# CMT LEVEL I
## 2019 Learning Objective Statements

**Stanley Dash, CMT**
**CMT Program Director**

# 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
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 traditional 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 graphically depict the high, low, open, and close of a trading period
Identify candle confirmations of support and resistance

## 11     Point-and-Figure Charting
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
Construct 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

### 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 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

### 39    Being Right or Making Money
List the four key characteristics Ned Davis claims are common to successful investors
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