

AA-07

TECHNICAL ANALYSIS A–Z

Moving averages, VWAP, RSI, MACD — the chart toolkit, honestly explained.

Alpha Academy · Team Alpha Trading

Technical Analysis A–Z: Tools That Read the Chart

Picture a chalkboard at a farmers market. Every time apples change hands, someone writes the new price on the board. Draw those prices as a line across a page, and you have a **chart** — a picture of price over time. **Technical analysis** is the skill of reading that picture to understand what buyers and sellers have been doing.

This chapter teaches the main chart-reading tools one at a time, in plain words, assuming you know nothing about markets yet. By the end you will be able to open almost any chart, find the trend (the general direction price has been moving), and use a few tools without getting lost. Start with the most important lesson: these tools describe the past and present. They do not see the future.

> **NOTE**
> Every tool in this chapter describes probability, not certainty — how likely something seems, based on what has happened before. Nothing predicts the future. Treat every tool like a weather report, not a crystal ball.

What Technical Analysis Is — and Is Not

Technical analysis rests on one idea: price already reflects what the crowd knows and feels — their information, hope, and fear get baked into it. So instead of only asking "is this a good company?", the chart reader asks "what is the crowd actually doing right now?"

The other approach is **fundamental analysis**: studying the business itself — sales, profits, debts — to judge what it is worth. Many traders use both. Neither makes you right.

A chart is built from **candlesticks**. A candlestick is one small shape summing up one slice of time — five minutes, one day, whatever you choose. It shows four prices: open, high, low, and close — where it started, its extremes, and where it ended. Green means it closed higher than it opened; red means lower.

Tools calculated from candles are called **indicators** — helper lines or numbers computed from price, and sometimes from volume (defined below). Your software does the math; you only interpret it. One warning: indicators are built from past prices, so they react after price has moved. Traders call this **lag** — a lagging tool can confirm a move that already started, never warn you before it begins.

Trend Lines and Channels: Start With Price Itself

Before any indicator, learn to read plain price. First question on any chart: which way is the **trend**, the general direction price has been traveling?

- **Uptrend**: higher highs and higher lows — a staircase going up, with small steps down in between.
- **Downtrend**: lower highs and lower lows — a staircase going down.
- **Sideways** (also called a range): price bounces between the same top and bottom, going nowhere overall.

A **trend line** is a straight line connecting the low points of an uptrend — underneath price, like a ramp it keeps bouncing off — or the high points of a downtrend, above price like a ceiling. Connect at least two obvious peaks or valleys (called swing points). The more times price touches the line and bounces, the more traders are watching it.

Example: a stock rises from $40 to $44 over two weeks, dipping first to $41.50, then to $42.50 — rising dips, meaning higher lows. Draw a line under them: an uptrend line. While daily prices keep closing above it, the staircase is intact; a firm close below it means the trend deserves a second look. Add a second line parallel to the first, on the other side of price, and you have a **channel** — a river between two banks, where price often slows or turns near the edges.

Moving Averages: The Trend, Smoothed Out

Price jumps around. A **moving average** smooths the jumps into one calm line: add up the closing prices of the last, say, 20 days and divide by 20. Tomorrow, drop the oldest day, add the new one, average again — the line "moves." Price above the line means recent prices are stronger than their recent average; below, weaker.

There are two common kinds. The **SMA** (Simple Moving Average) counts every day in the window the same. The **EMA** (Exponential Moving Average) counts recent days more than old days, so it hugs price more closely and reacts faster. The trade-off: faster means earlier signals and more false alarms; slower means later signals and fewer false alarms. Beginners usually start with the SMA.

The number is the **period** — how many candles it looks back over. The most watched are:

- **9 and 20** — short-term, the last few weeks.
- **50** — medium-term, about ten weeks; a common line between a healthy and a struggling stock.
- **200** — long-term, close to a trading year. Above it reads as a long-term uptrend; below it, a long-term downtrend.

Tiny example: the last five closes are $100, $102, $101, $103, $104. The 5-period SMA is (100 + 102 + 101 + 103 + 104) ÷ 5 = $102. Today's close of $104 sits above the line — a small sign of short-term strength. Longer periods work identically.

A **golden cross** is popular jargon for a shorter average (usually the 50-day) crossing up through a longer one (usually the 200-day). A **death cross** is the same crossing downward. The dramatic names are just press labels. Because averages lag, a cross only confirms a shift already weeks old.

