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| SMA (Simple Moving average) | * to smooth the data,   Eliminate noise to identify trends.   * Each output value is the average of the previous *n* values. * each value in the time period carries equal weight, and values outside of the time period are not included in the average.(helps in filtering out changes) | Formula: https://www.fmlabs.com/reference/SimpleMA.gif |

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| ABI(Absolut Breadth Index) | * The absolute value of the difference between the number of advancing issues and the number of declining issues. * Higher values indicate higher market volatility, | Formula: https://www.fmlabs.com/reference/ABI.gif |

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| Accumulate or running Total | * Calculates the running total of the input data. * Especially useful if the input data contains both positive and negative values so that the output will vary around zero. | Formula: https://www.fmlabs.com/reference/Accumulate.gif |

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| Accumulation Swing Index | * a running total of the Swing Index * Swing Index is calculated using only the two most recent bars, by summing it, the Accumulation Swing Index shows long-term trends * positive in a long-term up trend * Negative in a long-term down trend and it will hover around zero if the market is flat. * It can be interpreted by comparing it to the price and looking for divergence or confirmation. | Formula: https://www.fmlabs.com/reference/AccumSwingIndex.gif |

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| **Moving Average Convergence/Divergence (MACD)** | * difference between two Exponential Moving Averages * High values indicate overbought conditions, low values indicate oversold conditions. * Divergence with the price indicates an end to the current trend, especially if the MACD is at extreme high or low values * MACD line crosses above the signal line a buy signal is generated. When the MACD crosses below the signal line a sell signal is generated * MACD should be above zero for a buy, and below zero for a sell. * time periods for the MACD are often given as 26 and 12. | Formula: https://www.fmlabs.com/reference/MACD.gif |

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| **Relative Strength Index (RSI)** | * Calculates a ratio of the recent upward price movements to the absolute price movement. * ranges from 0 to 100 * interpreted as an overbought/oversold indicator when the value is over 70/below 30 * If the price is making new highs/lows, and the RSI is not, it indicates a reversal.(can look for divergence in price) | Formula: https://www.fmlabs.com/reference/RSI.gif |

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| **Bollinger Bands** | * consist of three lines. * a simple moving average (generally 20 periods) of the typical price (TP) * upper and lower bands are *F* standard deviations (generally 2) above and below the middle band. The bands widen and narrow when the volatility of the price is higher or lower, respectively. * they are an indicator of overbought or oversold conditions. When the price is near the upper or lower band it indicates that a reversal may be imminent. The middle band becomes a support or resistance level. The upper and lower bands can also be interpreted as price targets. When the price bounces off of the lower band and crosses the middle band, then the upper band becomes the price target. | Formula: https://www.fmlabs.com/reference/Bollinger.gif |

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| **Stochastic Momentum Index (SMI)** | * The difference is that the Stochastic Oscillator calculates where the close is relative to the high/low range, while the SMI calculates where the close is relative to the midpoint of the high/low range. The values of the SMI range from +100 to -100. When the close is greater than the midpoint, the SMI is above zero, when the close is less than than the midpoint, the SMI is below zero. * interpreted the same way as the Stochastic Oscillator. Extreme high/low SMI values indicate overbought/oversold conditions. A buy signal is generated when the SMI rises above -50, or when it crosses above the signal line. A sell signal is generated when the SMI falls below +50, or when it crosses below the signal line. Also look for divergence with the price to signal the end of a trend or indicate a false trend. | Formula: https://www.fmlabs.com/reference/SMI.gif |

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| **Stochastic Oscillator** | measures where the close is in relation to the recent trading range. The values range from zero to 100. %D values over 75 indicate an overbought condition; values under 25 indicate an oversold condition. When the Fast %D crosses above the Slow %D, it is a buy signal; when it crosses below, it is a sell signal. The Raw %K is generally considered too erratic to use for crossover signals. | Terminology:   |  |  | | --- | --- | | Fast Stochastic | Refers to both %K and %D where %K is un-smoothed | | Slow Stochastic | Refers to both %K and %D where %K is smoothed | | Raw %K | Un-smoothed %K | | Fast %K | Un-smoothed %K | | Slow %K | Smoothed %K | | Fast %D | Moving average of an un-smoothed %K | | Slow %D | Moving average of a smoothed %K, in effect: a double smoothed %K | | %D | Always refers to a smoothed %K (whether or not the %K itself is smoothed) | | Formula: https://www.fmlabs.com/reference/StochasticOscillator.gif |

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| **Stochastic RSI** | * It calculates the RSI relative to its range in order to increase the sensitivity of the standard RSI. The values of the StochRSI are from zero to one. * Overbought/oversold conditions are indicated when the StochRSI crosses above .20 / below .80. A buy signal is generated when the StochRSI moves from oversold to above the midpoint (.50). A sell signal is generated when the StochRSI moves from overbought to below the midpoint. Also look for divergence with the price to indicate the end of a trend. | Formula: https://www.fmlabs.com/reference/StochRSI.gif |

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| **Swing Index** | Swing Index attempts to determine the real price. The numbers range from -100 to +100. It is difficult to interpret in its raw form, and is usually summed to form the Accumulation Swing Index.  It is important to use the correct limit move for the commodity you are analyzing (e.g. $3.00 for T-Bonds, $0.04 for Heating Oil, etc). For a stock, limit move should be a large number, such as $10,000 | Formula: https://www.fmlabs.com/reference/SwingIndex.gif |

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| **Relative Momentum Index (RMI)** | * To determine up and down days, the RSI uses the close compared to the previous close. The RMI uses the close compared to the close *n* days ago. An RMI with a time period of 1 is equal to the RSI. The RMI ranges from 0 to 100. Loke the RSI, The RMI is interpreted as an overbought/oversold indicator when the value is over 70/below 30. You can also look for divergence with price. If the price is making new highs/lows, and the RMI is not, it indicates a reversal.  See also Relative Strength Index. | Formula: https://www.fmlabs.com/reference/RMI.gif |

