

OPTIONS EDUCATION 101

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HOW TO TRADE OPTIONS:

We at Homegrown Investments hope this introductory guide gives interested new investors/traders some guidance on what can seem initially confusing; options trading.

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THE BASICS



VALUE OF
CONTRACTS



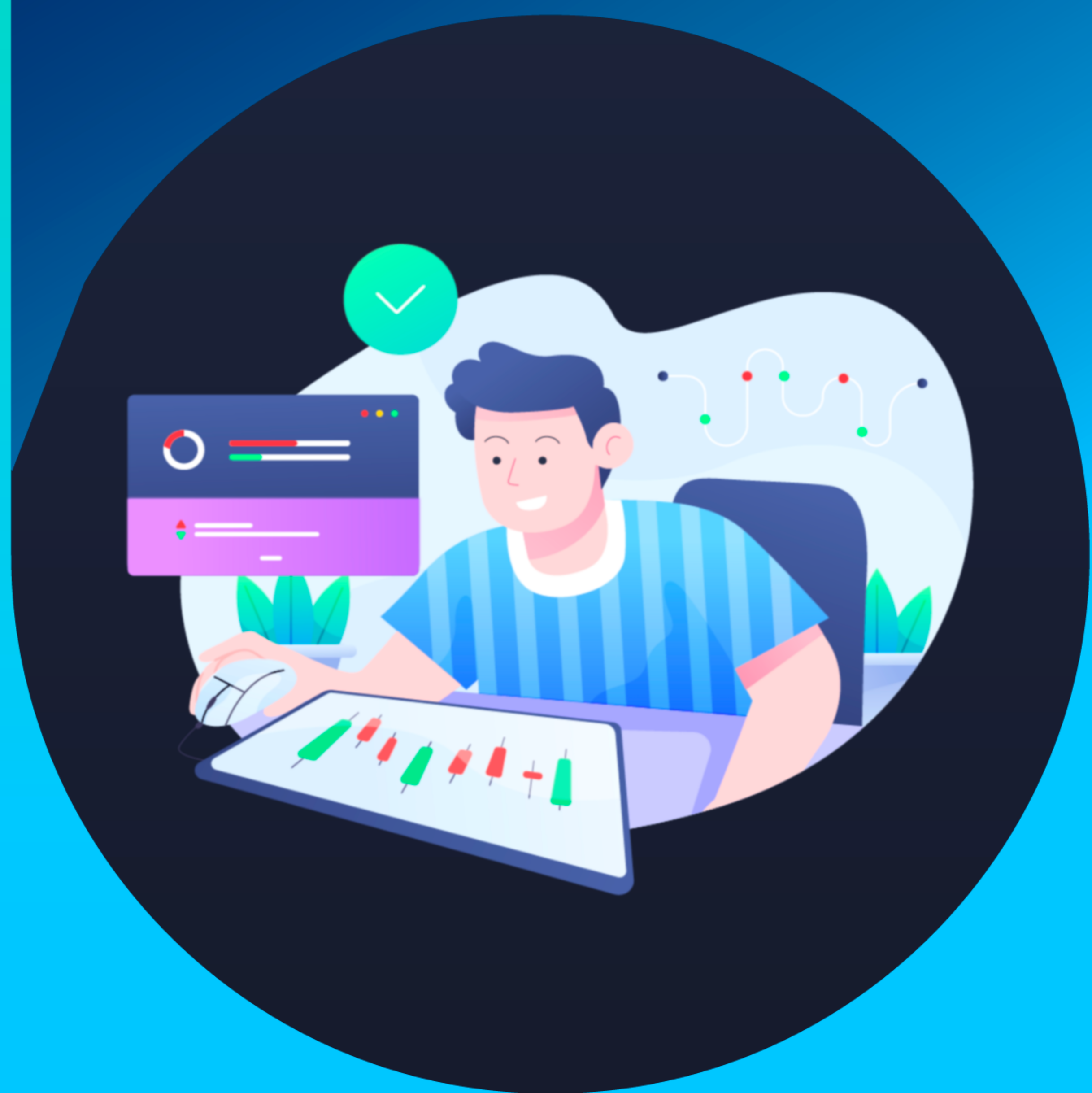
IMPLIED VOLATILITY
AND THE GREEKS



| Section

THE BASICS





WHAT IS AN OPTION?

An option gives the investor the right, but not the obligation, to **buy or sell a stock at a predetermined and agreed upon price (strike price)** and on or before a certain date (expiration date). The two types of options are a **call & put**.

An options price movement is based on two main factors: **the price of the underlying stock and time until expiration**.

THE TWO FACTORS DETERMINING OPTION PRICING

UNDERLYING ASSET MOVEMENT

The direction & price movements of the underlying asset, in this case, the stock affects the price of the option. If a stock goes up, the calls will go up with it as the agreed upon price (strike price) becomes more profitable or more likely to become profitable.