> **NOTE**
> Moving averages work best when price is trending. In a sideways range, price whips across the line and the averages point nowhere.

VWAP: The Day’s Fair-Price Line

VWAP stands for Volume-Weighted Average Price: the average price of a stock for the day so far, weighted by how many shares traded at each price — prices where lots of shares changed hands count more than prices where few did. Think of it as the day's true average cost.

VWAP restarts every morning, so it belongs mainly to **day traders** — people who open and close trades within the same day. Giant institutions are often judged against VWAP — buy below it and they beat the day's average — so VWAP acts like a magnet and a dividing line.

- **Price above VWAP**: buyers have controlled the day so far; the day leans bullish (upward).
- **Price below VWAP**: sellers have controlled the day so far; the day leans bearish (downward).

Example: at 11:00 AM a stock's VWAP is $75.20 and the stock trades at $76.10 — almost a dollar above the day's average transaction price, so demand is winning. Sink below it and stay there, and the story flips to sellers. VWAP never says "buy" or "sell"; it says who is winning today. In the first minutes it swings wildly, so give it time to settle.

RSI: A Speedometer for Momentum

Momentum is the strength and speed behind a price move — not just that price rose, but how hard it pushed. The **RSI** (Relative Strength Index) turns recent momentum into one number from 0 to 100, comparing the size of recent up-moves to down-moves, traditionally over 14 periods.

- **Above 70** is conventionally called **overbought** — price has risen unusually fast and far.
- **Below 30** is conventionally called **oversold** — price has fallen unusually hard and fast.

"Conventionally" is the key word: customs, not laws. In a powerful uptrend, RSI can sit above 70 for days while price keeps climbing. Overbought means "stretched, by this one measure" — not "must fall now."

RSI's most respected use is **divergence** — the indicator and price disagreeing. Example: a stock reaches a new high of $120 on Monday with RSI at 74. Thursday it edges to $121 — but RSI only reaches 66. Price made a new peak on a weaker push. That warning is called bearish divergence: the climb may be tiring. It is a warning, not an order — price can keep rising afterward.

MACD: Watching Two Averages Argue

The **MACD** (say "mack-dee") stands for Moving Average Convergence Divergence. MACD compares a fast EMA with a slow EMA — traditionally the 12-period and the 26-period. When the fast average pulls away, momentum is building; when they squeeze together, momentum is fading. "Convergence" means coming together; "divergence," pulling apart.

It draws two lines: the **MACD line**, the gap between the fast and slow EMAs, and the **signal line**, a smoothed average of the MACD line itself (traditionally a 9-period EMA of it).

The classic reading is the **signal crossover**. When the MACD line crosses up through the signal line, recent momentum has just turned upward — a possible early hint of strengthening. Crossing down means momentum has rolled over. MACD is built from moving averages, so it lags: the crossover comes after the turn has begun.

Bollinger Bands: A Belt That Breathes

Volatility is how much and how fast price typically swings — how jumpy a market is. **Bollinger Bands** draw three lines: a moving average in the middle (usually the 20-period SMA) and two outer bands a set distance above and below it, based on how much price has been swinging lately. The behavior:

- When price gets jumpy, the bands **expand**.
- When price gets quiet, the bands pinch into a narrow **squeeze**.

The squeeze is the famous part. Very quiet periods tend to end with a bigger move, in one direction or the other. A squeeze says energy is building — never which direction. Also unlearn a misunderstanding: touching the upper band is not an automatic sell signal, nor the lower band an automatic buy — in a strong trend, price can "walk the band" for days.

Volume: The Crowd Behind the Move

Volume is how many shares (or contracts) changed hands in a period — one candle might see 200,000 shares trade, a quiet one 8,000. Volume answers what price cannot: how many people showed up?

The core principle of **volume analysis** fits in one sentence: volume confirms moves. A **breakout** — price pushing above a level it could not pass before — means far more when volume surges with it. The same breakout on weak volume is suspect: little commitment, and a higher chance it fizzles. A sell-off on enormous volume shows real urgency to exit.

Example: a stock has sat under $60 for a month. Tuesday it closes at $61.40 on volume of 3.2 million shares, against a recent daily average of 1.1 million — nearly triple the normal crowd pushed it through $60. The same $61.40 close on only 600,000 shares — half the usual crowd — would tell a much weaker story.

