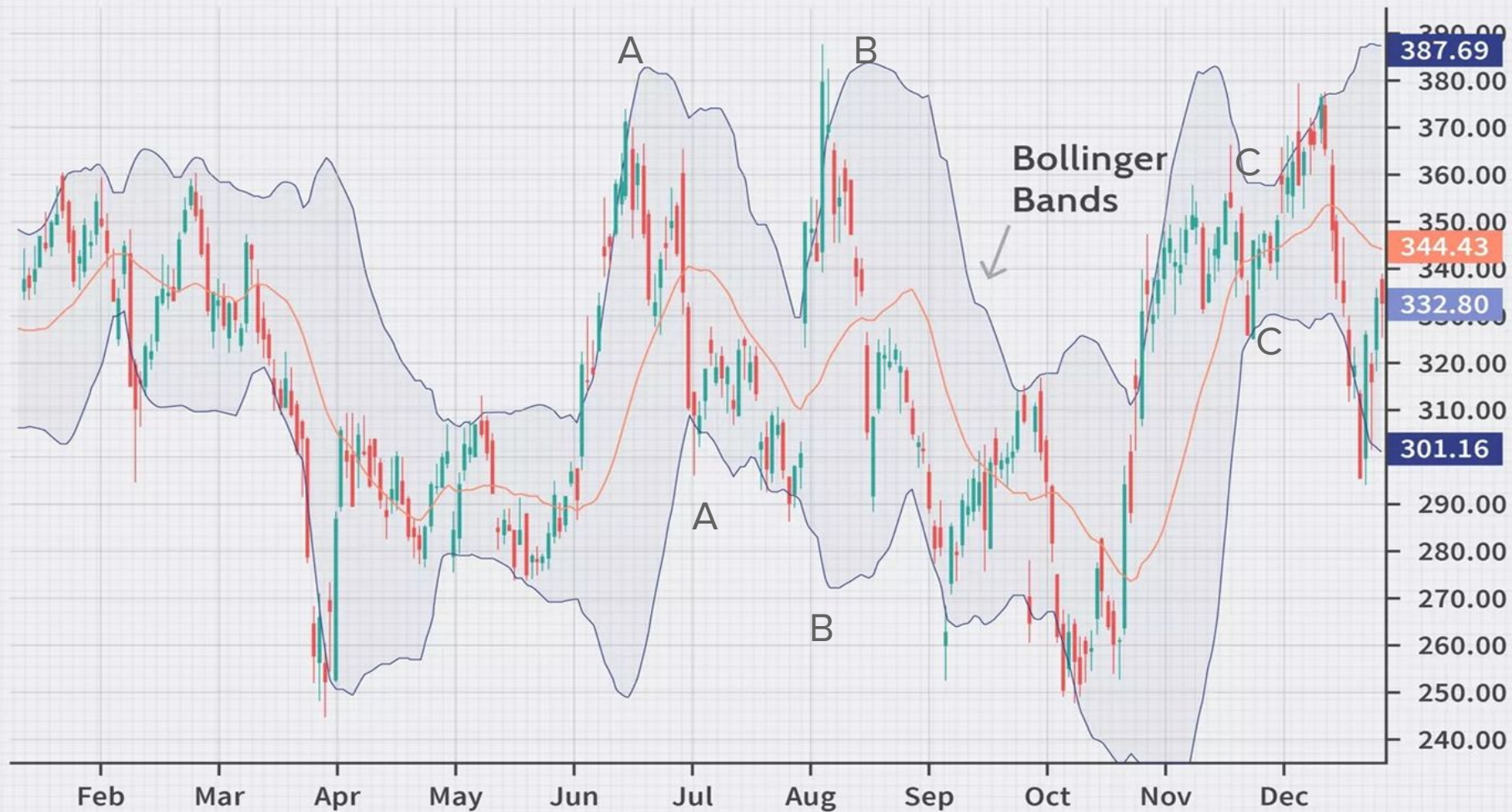
Relative Strength Index (RSI)

- **Relative Strength Index (RSI)** is a popular momentum oscillator used in technical analysis to measure the speed and change of price movements.

- Developed by J. Welles Wilder, the RSI is a valuable tool for identifying potential overbought or oversold conditions in a stock or other asset, helping traders anticipate possible price reversals or trend continuations

- RSI measures the speed and magnitude of a security's recent price changes to detect overvalued or undervalued conditions

- In addition to identifying overbought (above 70) and oversold (below 30) securities, the RSI can also indicate securities that may be primed for a trend reversal or a corrective pullback in price.