Time Until Expiration

The further away an expiration is, the more time a stock has to move in an upwards or downwards direction to reach the strike price. Since every option has an expiration date, the stock needs to reach the strike price to prevent the option from expiring worth less. As time decreases options become worth less as they have less time to reach the strike price & buyers won't be willing to pay as much.

WHY OPTIONS INSTEAD OF REGULAR STOCK? **ONE WORD: LEVERAGE**

One options consists of 100 shares of the underlying stock. The options contract captures the profits OR losses of 100 shares.

With less capital, you can make greater profits or greater losses depending on how the stock moves. You control the rights of 100 shares without paying for 100 shares.



EXAMPLE OF AN OPTION

Suppose you are trying to buy a house for sale at \$100,000 from a guy named George, but you aren't certain if you want to buy the house yet or keep searching. You are afraid of losing the opportunity to buy the house if someone offers George a better offer, so you make George an offer of \$5,000 to hold the house off the market and sell the house to you at \$100,000 at the end of the month if you decide to buy it.

In this example: the end of the month timeframe represents the expiration date of the option. The \$100,000 agreed upon price represents the strike price of the option. The \$5,000 represents the premium of an option that you pay the option writer for making the deal. Since George is the one agreeing to sell, he is representative of the option writer, and you the buyer is the representation of the option buyer.



A WINNING OUTCOME OF THE EXAMPLE

Now suppose oil is found underneath city during this month holding period, the house's value will now increase to **\$200,000**, but because of the deal, George Still has to sell it to you for **\$100,000** if you choose to buy it. **You have two options now:**

If you choose to buy the house for that price **you can own a \$200,000 house** while only paying **\$100,000** for the house + the **\$5,000** holding deposit. Now you can choose to keep the house (exercise the option) or resell the house and pocket the **\$95,000** profit (sell the shares on the market)

If you do not have **\$100,000** to buy the house for the original price before the oil was found, you can still make money by selling your holding deal to someone else who has the capital to afford it. Because the house is worth **\$200,000**, you can sell your deal to someone else who has the capital to buy house for **\$100,000**, of which you will profit **\$95,000** since you do not get your holding deposit back. Now, you just executed a deal for **\$95,000** profit while only putting down **\$5,000** of your own capital.

A LOSING OUTCOME OF THE EXAMPLE

Now suppose a new factory is placed next door to the house during this month holding period, the house's value will now decrease to **\$50,000**, so you decide not to buy the house for the **\$100,000** holding price; however, George will keep your **\$5,000** that you paid for him to hold it for you. Even though you lose **\$5,000**, at least you didn't buy the house right away and lose **\$50,000** like George did.



THE TAKEAWAY

THE TAKEAWAY FROM, CHOICE A OF THE WINNING EXAMPLE:

You would have profited \$100,000 if you never made the holding deal and just bought the house straight up, instead of profiting just \$95,000 because you took the deal. However, you still made good profits regardless. This strategy takes quite a bit of capital as you needed \$105,000 to make \$95,000. Paying for the entire house after it goes up is similar to an option's buyer exercising the option contract and taking control of the underlying asset.

THE TAKEAWAY FROM, CHOICE B OF THE WINNING EXAMPLE:

You never had the capital to buy the house, but you turned \$5,000 into \$95,000 profit by selling the house to someone else. This choice takes little capital, but experiences great returns equal to the profits of choice A. Selling the house holding contract to someone else with the capital is similar to selling an option to someone with the capital to buy the underlying asset / stock.

THE TAKEAWAY FROM, CHOICE C OF THE WINNING EXAMPLE:

You never had the capital to buy the house, but you turned \$5,000 into \$95,000 profit by selling the house to someone else. This choice takes little capital, but experiences great returns equal to the profits of choice A. Selling the house holding contract to someone else with the capital is similar to selling an option to someone with the capital to buy the underlying asset / stock.

TWO TYPES OF BASIC OPTIONS



1

CALLS

GIVES THE HOLDER THE RIGHT, BUT NOT THE OBLIGATION. TO BUY 100 SHARES OF A COMPANY AT A SPECIFIC PRICE, KNOWN AS THE STRIKE PRICE, UP UNTIL A SPECIFIED DATE, KNOWN AS THE EXPIRATION DATE.



2

PUTS

GIVES THE HOLDER THE RIGHT, BUT NOT THE OBLIGATION. TO SELL 100 SHARES OF A COMPANY AT A SPECIFIC PRICE, KNOWN AS THE STRIKE PRICE, UP UNTIL A SPECIFIED DATE, KNOWN AS THE EXPIRATION DATE

CALLS

Long call options are bullish meaning the price of the stock is expected to appreciate. **Long call options increase in value as the price of the underlying asset increases.** Call option writers (George in the house example) are bearish or neutral and believe the price will stay relatively the same or even dip by the time the contract expires. Written call options decrease in value as the price of the underlying increase.

