



**CMT LEVEL I**  
**2020**  
**Learning Objective Statements**

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# Level I. An Introduction to Technical Analysis

## Section One: Theory and History of Technical Analysis

### 1 The Basic Principle of Technical Analysis - The Trend

Define what is meant by a trend in technical analysis  
Explain why determining the trend is important to analysts  
Identify primary, secondary, short-term, and intraday trends  
Describe the basic beliefs behind the art of technical analysis  
Define “fractal” as used in describing price action

### 2 Dow Theory

Describe the history of Dow Theory  
Discuss the basic principles of Dow Theory  
Identify the three basic types of trends identified in Dow Theory as defined by time: primary, secondary and minor  
Identify the three basic trend patterns of all prices: upward, downward and sideways  
Describe the “ideal market picture” according to Dow Theory  
Express the concept of confirmation in Dow Theory  
Explain the role of volume in Dow Theory

### 3 History and Construction of Charts

List advantages of reviewing price information in chart format  
Review the data points required to construct line, bar, and candlestick charts  
Describe how to construct line, bar, and candlestick charts  
Explain the differences between arithmetic and logarithmic scales and their uses

## Section Two: Charts, Trends and Patterns

### 4 Trends - The Basics

Explain why trend identification is important to achieve profits  
Recognize an uptrend, a downtrend, and a trading range  
Describe the concept of support and resistance, and the underlying psychology  
Identify trends using most common methods  
Recall how significant reversal points are identified  
List general rules for trendlines

### 5 Breakouts, Stops and Retracements

Describe and identify breakouts  
List methods for confirming and filtering breakouts  
Explain the purpose of entry and exit stops  
Describe methods for setting entry and exit stops  
Define retracements, pullbacks, and throwbacks

## **6 Moving Averages**

Describe the basic principle of moving averages

Explain how to calculate simple, linearly weighted and exponentially smoothed moving averages

Identify trends and signals with moving averages

Describe and interpret Directional Movement Indicators

List common envelope, channel, and band indicators and their characteristics

## **7 Bar Chart Patterns**

Define what is meant by “chart patterns”

List common characteristics of patterns

Discuss opposing viewpoints over whether patterns exist

Describe the influence of computer technology on price-pattern study

Identify classic chart patterns such as triangles, and double and triple tops and bottoms

Identify rounding chart patterns such as head-and-shoulders

Identify “half-mast” chart patterns such as flags and pennants

## **8 Short-Term Patterns**

Locate reversals in longer-term trends using short-term price patterns

Describe the types of gaps that occur on price charts and their significance

Recognize wide-range and narrow-range bars and their implications for volatility

Identify one and two-bar reversal patterns

Identify common candlestick patterns and their significance within a trend

## **9 Confirmation**

Define terms including overbought, oversold, failure swings, divergence, and reversal

Identify the methods of plotting volume information on price charts

Explain general rules for interpreting volume data

List the major indexes and oscillators designed to use volume as confirmation

Describe open interest and how it might be used for confirmation

Explain the concept of momentum in price action

Identify characteristics and applications of indexes and oscillators such as MACD, RSI, and stochastics

## **10 Candlestick Charting Essentials**

Describe strengths and limitations of candle charts

Identify the components of individual candle lines – real bodies and shadows

Explain how candles depict the high, low, open, and close of a trading period

Identify candle confirmations of support and resistance

## **11 Point-and-Figure Charting**

List three important characteristics of point-and-figure charts

Define “box size” and “reversal”

Describe how point-and-figure charts are constructed

Explain the importance of box size to the sensitivity of point-and-figure charts

Review the construction of various box size and reversal point-and-figure charts

Identify common point-and-figure patterns

Explain how trendlines are drawn on point-and-figure charts

Locate basic signals on a point-and-figure chart

Describe how price targets are obtained using a horizontal or vertical count on a point-and-figure chart

## Section Three: Advanced Concepts in Charting and Trend Analysis

### 12 Introduction to the Wave Principle

Describe the basic operating theory of the Wave Principle  
Define motive waves and corrective waves  
Identify types of motive waves such as impulse, extension and diagonal  
Identify types of corrective waves such as zigzag, flat and triangle  
Label waves using standard Elliott Wave notation  
Describe Fibonacci relationships as applied to Elliott Wave analysis

### 13 The Anatomy of Elliott Wave Trading

Match the waves as labeled on a chart to the description in the text  
List the waves considered the most advantageous to trade  
Describe trade signals associated with various wave patterns

### 14 Measuring Market Strength

Explain the concept of divergence  
Define market breadth  
Identify signals of change in market breadth using the advance-decline line  
Describe other measures of internal stock-market strength such as McClellan's calculations  
Explain the use of volume in measuring stock-market strength  
Identify measures of stock-market strength from new high and new low data  
Describe measures of stock-market strength based on the number of stocks priced above their moving average

### 15 Foundations of Cycle Theory

Name the two types of cycles  
Identify the three defining characteristics of a cycle  
List and define Hurst's seven Principles of Commonality  
Define a composite wave  
Identify left and right translation  
Describe a dominant cycle  
Recall the tools which aid in cycle identification

### 16 Basics of Cycle Analysis

Explain how the annual cycle conforms to cycle theory  
Describe two methods of detrending price data  
Restate common seasonal tools  
Memorize notable economic cycles and their periods  
Recall some sequences/nonlinear cycles

## Section Four: Markets and Volatility

### 17 Markets, Instruments, Data, and the Technical Analyst

Name four asset classes amenable to technical analysis

List five tradeable instruments that a technician is likely to employ

Describe data-handling issues with which a technician should be familiar

### 18 Equities

Define equity securities and primary data types

Describe the benefits of equities for investors

Identify the effect of corporate actions on price data

Classify sectors, capitalization and other ways to segment the market

### 19 Indexes

Identify major global equity indexes

Name common non-equity indexes used by technical analysts

Explain weighting methods used in major indexes

Define “survivorship bias”