> **RULE**
> Price tells you what happened; volume tells you how much it mattered.

ATR: The Average Daily Wiggle

The **ATR** (Average True Range) answers a homey question: how much does this thing normally move in a day? For each of the last, traditionally, 14 days, it measures the full range price traveled — the whole high-to-low swing, including overnight gaps — then averages them. The result is in dollars: an ATR of $2.40 means the stock recently traveled about $2.40 from daily low to daily high, on average. Traders call it the **average daily wiggle**.

ATR never points up or down. It is a measuring stick, useful two ways. First, expectations: with an ATR of $0.60, hoping for a $3 move today is wishing; with an ATR of $6, a $0.50 move is noise. Second, risk: many traders set their protective exit — the price where they admit the trade idea was wrong — at a distance related to ATR, and trade smaller when ATR is large.

Support, Resistance, and Fibonacci Levels

Support is a price area where declines have repeatedly stalled — a floor where buyers showed up before. **Resistance** is a ceiling where rallies kept stalling as sellers appeared. Treat them as zones, not exact pennies: traders remember "around $50," not "$50.13." Old resistance, once price breaks firmly above it and holds, often becomes new support — the ceiling becomes the floor.

Levels come from previous highs and lows and round numbers like $50 and $100, and work — to the extent they do — because so many traders watch the same places.

Fibonacci retracement is the famous add-on: after a clear move up, draw a tool between the move's low and high, and it marks lines at 38.2%, 50%, and 61.8% of the way back down. Those percentages come from the Fibonacci sequence of numbers. Example: a stock ran from $80 to $100. A 50% retracement brings it back halfway, to $90. The 50% level is not even a true Fibonacci ratio, yet it is watched anyway, which tells you what is really going on:

> **NOTE**
> Be honest about what these levels are. Support, resistance, and Fibonacci lines are conventions — landmarks that can become self-fulfilling, because price reacts partly where people expect it to and place orders. They are not laws of physics: price slices straight through them whenever real pressure is strong enough. Have a plan for when a level fails.

Multi-Timeframe Analysis: Zoom Out, Then Zoom In

A **timeframe** is the slice of time each candle represents — one minute, one hour, one day, one week. The same stock can look calm weekly and chaotic on a one-minute chart. **Multi-timeframe analysis** means checking more than one zoom level before judging.

- **Big timeframe first** (daily or weekly): What is the main trend? Where are the nearest big support and resistance zones?
- **Smaller timeframe second** (hourly or five-minute): Inside that big picture, what is happening right now?
- **Agreement is information.** If the daily trend is up and the hourly chart is rising too, the views support each other. If they fight — daily up, hourly plunging — that disagreement is itself worth knowing before risking a dollar. When timeframes disagree, respect the larger one more: it represents more trading and more money.

Building Your First Indicator Stack

The temptation now is to load every tool at once. Resist it. Indicators mostly repackage the same price data, so five of them repeat each other while cluttering the screen — **indicator overload**. A beginner stack covers only three jobs:

Job	Tool	What it answers
Trend	50- and 200-period moving averages, or trend lines	Which way is the main direction?
Day's control line	VWAP (for day trading)	Who is winning today — buyers or sellers?
Momentum (pick ONE)	RSI or MACD — never both to start	Is the move strong, stretched, or fading?

Add volume — the raw count of shares traded, not an indicator layered on price. An **oscillator** is an indicator that swings back and forth within a set range, like RSI. That is the whole starter kit; everything else arrives one tool at a time, later.

> **RULE**
> One trend tool, VWAP, and at most ONE oscillator. If a new indicator answers no new question, it does not go on your chart. A simple chart you fully understand beats a crowded one you half understand.

Worked Example: Reading One Chart, Start to Finish

Let us use everything on one made-up morning. The stock is a fictional company, ticker **XYZ**, and it is 10:30 AM. We read the chart the slow way: big picture first, conclusions last.

Step 1 — Name the trend. XYZ has climbed from $88 to $104 over three months. On the daily chart, price sits above its 50-day SMA ($99) and its 200-day SMA ($93), both sloping upward. Higher highs, higher lows. Verdict: the main trend is up.