A CALL EXAMPLE: Let's say a call buyer bought \$200 strike price calls for Microsoft at \$10 a call with an expiration in a week.

If Microsoft (**MSFT**) is trading at **\$250** at expiry and the strike price is **\$200**, the profit is **\$250 - (\$200 strike + \$10 premium) = \$40 profit per share.**

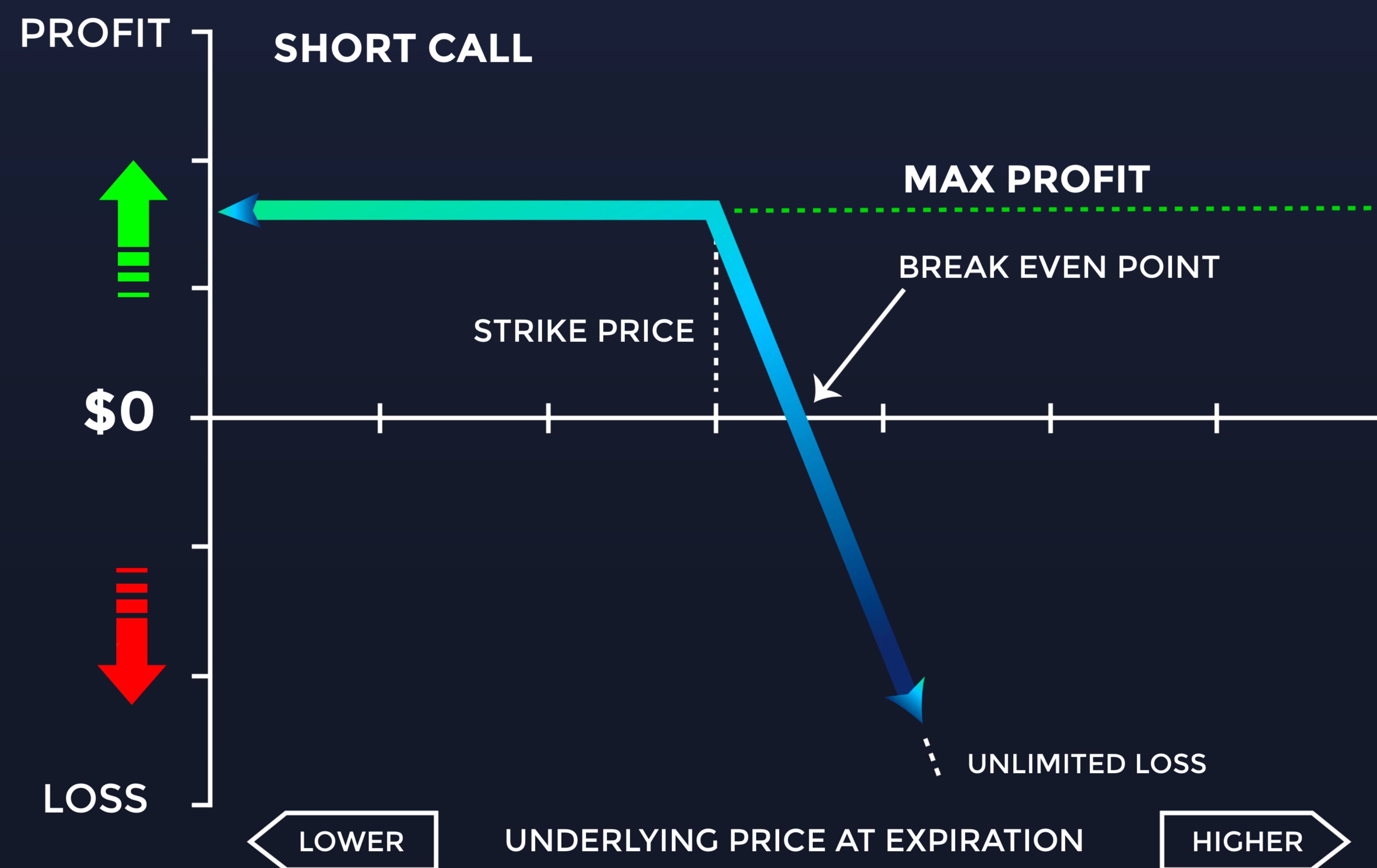
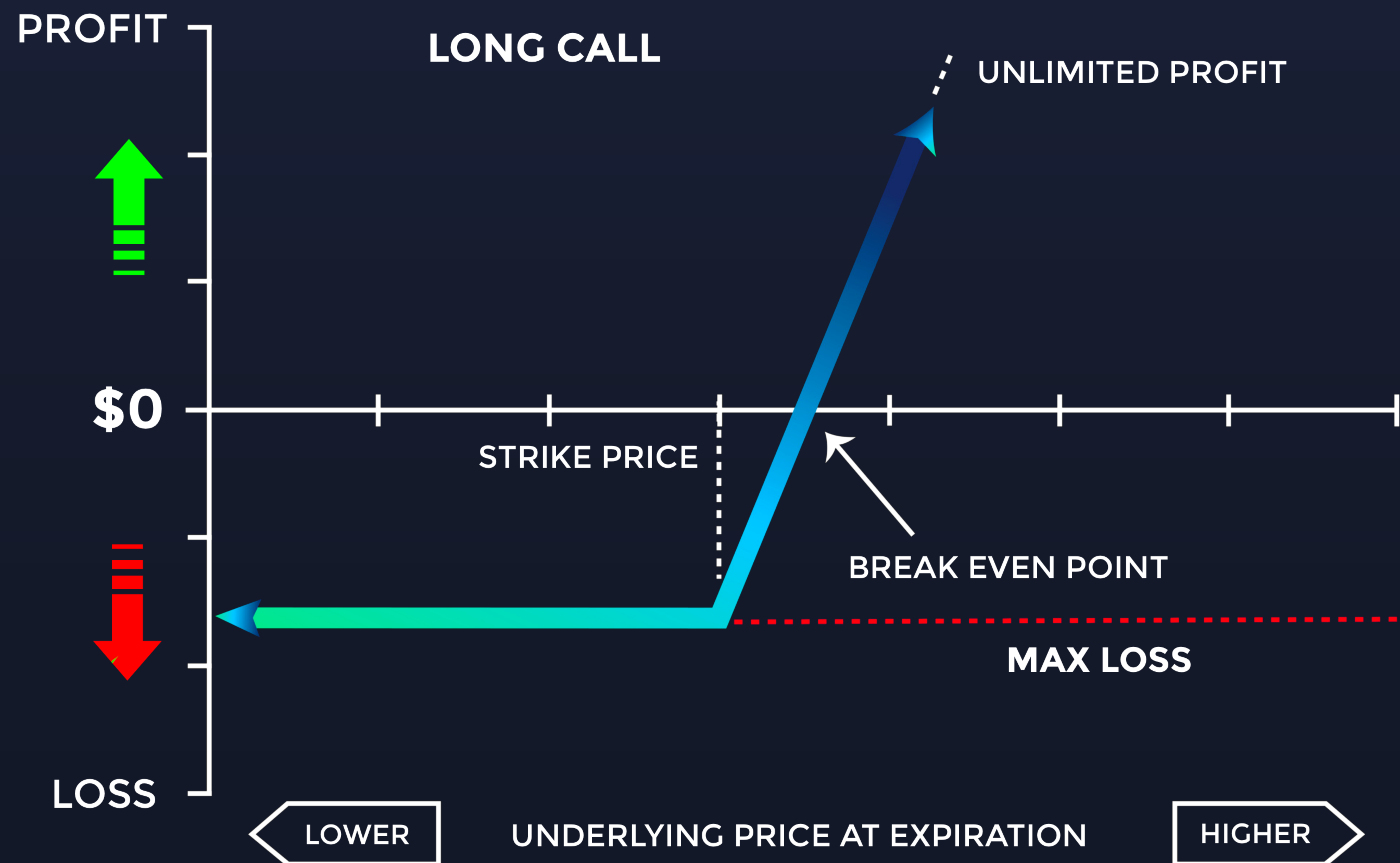
If the buyer bought one contract that equates to **\$4,000 (\$40 x 100 shares)** or **\$20,000** if they bought 5 contracts (**\$40 * 500 shares**).

