

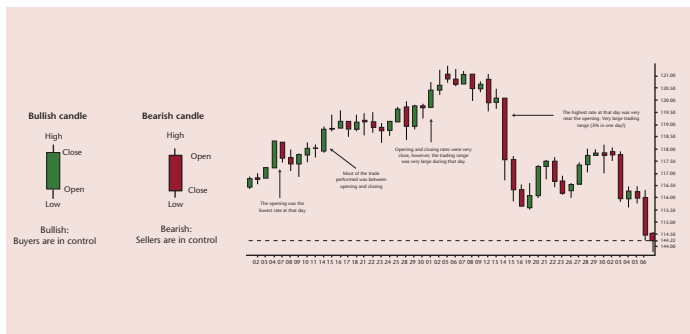
# How to be a maths millionaire!



Mathematics and applied mathematics are used in everyday life. Stock markets, mobile phones, car manufacturing, Google, Hollywood special effects, digital TV and satellites all use cutting-edge mathematics tools in their basic functions. The Mathematical Modelling Series presents a number of applications of mathematics in domains as varied as the human body, volcanology, telecommunications or finance.

## Get me rich quick

A stock market is a public market where you can buy shares of a company. This represents a claim on the company's buildings and earnings. Share prices move up and down all the time. Every day, millions are made from taking advantage of market movements (up or down) in the share prices. The simple idea is buy low and sell high. Mathematics can help you to define when a share is low or high, and give you information about when you should buy or sell.



## How it works

Shares for sale on the market can be over-priced or under-priced. People's over-reactions affect the share price so that too much optimism may drive prices too high or too much pessimism may drive prices too low. Positive or up-trends are periods where the

price is slowly increasing: these are called bull markets. Negative or down-trends are periods where the price is slowly decreasing: these are referred to as bear markets. The aim of the game is to take advantage of these situations: buy the stock when it is particularly low and sell the stock when it is high. To identify these patterns and trends in financial markets and attempt to make millions, people use statistical images called candlesticks (shown left). They are made up of a body (red or green), and an upper and a lower tail. This illustrates the highest and lowest prices of the share during a time interval. The body illustrates the opening and closing price at the bottom and top of the body.

## Conclusion

Green candlesticks signal up-trend movement (the longer the body, the more significant the price increase). Therefore, buy at the lowest possible price. Red candlesticks signal down-trend movement (the longer the body, the more significant the price decrease). Therefore, sell at the highest possible price.

## Parts of the curriculum used in this project:

- Differentiation
- Inequalities, absolute values
- Ordinary differential equations
- Integration
- Sequences and series
- Statistics

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If you want more information about MACSI and this project:

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