

## Stock Market Game – Dollar Cost Averaging

**Warm Up Problem:** Imagine a stock whose price changes +1\$ or -1\$ each day, however the price never falls below its starting price.

- a) How many valid price paths can the stock take over 5 days such that it never falls below its starting price? Draw a tree of price paths to visualize how the stock price moves each day.
- b) Will you invest in this stock?
- c) Will you invest in this stock if you can put your money in a bank which gives you a daily interest of 0.25\$?

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During this quarter, we are participating in the Stock Market Game to learn about investing and math around it.

Each team started with a virtual pool of money worth \$100,000 (as on 03/25/2025) and will buy and sell stocks, bonds and mutual funds to grow their pool of money. The team having the maximum amount of total equity at the end of the quarter will be the winner and will get a surprise gift and certificate!

Login to <https://www.stockmarketgame.org/> using your team's credentials.

1. The first screen after login will show below information for your portfolio (Numbers will differ).

<b>Total Equity</b> \$99,248.42	<b>Net Equity Gain</b> -\$751.58 (-0.752%)	<b>Buying Power</b> \$129,194.33	<b>Cash Balance</b> \$79,550.42
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a) Show how the 'Total Equity' number you see for your portfolio has been calculated.

b) Show how the 'Net Equity Gain' number you see for your portfolio has been calculated.

c) Show how the 'Cash Balance' number you see for your portfolio has been calculated.

2. Pick any one row of your Equity Positions:

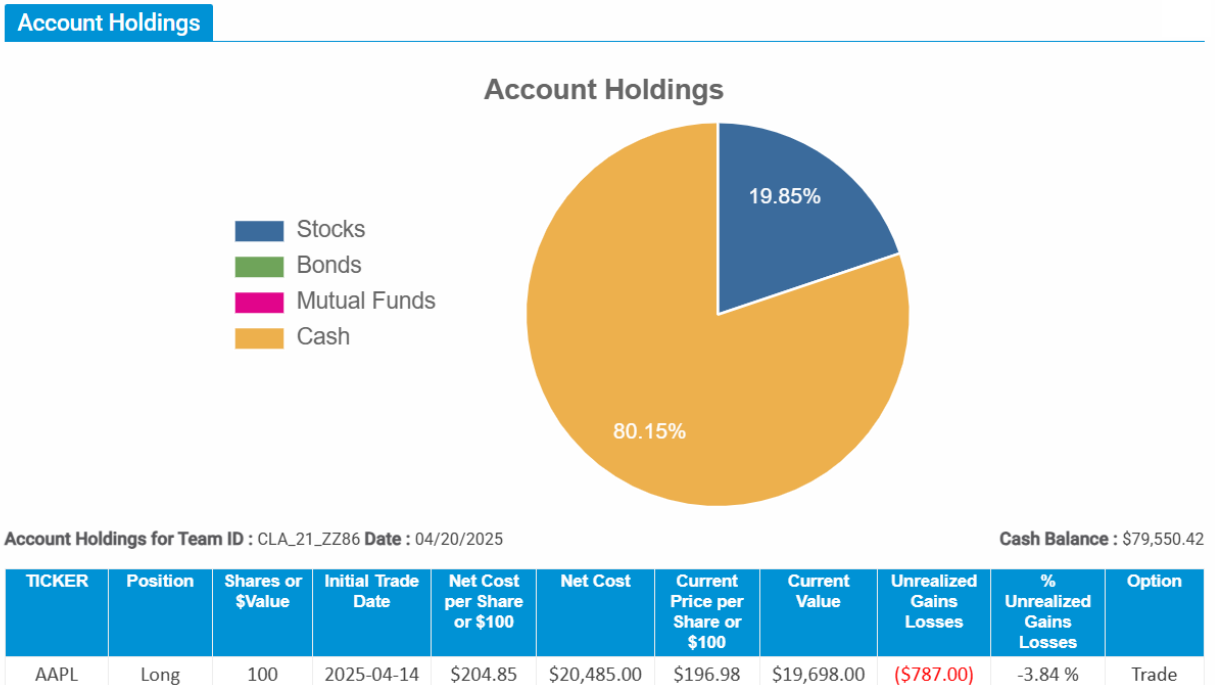
Equity Positions										
Ticker	Date	Position	Quantity *	Cost Basis	Previous Close	Current Price	Price Change	Market Value	Gain/Loss	Action
AAPL	2025-04-14	Long	100	20,485.00	\$196.98	\$197.294	0.159%	19729.40	\$-755.60	Trade

a) Write the Formula showing how "Price Change %" number has been calculated.

b) Write the Formula showing how "Market Value" number has been calculated.

c) Write the Formula showing how "Gain/Loss" number has been calculated.

3. Click on PORTFOLIO > ACCOUNT HOLDINGS menu option:



a) Show how holding % numbers you see in the chart have been calculated

b) Does Net Cost per share contains the commission or fees charged? How much?

c) Show how % Unrealized Gains Losses have been calculated? What is the denominator?

4. **Dollar Cost Averaging:** Dollar Cost Averaging is an investment strategy where an investor divides the total amount they want to invest into equal periodic purchases of a particular asset (e.g., stocks, ETFs) regardless of price fluctuations. Instead of investing a lump sum all at once in a stock, the investor spreads out purchases over time (e.g., monthly or quarterly). This reduces the impact of market volatility on their average purchase price. The investor need not necessarily time the market to make a profit.

a. You buy shares of ABC stock over three months:

i. Month 1: 50 shares at \$80 per share (+\$2 transaction fee)

ii. Month 2: 75 shares at \$90 per share (+\$3 transaction fee)

iii. Month 3: 100 shares at \$95 per share (+\$4 transaction fee)

What is your Net Cost Per Share for all ABC stocks?

b. Investor A makes a one-time lump-sum investment of \$3,000 in XYZ stock at \$100 per share.

Investor B dollar-cost averages, buying \$1,000 worth each month for three months, with stock prices fluctuating as follows:

i. Month 1: \$100 per share

ii. Month 2: \$90 per share

iii. Month 3: \$110 per share

Calculate the Net Cost Per Share for Investor B. Which investor ends up with the lower Net Cost Per Share?

c. What is the downside/disadvantage of Dollar Cost Averaging? (Hint: think of scenarios when prices are rising (**bull market**) and when prices are falling (**bear market**))

**Homework:**

1. Explain Dollar Cost Averaging to your family members and how it can be beneficial for long term investment goals. Are you able to convince them to follow this strategy for their own stock investments?
2. Buy 10 shares of your favorite stock on each day of week (Monday to Friday). Calculate the Net Cost Per Share for these purchases over 5 days. Is the average cost greater or less than the price you paid on the first day?