If at expiry **MSFT** is below **\$200** then the call buyer loses **\$1000 (\$10 x 100 shares)** for each contract they bought.



CALLS

HERE IS A HANDY VISUALIZATION OF **HOW THE OWNER OR SELLER OF A CALL CONTRACT CAN MAKE MONEY OR BREAKEVEN** BASED OF THE UNDERLYING ASSETS PRICE (THE STOCKS PRICE BY THE DATE EXPLAINED IN THE CONTRACT)



PUTS

Long put options are bearish meaning the price of the stock is expected to depreciate. **Long put options increase in value as the price of the underlying asset decreases.** Put option writers are bullish or neutral and believe the price will stay relatively the same or even go up by the time the contract expires. Written put options decrease in value as the price of the underlying decreases.

A put example: Let's say a put buyer bought **\$200** strike price puts for Microsoft at \$10 a put with an expiration in a week.

If Microsoft (**MSFT**) is trading at **\$150** at expiry and the strike price is **\$200**,

The profit is **(\$200 strike + \$10 premium) - \$150 = \$40 profit per short.**

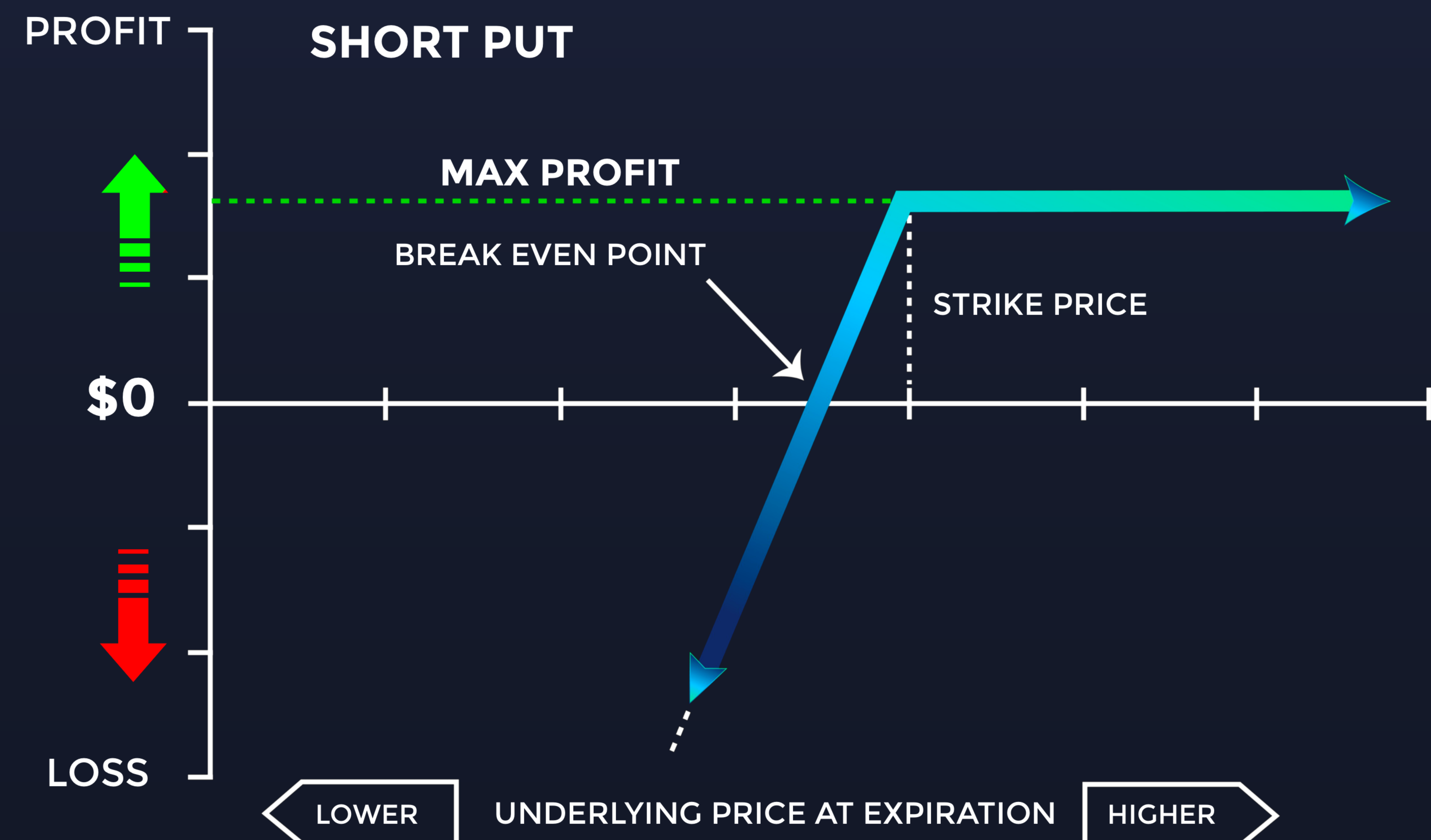
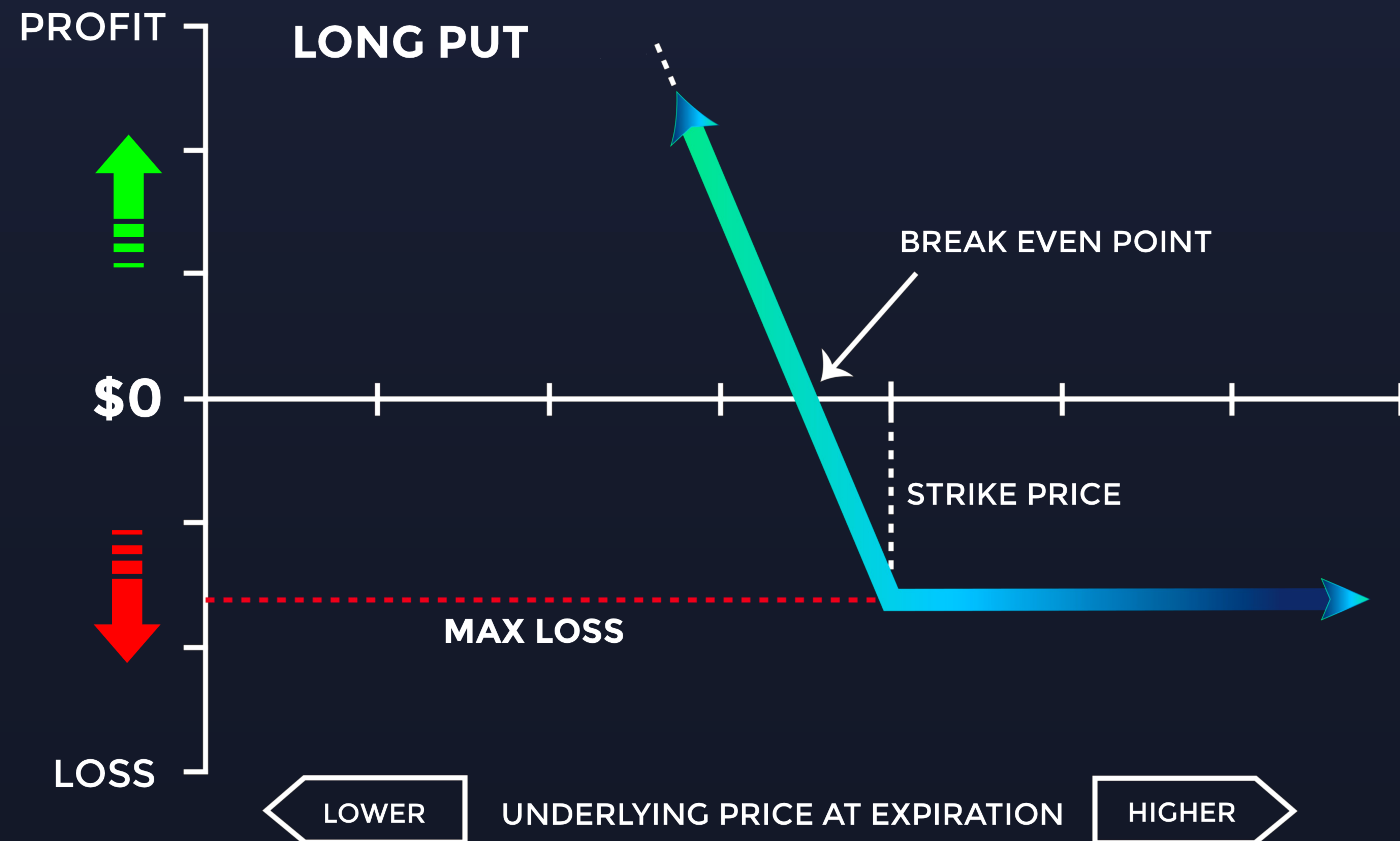
If the buyer bought one contract that equates to **\$4,000 (\$40 * 100 shorts)** or **\$20,000** if they bought 5 contracts **(\$40 * 500 shorts)**.

