



**Market Technicians Association, Inc.**

*Professionals Managing Market Risk • Incorporated in 1973*

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# Body of Knowledge Study

## **GENERAL**

The Market Technicians Association (MTA) administers and develops the CMT certification examination. Prometric, an outside test development firm has developed a “pulse” survey to review current test specification in an effort to keep this exam current. This “pulse” survey has helped us remain current giving us guidelines from a group of technical analysts.

The “Body of Knowledge Study” was prepared in 2004, and is the basis for the technical analysis material required to successfully pass the CMT examination process. Recently a “pulse” survey was conducted in 2007, by Prometric. This survey updated input from a group of technical analysts and was conducted within the guidelines of professionally sound practice.

Future “pulse” surveys will be conducted over time in an effort to keep the CMT program fresh and meaningful in today’s market place. A complete “job analysis” review is tentatively scheduled to be conducted in 2010. (For more information on the specifics of the test development process, please feel free to contact Jeanette@mta.org who can provide you with a copy of the actual reports.)

### **Development of test specifications for the CMT Certification Examinations**

As previously noted, the CMT Test Specifications were developed in September 2004 using the survey results. Decisions made by the Test Specifications Committee regarding the tasks, knowledge and indicators to be included on (or excluded from) the CMT Level 1, Level 2 and Level 3 test specifications were based on a careful review of the survey results. In addition, the Test Specifications Committee members are very knowledgeable about the focus and intent of each examination level. Therefore, decisions were based both on survey results as well as the level(s) of the CMT program where topics are most appropriately tested.

As described in MTA’s published information about the CMT examination:

- ❖ CMT Level 1 (Definition). The Level 1 examination measures basic, entry-level competence and understanding on the part of the candidate. The CMT Level 1 candidate needs to have a working knowledge of the basic tools of the technical analyst.
- ❖ CMT Level 2 (Definition/Application). The CMT Level 2 examination requires the candidate to demonstrate a greater depth of competency in a variety of fields of expertise. The CMT Level 2 candidate is expected to demonstrate proficiency in applying more advanced analytical techniques.
- ❖ CMT Level 3 (Definition/Application/Integration). The CMT Level 3 examination tests the candidate on the formation of well-thought out research opinions, portfolio strategies and trading decisions based on a wide range of charts and technical data.

The CMT Examinations test important knowledge needed for technical analysis work. The tasks provide context for designing robust examination items that reflect work activities validated through the survey. The indicators, also validated through the survey process provide the CMT Accreditation Committee with information about quantitative and evaluative tools used by technical analysts to perform their work and, as such, may be included in examination items. All material assigned for CMT 1 and CMT 2 candidates will be cumulative and the CMT 3 candidate will be responsible for all assigned materials for all levels.

### Tasks

Task	Level 1	Level 2	Level 3
<b>Domain 1: Compilation</b>	<b>X</b>		<b>X</b>
1. Collect data from various print, electronic, and other sources			
2. Compile data including: extract data, visualize the data set, and check for null data	<b>X</b>	<b>X</b>	<b>X</b>
3. Organize data, including: determine how to handle null data using statistical methods; determine how to handle outliers; validate data by comparing different vendors; errors; omissions; and bad ticks	<b>X</b>	<b>X</b>	<b>X</b>
4. Create spreadsheets, charts and graphs to illustrate compiled data	<b>X</b>	<b>X</b>	<b>X</b>
<b>Domain 2: Utilization</b>		<b>X</b>	<b>X</b>
5. Perform research on Intermarket relationships (e.g. currencies, bonds, commodities, equities)			
6. Rate tasks 6a to 6k as the pertain to "Interpret Data":	<b>X</b>	<b>X</b>	<b>X</b>
6a. Cycles including seasonality			
6b. flow of funds	<b>X</b>	<b>X</b>	<b>X</b>
6c. Intermarket relationships (e.g. equities versus foreign exchange)	<b>X</b>	<b>X</b>	<b>X</b>
6d. Intermarket relationships (e.g. group to group, stock to stock)	<b>X</b>	<b>X</b>	<b>X</b>
6e. relative strength	<b>X</b>	<b>X</b>	<b>X</b>
6f. oscillators	<b>X</b>	<b>X</b>	<b>X</b>
6g. patterns	<b>X</b>	<b>X</b>	<b>X</b>
6h. sentiment	<b>X</b>	<b>X</b>	<b>X</b>
6i. support and resistance	<b>X</b>	<b>X</b>	<b>X</b>
6j. trends and momentum	<b>X</b>	<b>X</b>	<b>X</b>
6k. volume and/or open interest	<b>X</b>	<b>X</b>	<b>X</b>
<b>Domain 3: Extrapolation</b>		<b>X</b>	<b>X</b>
7. Formulation and optimize new indicators, including identifying objective of the indicator			
8. Determine relative merits or opportunities for various securities sectors and markets			<b>X</b>
9. Identify and evaluate degrees of risk, including time period (intraday, short term, intermediate term, long		<b>X</b>	<b>X</b>

