FIN 401: Options

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KEY TERMS

Strike Price (k)	Exercise price / The price at which the option can be exercised
Premium	The cost to purchase a call or put option (paid by the buyer of an option to the seller)
Expiration Date	Last day the holder has the right to exercise the option
In the Money	Option has an intrinsic value (Worth more than strike price)
Out of the Money	Not profitable if exercised (Worth less than strike price)
At the Money	Strike price = Current market price
Short Position	The option writer (seller), has an obligation to fulfill the contract
Long Position	The option buyer (owner), has power whether to exercise their right or not
Payoff	The intrinsic value of the option at expiration date (value from exercising)
Profits	The net gain or loss, including the option premium paid or received.

BASIC DEFINITIONS

Call Option: Gives the owner the right but not the obligation to **BUY** an asset at a given time in the future, at a specified price agreed upon today.

1. **Short Position:**

   When stock price < strike price (s < k), the payoff will be equal to ZERO since **s - k** will be **< 0**. The profit will be constant and equal to +c (which is the option premium the seller receives for selling the option).

   When strike price < stock price (k < s), the payoff and profit will slope downward (negative), as the seller will be obliged to sell the asset at a price k, when the current price of the asset is selling at a higher market price which is s.

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2. **Long Position:**

   When strike price < stock price (k < s), the purchaser's payoff and profit (the owner of the option) will be positive, as they will exercise their option to buy an asset at a strike price, k, which is less than the current market price, s.

   When stock price < strike price (s < k), the owner's payoff will be zero (since s - k < 0, hence we take 0). And their profit will be - c, which is the cost of buying the option.

Put Option: Gives the owner the right but not the obligation to **SELL** an asset at a given time in the future, at a specified price agreed upon today.

1. **Short Position:**

   When stock price < strike price (s < k), the writer of the put option (seller), will be obligated to buy an asset at the strike price, k, if the buyer exercises their right. The seller's payoff and profit will be negative, as they would be buying an asset at a price k, which is greater than the current market price, s.

   When strike price < stock price (k < s), the option owner will not exercise their right as the put option is out of the money. Payoff will be zero, as k - s < 0, and the profit will be equal to +p, as the writer will get to keep the premium they received to sell the option.

2. **Long Position:**

   When stock price < strike price (s < k), the owner's payoff and profit will be positive, as they will exercise their right to sell an asset at a strike price k, which is greater than the current market price, s.

   When strike price < stock price (k < s), the owner will not exercise their right as the option is out of the money, and their maximum loss is the premium they paid for owning the option.

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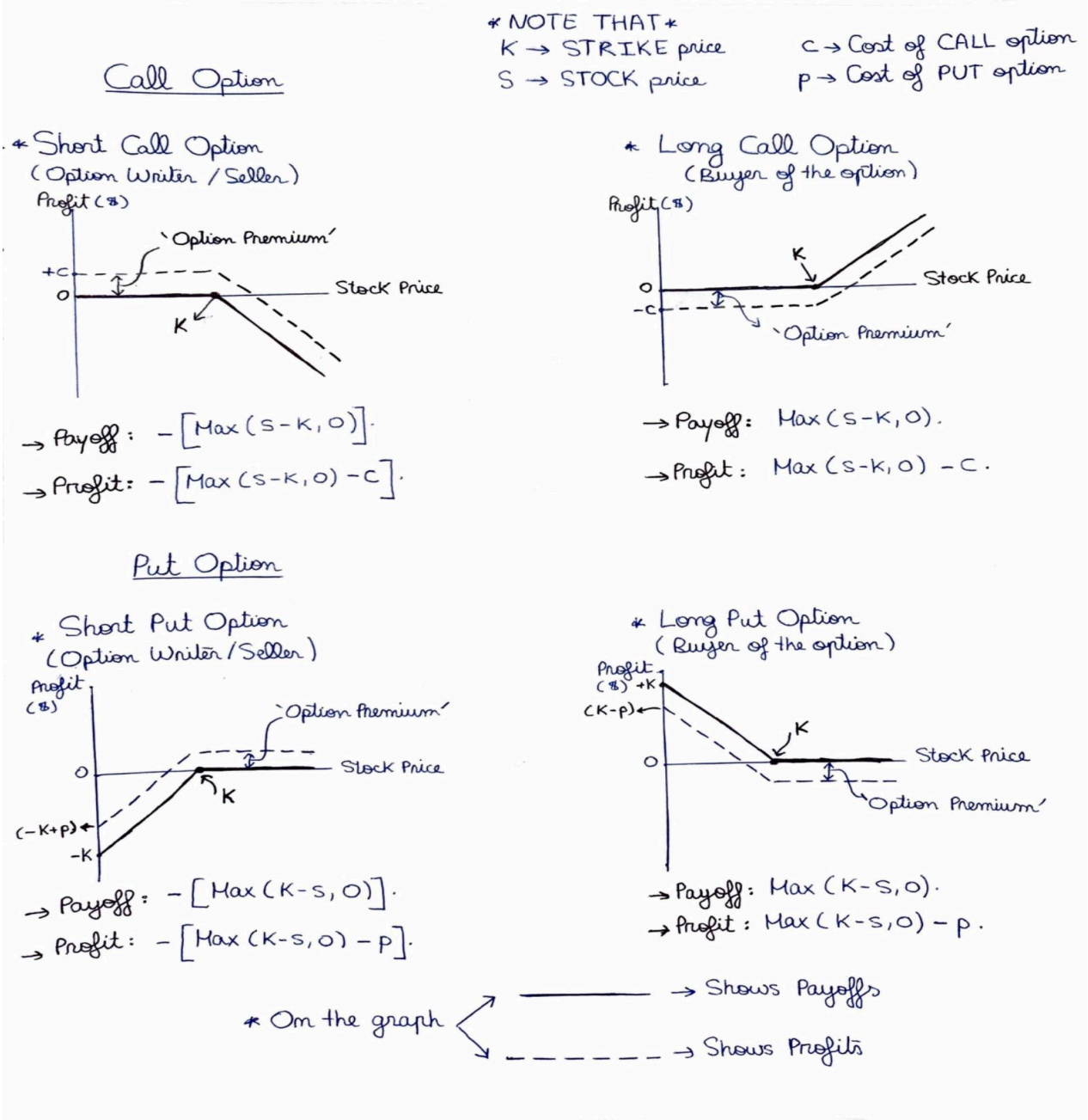
FORMULAS AND DIAGRAMS



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