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Trade w/ Moving Average

- **What Is Moving Average?**
  - The sum of the last N close prices divided by N
    - n = number of time periods
    - A_x = the close price at each interval
    - $SMA = \frac{A_1 + A_2 + \ldots A_n}{n}$
  - Technically this is arithmetic mean not just an "average"
  - In general, arithmetic means are useful because
    - They eliminate data anomalies
    - They summarize data allowing for quick interpretation.
    - Give an accurate representation of large bodies of data

- **Understanding A Moving Average**
  - 2 variables needing to be considered
    - N: What happens when we increase/decrease n?
    - Timeframe: What happens when we look at higher/lower timeframes
  - **What happens when we increase/decrease n?**
    - Smaller n = less lag, less significant
    - Large n = more lag, more significant
    - Small to large moving average is not binary, it is a spectrum.
  - **How N Determines Lag**
    - $A_n \div n$
      - The larger the n, the smaller the value of the most recent candle
      - When n = 100, each candle affects the value by 1%
      - When n = 10, each candle affects value by 10%
  - Timeframes
    - Higher time frames: Incorporate more data. More significant
    - Lower time frames: Incorporate less data. Less significant.

- Exponential Moving Average
  - $EMA_t = [V_t \times (S/1+d)] + EMA_y \times [1-(S/1+d)]$
  - Assume all the same rules as a regular moving average with 1 key difference.
    - EMA's value recent data more than past data.
  - Useful when you want your MA to react strongly to more recent data.

- Trend Analysis w/ MA's
  - Short Term Moving Average: Low lag, low significance
    Medium Term Moving Average: Mid lag, mid sig.
    Long Term Moving Average: High lag, high sig.
  - Remember short, mid, and long are relative
  - There are always trends w/ in trends
  - Distance Between MA's
    - The further apart, the stronger the trend
    - Multiple crosses of all MA's in quick succession indicate no trend
    - If crosses occur during a trend, this is an indicator of the trend weakening
    - We can use MA's as a support or resistance.
      - If price dips below MA, trend is weakening
  - You will always be analyzing trends w/ in trends w/ in trends
  - Use 1 high, one low, and 1 mid timeframe. ★
  - Use distance between MA to determine strength ★
  - Use crossovers to detect weakening of current or no trend. ★

Trade w/ Moving Average

- Moving Averages as Support/Resistance
  - Dynamic support/resistance
    - Moving averages can be used as dynamic support/resistance levels.
    - The stronger the trend, the more likely they are to hold