term, secular)			
10. Identify and evaluate degrees of potential, including time period (intraday, short term, intermediate term, long term, secular)		X	X
11. Devise/determine strategy/strategies relating to investments (i.e. buy; hold; sell; adjust stop), including money management strategies 11a. Implement strategy/strategies for own investing/trading			X
11b. Implement strategy/strategies for clients' investing/trading			X
11c. Implement strategy/strategies for firms' investing/trading			X
11d. Recommend strategy/strategies for clients' investing/trading			X
11e. Recommend strategy/strategies for firms' investing/trading			X
12. Rate tasks 12a to 12c as they pertain to "Formulate forecasts of" 12a. markets/sectors		X	X
12b. economic conditions		X	X
12c. individual securities/derivatives	X	X	X
13. Determine the direction, strength, and length of market trends, including time period (intraday, short term, intermediate term, long term, secular)	X	X	X
14. Prepare technical analyses and strategy/strategies (e.g. risk assessment; current position "bullish", "bearish" or "range"; indication of trend-intraday, short term, intermediate term, long term, secular) 14a. internal		X	X
14b. external		X	X
15. Rate tasks 15a. to 15b as they pertain to "Communicate conclusions (e.g., daily; weekly; monthly) in various modalities such as e-mail, newsletters, presentations to clients and groups" 15a. internal			X
15b. external			X
<b>Knowledge</b>			X
<b>Domain 1: General Principles</b>	X	X	X
1. MTA Code of Ethics			
3. market history	X	X	X
4. market theories (e.g., efficient market hypothesis, random walk; chaos theory; behavioral finance)	X	X	X
5. basic statistical concepts: 5a. descriptive statistics (e.g., mean, mode, median,		X	X

standard deviation)			
5b. inferential statistics (e.g., correlational analysis, t-tests, regression analysis)		X	X
5c. probability		X	X
5d. Optimization		X	X
6. Rate statements 6a. to 6j and optional write ins (6K to 6M) as they pertain to Knowledge of chart types:	X	X	X
6a. bar chart	X	X	X
6b. candlestick	X	X	X
6e. line chart	X	X	X
6f. market profile	X	X	X
6g. point and figure	X	X	X
6h. semi logarithmic versus arithmetic	X	X	X
6i. time frames	X	X	X
6j. volume/open interest	X	X	X
<b>Domain 2: Trend and Momentum</b>	X	X	X
7. Breadth			
8. channels, envelopes and bands	X	X	X
9. cycles	X	X	X
10. divergences and confirmations	X	X	X
11. moving averages	X	X	X
12. open interest	X	X	X
13. oscillators	X	X	X
14. support and resistance	X	X	X
15. trendlines	X	X	X
16. volatility	X	X	X
17. volume	X	X	X
18. basic reversal pattern analysis (e.g., double tops; head and shoulders)	X	X	X
19. basic continuation pattern analysis (e.g., flags; pennants)	X	X	X
20. additional pattern analysis	X	X	X
20a. Dow Theory			
20b Elliott Wave	X	X	X
20c. Gann	X		X
20d. Wyckoff	X		X
<b>Domain 3: Sentiment (Behavioral Finance</b>	X	X	X
21. content and application of polls:			
21a. Sentiment polls (example Investor's Intelligence; Market Vane, Consensus Inc., AAI, Daily Sentiment Index) (DSI)			
22. transactional indicators:	X	X	X
22a. put/call ratios			
22b. short selling	X	X	X

22c. margin debt	X	X	X
22d. insider activity	X	X	X
22e. commitment traders	X	X	X
22f. members and specialists activity	X	X	X
22g. mutual fund cash and cash flow	X	X	X
22h. vix	X	X	X
23. valuation indicators (eg., dividend yields, PEs, price to book)	X	X	X
24. consumer confidence surveys	X	X	X
25. asset allocations by different groups (e.g., bank trust departments, households)	X	X	X
<b>Domain 4: Flow of Funds</b>	X	X	X
26. exchange for physicals (EFP)			
27. Federal Reserve Indicators			X
28. international flows			X
29. money supply	X		X
30. new equity financing (e.g., IPOs)	X	X	X
31. secondary offerings	X	X	X
<b>Domain 5: Intermarket Analysis</b>	X		X
32. ratios between/among markets (e.g., equities, fixed income, currencies, commodities)			
33. ratios between/among instruments		X	X
34. calendar spreads		X	X
35. leading/lagging relation between/among instruments		X	X
36. leading/lagging relation between/among markets		X	X
<b>Domain 6: Trading Investing Strategies</b>			X
37. diversification			
38. draw downs			X
39. exposure			X
40. hedging	X		X
41. limit moves	X		X
42. liquidity	X		X
43. margin/leveraging	X		X
44. post-trade analysis			X
45. profit-to-risk profile	X		X
46. pyramiding/compounding	X		X
47. stops	X		X
48. trade vehicle allocation (e.g., options, futures, spot)		X	X
49. relative performance strength	X	X	X

The Test Specifications Committee approved 33 indicators for the CMT Level 1 Examination, 22 indicators for the CMT level 2 Examinations, and 4 indicators for the CMT Level 3 Examination. CMT Level 3 candidates are responsible for all information required for CMT Level 1 and Level 2. This is a cumulative exam testing your knowledge and use of everything learned.