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| **Relative Volatility Index (RVI) - Original Calculation** | * RSI uses the average price change, the RVI uses a 9 period standard deviation of the price. * The original version of the RVI is calculated using the closing price. The revised version is calculated by taking the average of the original RVI of the high and the original RVI of the low. * RVI is a volatility indicator. It was developed as a compliment to and a confirmation of momentum based indicators. When used to confirm other signals, only buy when the RVI is over 50 and only sell when the RVI is under 50. If a signal is ignored, buy when the RVI is over 60 and sell when the RVI is under 40. Exit a long position if the RVI drops below 40 and exit a short position when the RVI rises above 60. | Formula: https://www.fmlabs.com/reference/RVIoriginal.gif |

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| **Relative Volatility Index (RVI)** | * RSI uses the average price change, the RVI uses a 9 period standard deviation of the price. | Formula: https://www.fmlabs.com/reference/RVI.gif |

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| **Average Directional Movement Index (ADX)** | * The values range from 0 to 100, but rarely get above 60 * To interpret the ADX, consider a high number to be a strong trend, and a low number, a weak trend. | Formula: https://www.fmlabs.com/reference/ADX.gif |

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| **Average Directional Movement Rating (ADXR)** | * equal to the current ADX plus the ADX from *n* bars ago divided by 2 * it is the average of the two ADX values * ADXR smoothes the ADX, and is therefore less responsive, however, the ADXR filters out excessive tops and bottoms. * To interpret the ADXR, consider a high number to be a strong trend, and a low number, a weak trend. | Formula: https://www.fmlabs.com/reference/ADXR.gif |

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| **T3** | * T3 takes the DEMA calculation and adds a *vfactor* which is between zero and 1. * resultant function is called the GD, or Generalized DEMA. A GD with *vfactor*of 1 is the same as the DEMA. * A GD with a *vfactor* of zero is the same as an Exponential Moving Average. The T3 typically uses a *vfactor* of 0.7. * T3 triple-smoothes the data series by calling the GD three times. You can pass any value for *tcount* to the T3 function | Formula: https://www.fmlabs.com/reference/T3.gif |

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| **TEMA** | * TEMA is a smoothing indicator with less lag than a straight exponential moving average. * TEMA is an acronym for Triple Exponential Moving Average | Formula: https://www.fmlabs.com/reference/TEMA.gif |

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| Absolute Price Oscillator | * The Absolute Price Oscillator displays the difference between two exponential moving averages of a security's price and is expressed as an absolute value. * https://www.fidelity.com/learning-center/trading-investing/technical-analysis/technical-indicator-guide/apo | Calculation  APO = Shorter Period EMA – Longer Period EMA |

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| Percentage Price Oscillator (PPO) | * stockcharts.com/school/doku.php?id=chart\_school:technical\_indicators:price\_oscillators\_ppo | Calculation Percentage Price Oscillator (PPO): {(12-day EMA - 26-day EMA)/26-day EMA} x 100  Signal Line: 9-day EMA of PPO  PPO Histogram: PPO - Signal Line |

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| **Exponential Moving Average** | * In a Simple Moving Average, each value in the time period carries equal weight, and values outside of the time period are not included in the average. However, the Exponential Moving Average is a cumulative calculation, including all data. Past values have a diminishing contribution to the average, while more recent values have a greater contribution. This method allows the moving average to be more responsive to changes in the data. | https://www.fmlabs.com/reference/ExpMA.gif |

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| **Williams %R** | * values range from zero to 100, and are charted on an inverted scale, that is, with zero at the top and 100 at the bottom. Values below 20 indicate an overbought condition and a sell signal is generated when it crosses the 20 line. Values over 80 indicate an oversold condition and a buy signal is generated when it crosses the 80 line. | Formula: https://www.fmlabs.com/reference/WilliamsR.gif |

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| **Weighted Moving Average** | * calculates a weight for each value in the series. * more recent values are assigned greater weights. * The Weighted Moving Average is similar to a Simple Moving average in that it is not cumulative, that is, it only includes values in the time period (unlike an Exponential Moving Average). * The Weighted Moving Average is similar to an Exponential Moving Average in that more recent data has a greater contribution to the average. | Formula: https://www.fmlabs.com/reference/WeightedMA.gif |

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| **DEMA** | * The DEMA is a smoothing indicator with less lag than a straight exponential moving average. * DEMA is an acronym for Double Exponential Moving Average, but the calculation is more complex than just a moving average of a moving average. | Formula: https://www.fmlabs.com/reference/DEMA.gif |

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| **Triangular Moving Average** | * The Triangular Moving Average is a form of Weighted Moving Average wherein the weights are assigned in a triangular pattern. For example, the weights for a 7 period Triangular Moving Average would be 1, 2, 3, 4, 3, 2, 1. This gives more weight to the middle of the time series and less weight to the oldest and newest data. | Formula: https://www.fmlabs.com/reference/TriangularMA.gif |

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| Kaufman's Adaptive Moving Average (KAMA) |  | Current KAMA = Prior KAMA + SC x (Price - Prior KAMA)  ER = Change/Volatility  Change = ABS(Close - Close (10 periods ago))  Volatility = Sum10(ABS(Close - Prior Close))  Volatility is the sum of the absolute value of the last ten price changes (Close - Prior Close).  SC = [ER x (fastest SC - slowest SC) + slowest SC]2  SC = [ER x (2/(2+1) - 2/(30+1)) + 2/(30+1)]2 |