If at expiry **MSFT** is above **\$200** then the put buyer loses **\$1000 (\$10 x 100 shorts)** for each contract they bought.



PUTS

HERE IS A HANDY VISUALIZATION OF **HOW THE OWNER OR SELLER OF A PUT CONTRACT CAN MAKE MONEY OR BREAKEVEN** BASED OF THE UNDERLYING ASSETS PRICE (THE STOCKS PRICE BY THE DATE EXPLAINED IN THE CONTRACT)



| Section

VALUE OF CONTRACTS



HOW IS VALUE CALCULATED?

Value is calculated on a contract by adding intrinsic value to the extrinsic value of a contract.

INTRINSIC VALUE:

The amount that an option is in the money. This is also how much the contract would be worth if it was exercised right now.

How to calculate intrinsic value:

For calls: $\text{Stock price} - \text{Strike price} = \text{Intrinsic Value}$

FOR EXAMPLE

Apple is trading at \$100. You have a call with a strike price of \$95 worth \$7.00. The intrinsic value would be $\$100 - \$95 = \$5.00$.

Although the contract is worth \$7.00, only \$5.00 is intrinsic.

FOR PUTS

$\text{Strike price} - \text{Stock price} = \text{Intrinsic Value}$

FOR EXAMPLE

Apple is trading at \$100. You have a put with a strike price of \$105 worth \$7.00. The intrinsic value would be $\$105 - \$100 = \$5.00$.