- It can signal when to buy and sell

- RSI calculates the average gain and average loss over a specified time frame to provide an indication of recent price strength or weakness
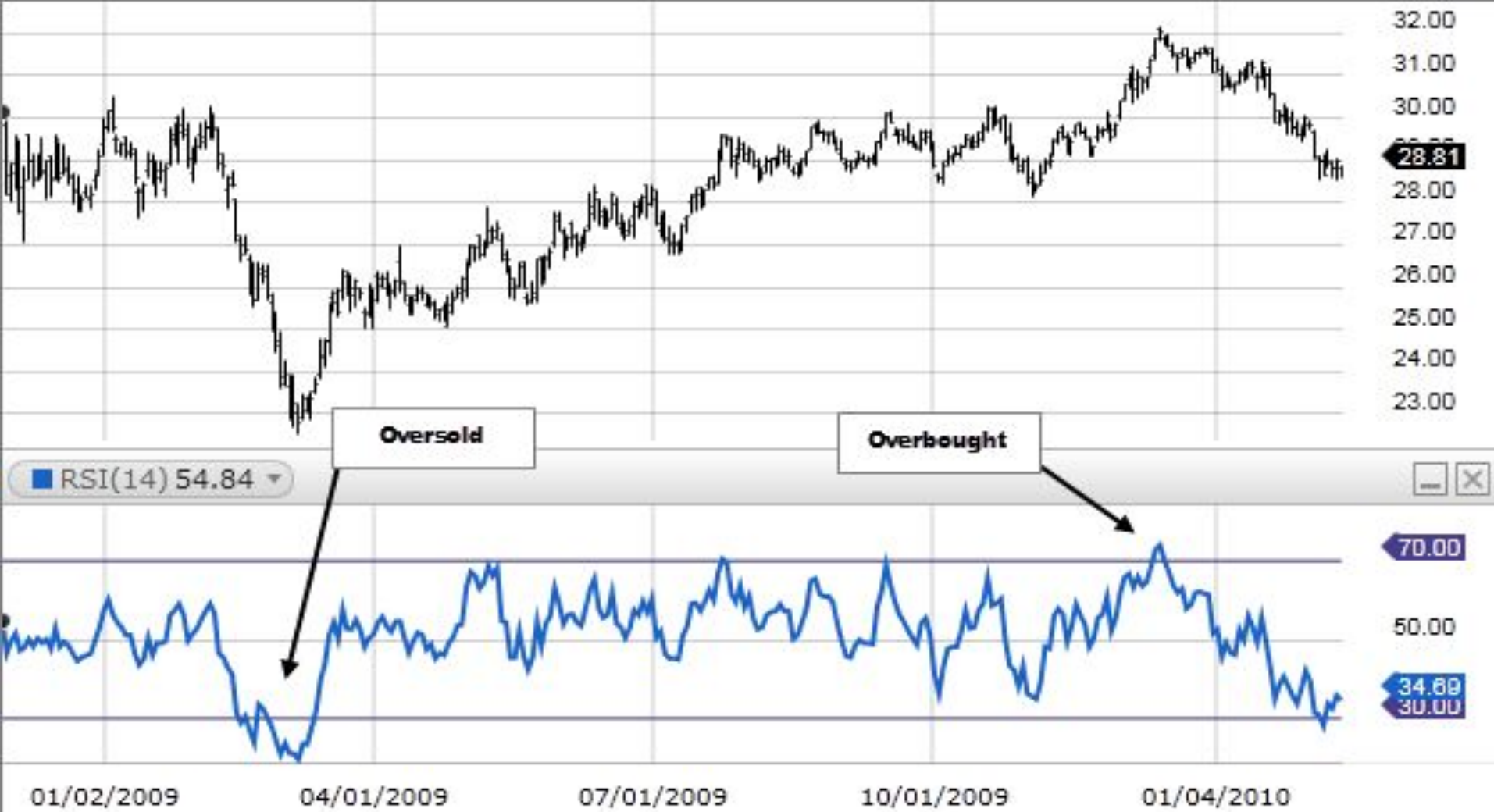
- RSI compares a security's strength on days when prices go up to its strength on days when prices go down.

- Relating the result of this comparison to price action can give traders an idea of how a security may perform

How it works?

Overbought and Oversold Levels:

- **Overbought (Above 70)**: When the RSI moves above 70, it indicates that the asset may be overbought, meaning it could be overvalued and might be due for a pullback or correction. This can signal a potential **sell** opportunity.

- **Overbought** means that buying pressure has been high, possibly driving the price too high relative to recent price movements.

- An overbought condition doesn't guarantee a reversal but indicates that the asset might be due for a correction or pullback. Traders may interpret this as a potential signal to sell or take profits.

- **Oversold (Below 30)**: When the RSI drops below 30, it suggests that the asset may be oversold, meaning it could be undervalued and may lead to a price increase. This could signal a potential **buy** opportunity.

- When the RSI falls below **30**, it suggests the asset may be **oversold**. This implies that selling pressure has been high, potentially driving the price lower than what recent price movements would justify.

- An oversold condition can signal a potential buying opportunity, as the asset might be undervalued or due for a price rebound.

Centerline Cross:

- The RSI has a midpoint at 50. When the RSI is above 50, it suggests that average gains are higher than average losses, indicating bullish sentiment. When below 50, it suggests bearish sentiment.

70 and 30 in the RSI are not prices of the asset but rather **index values** on the RSI scale, which ranges from 0 to 100.

These values represent **momentum thresholds** that indicate whether an asset might be overbought or oversold

Example of RSI Interpretation

- Suppose a stock has an RSI reading of 80. Since this value is above 70, it suggests that the stock may be overbought. A trader might interpret this as a potential opportunity to sell or wait for a price pullback before entering a new position.

- Conversely, if the stock's RSI falls to 25, it may be oversold, indicating a possible buying opportunity