Note: The numbering of the indicators below may not appear in sequential order due to deletions made by the Test Specifications Committee. For example what originally were indicators 5, 6, 7, 8, 9 may now appear as 5, 6, 10, 12, 13, 14 etc. due to deletions.

<b>Indicators</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
1. Absolute Breadth Index	X		X
2. Advance/Decline Divergence Osc.	X	X	X
3. Advance/Decline Line	X	X	X
4. Advance/Decline Ratio	X	X	X
5. Advisory Service Sentiment	X	X	X
6. ADX	X	X	X
10. ARMS Index	X	X	X
12. Average True Range	X		X
13. Commodity Channel Index (CCI)	X		X
14. Equity Mutual Funds, Cash Percentage	X	X	X
16. Futures-Cash Market Spread	X	X	X
18. High/Low Studies	X	X	X
20. MACD	X	X	X
21. McClellan Oscillator	X	X	X
22. McClellan Summation Index	X	X	X
23. Momentum Oscillators	X	X	X
24. Money Flow Index	X	X	X
25. Money Supply	X	X	X
26. Most Active Stocks, Average Price	X		X
27. Most Active Stocks, Breadth	X		X
28. Most Active Stocks, Volume	X		X
29. Moving Averages	X	X	X
32. Odd Lot Short Sales	X		X
33. On Balance Volume	X	X	X
34. OTC to NYSE Volume Ratio	X		X
36. Public/Specialist Shorts NYSE	X		X
37. Put/call Premium Ratio	X	X	X
38. Put/call volume ratio	X	X	X
39. Rate of Change (ROC)	X	X	X
41. Stochastic Oscillator	X	X	X
44. Wilder's RSI	X	X	X
45. Wilder's SAR: Stop and Reverse/Parabolic	X		X
46. Williams %R	X		X

### **Development of Test Content Weights for the CMT Level 1 and Level 2 Certification Examinations.**

The Test Specifications Committee participated in an exercise that required each member to individually assign a percentage weight to the each of the six knowledge domains: General Principles; Trend and Momentum; Sentiment (Behavioral Finance); Flow of Funds; Intermarket Analysis; and Trading Investment Strategies.

Weights were then entered into the Excel® spreadsheet and results shared with all committee members. This resulted in a productive discussion among the committee members regarding the optimal percentages for CMT Level 1 and Level 2 examinations. Tables 7 and 8 show the recommended weights by domain.

***Table 7. Test Content Weights Recommended by the Test Specifications Committee for the CMT Level 1 Certification Examination***

<b>CMT Level 1 Examination (Multiple Choice)</b>	<b>Domain %</b>
General Principles	50.0%
Trend and Momentum	30.0%
Flow of Funds	N/A
Intermarket Analysis	N/A
Behavioral Finance (Sentiment)	16.0%
Trading Investing Strategies	4.0%
<b>Total</b>	<b>100.0%</b>

***Table 8. Test Content Weights Recommended by the Test Specifications Committee for the CMT Level 2 Certification Examination***

<b>CMT Level 2 Examination (Multiple Choice)</b>	<b>Domain %</b>
General Principles	23.0%
Trend and Momentum	21.0%
Flow of Funds	09.0%
Intermarket Analysis	10.0%
Behavioral Finance (Sentiment)	18.0%
Trading Investing Strategies	19.0%
<b>Total</b>	<b>100.0%</b>

The CMT Level 3 Examination is a four-hour essay examination that consists of independent questions worth a total of 240 points. These questions have sub-questions within them. Therefore one question may have several parts which call for independent analysis linking that analysis to well supported conclusions. The primary focus of the Level 3 exam is the practical and ethical application and integration of technical analysis. In other words, all past requirements and background knowledge will be tested in an application format. All candidates must pass and achieve at least a 70% score on ethics.

A candidate will not achieve a pass for the CMT 3 exam unless or until the ethics portion of the exam is passed. Based on information provided by MTA, the point system is predicated on the curriculum and objectives of the Level 3 exam. Since the focus of the Level 3 exam is the integration and application of technical analysis, 50% of the exam, or 120 points is allocated to the exam's major case study. The case study requires the candidate to analyze different types of charts with the specific objective of developing and substantiating their analysis and investment recommendations. The candidates are required to fully substantiate their analysis in a manner that is supportive and consistent with their recommendations. The remaining 120 points are allocated based on the reading assignments and the following MTA primary imperatives: ethics; behavioral finance; and, trading investment strategies.

The Test Specifications Committee did not assign specific percentages to the knowledge domains; however, the Committee members did discuss the potential test focus in terms of a loose ranking of the knowledge domains from "major focus" to "minor focus". At the present time, Prometric is involved with the administration, but is not involved with scoring of the CMT Level 3 Examination.