### 20 Fixed Income / Bonds

List the major types of issuers of debt securities

Identify the basic terms of a debt instrument: duration, maturity, coupon, issuer

State the ways in which debt prices are expressed

Explain the relationship between price and yield

Define “yield curve”

Describe the importance of US government debt in the pricing of other debt securities: “yield (or credit) spread”

### 21 Futures

Explain the purpose of futures markets

Classify various futures markets as industrial, agricultural, financial, and so on

List the major terms of a futures contract

Define open interest in futures

Describe challenges technicians face when using futures market data

### 22 Exchange-Traded Products (ETPs)

Define an exchange-traded product

Review differences between exchange-traded funds (ETFs) and exchange-traded notes (ETNs)

Describe the uses for leveraged ETPs

### 23 Foreign Exchange (Currencies)

Identify the base and quote currencies in a pair

Classify currency pairs as “major” or “cross”

Discuss the impact on technical analysis of the “dealer market” system of currency trading

Explain the data used in building currency charts

Describe cryptocurrencies

## **24 Options**

Explain the purpose of options markets  
List the major terms of an option contract  
Describe “the Greeks”  
Define implied volatility

## **25 Understanding Implied Volatility**

Explain the difference between historical and implied volatility  
Describe the concept of put-call parity  
Discuss how implied volatility may be used to estimate price movement  
State how to calculate single-day implied volatility

## **26 About the VIX Index**

Describe the VIX index  
Explain the implications of a rising or falling VIX index  
State how to calculate expected 30-day market movement

# **Section Five: Behavioral Finance and Other Theories of Market Dynamics**

## **27 What is the Efficient Market Hypothesis**

Identify the basic concept of the Efficient Market Hypothesis (EMH)  
Describe the three forms of the EMH  
Explain the characteristics of stock prices as a martingale  
Describe how randomly generated output can appear non-random and how that might relate to asset prices and returns  
Identify the three areas in which behavioral finance challenges the EMH

## **28 The EMH and the “Market Model”**

Describe the basic components of the CAPM model  
Identify valid criticisms of the CAPM model

## **29 The Forerunners to Behavioral Finance**

Explain momentum strategies and mean-reversion strategies  
Define the general concept of value investing  
Describe why value investing is similar to a mean-reversion approach  
Explain how value investing (Graham and Dodd) conflicts with the EMH

## **30 Noise Traders and the Law of One Price**

Define “fungibility” in the context of financial markets  
Explain “arbitrage”  
Describe “noise” vs. “information”  
Define “noise trader”

## **31 Noise Traders as Technical Traders**

Explain why technical traders are considered a specific type of noise trader  
Describe the actions of technical traders as noise traders in the context of market valuation

### **32 Academic Approaches to Technical Analysis**

Describe how technical analysis remains relevant despite the EMH

Discuss how the Adaptive Market Hypothesis reconciles the EMH with technical and behavioral factors

### **33 Market Sentiment and Technical Analysis**

Define “sentiment” as it relates to financial markets

Identify general categories of informed and uninformed participants

Discuss the importance of the “crowd”

Describe the challenges of using sentiment indicators

### **34 Sentiment Measures from Market Data**

Describe the VIX as a sentiment measure

Explain the use of options volume and open interest as sentiment indicators

Describe the use of futures open interest in gauging sentiment

Identify the three primary groups in the Commitments of Traders report

Define short interest

Explain insider activity as a sentiment indicator

### **35 Sentiment Measures from External Data**

Describe the use of news and advisories as sentiment measures

Explain the concept of contrary opinion

Indicate how mutual fund cash and other funds measures are used to gauge sentiment

## **Section Six: Basic Statistics for the Technical Analyst**

### **36 Introduction to Descriptive Statistics**

Describe the three most common measures of central tendency: mean, median and mode

Discuss alternative methods of calculating the mean and their uses

Describe what is meant by “measures of dispersion”

Explain two measures of dispersion: standard deviation and variance

State the value of data visualization as a complement to descriptive statistics

### **37 Introduction to Probability**

Define probability

Explain the impact of the law of large numbers on a series of outcomes

Define random variable and the phrase “independent and identically distributed”

Describe a normal probability distribution

Identify skew and kurtosis

## **Section Seven: Perspectives on Technical Trading Systems**

### **38 Objective Rules and Their Evaluation**

Describe objective and subjective methods in technical analysis

Define “rule” as used in trading systems

Explain binary rules as well as individual and multiple thresholds

Identify traditional rules and inverse rules

Discuss the importance of benchmarking in evaluating trading rules

Describe the value of using detrended prices

Describe the key components of “trading costs”

### **39 Being Right or Making Money**

List the four key characteristics Ned Davis claims are common to successful investors  
Describe the importance of having plans to persevere through mistakes and losses  
Identify Ned Davis' nine rules to consider when building a timing model  
Discuss the theory behind "contrary opinion"

### **40 The Model Building Process**

Describe "internal" and "external" indicators  
Explain the use of valuation indicators as sentiment measures  
Describe the basic relationships of economic growth, Fed policy, and money supply  
Discuss the use of moving average signals based on "crossings" and "slopes"  
Explain the use of price momentum and indicator momentum  
Identify the problem of curve-fitting, or overoptimization

### **41 Relative Strength as a Criterion for Investment Selection**

Define relative strength  
Explain the value of relative strength in analyzing stock price movements  
List several relative strength ratios that may be calculated  
Identify some of the limitations of relative strength in investment decisions





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