Although the contract is worth \$7.00, only \$5.00 is intrinsic.



HOW IS VALUE CALCULATED?

EXTRINSIC VALUE

The value of a contract based on the time until the contract expires and the Implied Volatility (see chapter 3) of the contract. The further out a contract, the more chance the stock has of reaching the strike price, so thus the longer the time the more the contract is worth. Extrinsic value is the sum of both the time value and volatility value.

Extrinsic Value is anything that is not intrinsic value. It is the Time Value + Volatility Value.

TIME VALUE

The time value is the time left for a stock to reach a desired price, the more time left on the contract, the more time value you will have.

IMPLIED VOLIATILY

IV measures how much the stock price may swing based on current events regarding the company, economy, or anything else that can swing the stock. The higher the IV, the larger the predicted move will be and vice versa for a smaller IV.



TOTAL VALUE (PREMIUM)

This is the total value of the intrinsic + extrinsic value. This is how much the option is worth if you were to sell it to another buyer. There are two ways to calculate this,

Intrinsic Value + Extrinsic Value = Premium

Intrinsic Value + (Time Value + Volatility Value) = Premium

As the time until expiration begins to tick, the extrinsic value of the contract becomes worth less and less until it reaches \$0, leaving only intrinsic value. This is because the contract will have less time to make a move in the desired direction before the contract expires and there is less time for a volatile move in the stock.

This decaying of time value in extrinsic value is known as Theta decay and the decaying of Implied Volatility is known as IV crush. (see chapter 3).

The intrinsic and extrinsic values **determine the moneyness of a contract.**



THREE TYPES OF MONEYNES

ITM

1

IN THE MONEY

A call that is in the money is a call purchased with a strike price below the current price of a stock. A put that is in the money is a put purchased with a strike price above the current price of a stock. In the money has both intrinsic value and extrinsic value. It has intrinsic because if you exercised the contract right now it would be intrinsically worth something immediately. It also has extrinsic value because the contract still has time left to move in the desired direction. Since there is intrinsic value, the contracts cost more than ATM and OTM because upon purchasing the contracts already have instant intrinsic value.

ATM

2

AT THE MONEY

A call and put that are at the money is a call or put purchased at a strike price equal to the stock's current value. It is made up entirely of extrinsic value, because if exercised immediately it would be worth nothing. However, as it moves in the money towards the desired direction it gains intrinsic value instantly. These are cheaper than ITM contracts because they do not yet have intrinsic value, but they are more expensive than OTM contracts because they begin gaining intrinsic value immediately as the stock moves in the desired direction.

OTM

3

OUT OF THE MONEY

A call that is out of the money is a call purchased with a strike price above the current stock price. A put that is out of the money is a put purchased with a strike price below the current stock price. It is made up entirely of extrinsic value, because if exercised immediately it would be worth nothing. However, as the stock moves closer towards the strike price, the contract increases its extrinsic value as the contract becomes more likely to enter in the money. These are cheaper than ITM and ATM contracts because they do not yet have intrinsic value and are worthless if exercised immediately..

AN OPTIONS CHAIN EXAMPLE

Option Chains for GOOG. Fixed Return Options Are Highlighted in Yellow. S&P Options Reports* Futures Options Custom [Preferred Ending]

Quotes as of 6/25/2008 1:57:28 PM ET

Option Pricer | Cov Calls | Straddles | Spreads | Call Spreads | Collars | Calendar Puts | Calendar Calls | Imp Vol | Previous

Symbol: GOOG Range: Near-the-Money Type: Calls And Puts Expiration: Jul 08 View Chain

GOOGLE INC Time & Sales | Chart | Volatility View | News

Symbol	Last	Change	Bid	Ask	High	Low	Volume	Chart
GOOG	550.80	+8.50	550.72	550.93	554.97	543.67	1,994,095	Google

GOOG Expiration Months: Jul 08 | Aug 08 | Sep 08 | Dec 08 | Jan 09 | Jan 10

Calls									Puts								
Symbol	Last	Chg	Bid	Ask	Vol	OpInt	Action	Strike	Symbol	Last	Chg	Bid	Ask	Vol	OpInt	Action	
Jul 08 Calls (22 days to expiration) GOOG @ 550.8									Jul 08 Puts								
.GOPGW	36.20	4.80	35.40	35.70	164	640	Trade	530.00	.GOPSW	13.53	-4.17	13.80	14.00	753	1,625	Trade	
.GOPGX	29.98	4.28	29.30	29.60	1,555	1,298	Trade	540.00	.GOPSX	17.60	-4.90	17.70	18.00	1,022	2,613	Trade	
.GOPGY	24.20	3.30	24.00	24.20	1,446	3,431	Trade	550.00	.GOPSY	22.20	-5.50	22.20	22.50	1,011	3,914	Trade	
.GOPGZ	19.50	2.70	19.20	19.40	1,039	3,404	Trade	560.00	.GOPSZ	27.42	-5.78	27.40	27.80	368	2,215	Trade	
.GOPGQ	15.20	2.10	15.20	15.30	580	2,167	Trade	570.00	.GOPSQ	33.00	-8.00	33.40	33.70	176	1,188	Trade	