Step 2 — Mark the map. The last big swing high was $105, so resistance sits around $105. It stalled at $98 twice, so $98 is the support zone below.

Step 3 — Check today's control line. XYZ opened at $103, dipped to $102.40, and now trades at $104.10. VWAP sits at $103.10, and price is above it: buyers are winning today, and the dip bounced right off VWAP.

Step 4 — Ask the one oscillator. Hourly RSI reads 61 — above the middle, so momentum leans upward, but below the 70 overbought convention, so the move is not wildly stretched. No divergence: price and RSI rose together.

Step 5 — Confirm with volume and the wiggle. Volume is running about 30% above the usual pace for this hour, and the up-moves carried more volume than the dip. ATR is $2.80, so a run from $104 to the $105 resistance, and even beyond, fits inside a normal day's travel.

Step 6 — State the honest summary. "Main trend up. Buyers control today above VWAP at $103.10. Momentum is positive but not extreme. Resistance at $105 is the next test; support sits at $98. Nothing here predicts that $105 breaks." That is technical analysis done right.

Common Beginner Mistakes

- **Loading every indicator at once.** Ten tools repeating the same data create confusion, not confidence.
- **Treating "overbought" as "sell now."** RSI above 70 means stretched, not finished.
- **Believing a crossover predicts the future.** Crossovers describe shifts that already began. They lag by design.
- **Ignoring volume.** A breakout on tiny volume is a rumor with no witnesses.
- **Drawing lines to fit a hope.** A real trend line connects obvious swing points any viewer would pick.
- **Using one timeframe only.** A terrifying five-minute chart may be a harmless wiggle in a calm daily uptrend.
- **Expecting the squeeze to pick a direction.** A Bollinger squeeze warns a bigger move may come — never which way.

Chapter Summary

- Technical analysis is reading charts to describe what buyers and sellers have been doing. It estimates probability; it never predicts.
- Name the trend first: uptrend, downtrend, or sideways. Trend lines and channels make the path visible.
- Moving averages smooth price into a line: the SMA weighs every day equally, the EMA weighs recent days more and reacts faster. The 9/20, 50, and 200 periods are the most watched.
- VWAP is the day's volume-weighted average price. Above it, buyers control the day so far; below it, sellers do.

- RSI measures momentum from 0 to 100: above 70 is conventionally overbought, below 30 oversold — customs, not laws. Divergence can warn that a move is tiring.
- MACD compares fast and slow EMAs, and its crossovers describe momentum turning after the turn has begun. Bollinger Bands widen and narrow with volatility; a squeeze warns of a bigger move, not its direction.
- Volume confirms moves: big moves on heavy volume carry conviction; big moves on light volume deserve doubt. ATR measures the average daily wiggle in dollars, not direction.
- Support, resistance, and Fibonacci levels are widely watched conventions that can act self-fulfilling — and fail when real pressure overwhelms them.
- Check the big timeframe first, then the small one. Keep the beginner stack small: a trend tool, VWAP, one oscillator at most, plus volume.

Check Yourself

1. A stock trades above its VWAP at noon. Who has controlled the day so far, and why does VWAP say so?
2. How do an SMA and an EMA differ, and what trade-off comes with the EMA's speed?
3. RSI prints 74 while a stock makes new highs three days in a row. Does that prove the rise is over? Why or why not?
4. A stock breaks above a level it failed at for a month, on half its average volume. Why trust that breakout less than the same breakout on triple the volume?
5. Name the three parts of the beginner indicator stack, and the rule about oscillators.

Answers: 1) Buyers — VWAP is the day's average transaction price weighted by shares traded, and price above it means participants paid more than that average. 2) The SMA weighs every period equally; the EMA weighs recent periods more and reacts faster — earlier signals, but more false alarms. 3) No. Above 70 is a convention meaning "stretched," not a law; strong trends can stay overbought for days while price keeps rising. 4) Volume confirms moves: a breakout backed by unusually few shares has little crowd commitment and is more likely to fizzle. 5) A trend tool (moving averages or trend lines), VWAP, and at most ONE oscillator — RSI or MACD, not both — plus volume. If a new indicator answers no new question, it does not go on the chart.

> **RULE**
> Describe first, predict never. Read the trend, check who controls the day, ask one oscillator, confirm with volume — and let probability, not hope, do the talking.