Action: Trade Trade Calculator Mini Pricer Add to Watch List Reset

The highlighted yellow is **IN THE MONEY (ITM)**

The highlighted white is **OUT THE MONEY (OTM)**

The last stock price was 500.00, which means that a 550.00 option would be considered an **AT THE MONEY OPTION (ATM)**

| Section

IMPLIED VOLATILITY AND THE GREEKS



WHAT IS A GREEK?

Option Greeks are a series of Greek letters that represent value changes in the price of an option.

There are many Greeks, but the four we will cover are **Delta**, **Theta**, **Gamma** and **Vega**. The favorite of the four being Delta and Theta. We will also cover Implied Volatility, although technically, not a Greek, it functions similar to one.



Delta

Theta



Gamma

Vega





DELTA

This Greek represents how much the option contract will move per dollar movement in the underlying stock. Delta can be used to measure the price sensitivity of the option compared to the stock.

- Delta ranges from 1 to 0 for calls. A deep **ITM** call will have a Delta closer to 1, and a deep **OTM** call will have a Delta closer to 0.
- Delta ranges from -1 to 0 for puts. A deep **ITM** put will have a Delta closer to -1, and a deep **OTM** put will have a Delta closer to 0.
- **ITM** options have a higher Delta because they capture more intrinsic value per move.
- A share of a stock will have a Delta of 1 because it captures full intrinsic value.

FOR EXAMPLE

If a call has a Delta of 0.80 and the stock rises 1.00, your contracts will gain 0.80 in premium.



THETA

This Greek represents how much the option contract will lose in value overnight as it gets one day closer to expiration and has one day less to move further in the desired direction.

- How large the **Theta is will determine how much premium you lose every day** as there is less time on the contract.
- For a contract to make money it must gain money through Delta faster than Theta loses it. **Just because a stock is going up does not mean your calls will make money** if the stock / Delta is gaining your contracts less than Theta is taking off of it overtime.

FOR EXAMPLE

If a call has a Theta of -0.20 , the call will lose 0.20 of premium every day due to Theta. So if a stock stays the same overnight, you will lose -0.20 . If a call has a Delta of 0.80 , and a Theta of -0.20 , if the stock gains $\$2.00$ overnight, the contract will be worth only 1.40 more due to the value Theta took off, without Theta it would have been 1.60 .



γ

GAMMA

This Greek represents the change in Delta relative to the change in price in the underlying stock.

- Gamma indicates the amount Delta would change if the **stock moved \$1**.
- Gamma shows how **stable** the Delta of an option is.
- A higher Gamma will **indicate a larger move** in the Delta for small movements in a stock.
- Gamma is higher for options with a **shorter expiration**. This is because price swings have more impact on the option as it gets closer to expiration.

FOR EXAMPLE

A call has a Delta of 0.50 and a Gamma of 0.20, if the stock gains a dollar, you will gain 0.50 in premium and the new Delta will be 0.70.



V

VEGA

This Greek represents how sensitive options change is to a change in volatility.

- Demonstrates how sensitive an option is to **Implied Volatility**.
- Vega represents the change in an options price relative to a **1% change** in Implied Volatility.
- A rise in Implied Volatility will raise an options price because a rise in IV represents a stock being more likely to experience extreme volatility potentially in the direction of the desired price movement. **The opposite is also true for a decrease in IV, the option premium will then lose value as a stock is less** likely to experience extreme volatility in the potentially desired direction of price movement.

FOR EXAMPLE

if an option has a Vega of 0.10, if the Implied Volatility rises by 1%, the premium will gain 0.10 in value.

IMPLIED VOLATILITY (IV)

Although technically not a Greek, it can act or in a similar manner to one.

- Demonstrates how likely it is that a **stock will experience** a price swing.
- Higher IV results in **more expensive options** as the potential for a price swing in the desired direction.

FOR EXAMPLE

If an option has an IV of 50% for average, and a premium of 1.00, and the CEO announces they will have a press conference on TV later in the week, the potential for news will increase the IV and cause a rise in the price of the premium. The rise in premium based on a rise in IV is calculated by the Vega.



THANK YOU

HOMEGROWN INVESTMENTS INC hopes you have enjoyed this introductory guide to trading options. If you have further questions feel free to ask our knowledgeable staff in our discord at join.870trades.com

Goodluck to all new traders

