

# Defintions

# Options Greeks Cheat Sheet

All examples below use BHP: current price \$83.33, put strike \$80, option price \$1.15, 15 days to expiry.

## Implied Volatility (IV)

**What it is:** The market's expectation of how much the stock price will move over the next year, expressed as a percentage.

| Value  | What it means                              |
|--------|--------------------------------------------|
| 0-20%  | Low volatility — stock expected to be calm |
| 20-50% | Normal range for most stocks               |
| 50-80% | High volatility — big moves expected       |
| 80%+   | Extreme volatility — options are expensive |

“ **Your BHP put:** IV  $\approx$  24%  $\rightarrow$  Fairly normal volatility for a large ASX stock like BHP.

## Delta ( $\Delta$ )

**What it is:** How much the option's price moves when the stock moves \$1.

| Value         | What it means                  |
|---------------|--------------------------------|
| 0.00 to +1.00 | Calls — rises when stock rises |
| 0.00 to -1.00 | Puts — falls when stock rises  |

| Value           | What it means                                   |
|-----------------|-------------------------------------------------|
| $\pm 0.50$      | Roughly 50/50 chance of expiring in the money   |
| $\pm 0.80-1.00$ | Deep in the money — moves almost like the stock |
| $\pm 0.01-0.10$ | Far out of the money — very unlikely to profit  |

“ **Your BHP put:** Delta  $\approx -0.20 \rightarrow$  For every \$1 BHP rises, this put loses  $\sim \$0.20$ . For every \$1 BHP falls, it gains  $\sim \$0.20$ . Also read as roughly a 20% chance of expiring in the money.

## Gamma ( $\Gamma$ )

**What it is:** How much **delta itself changes** when the stock moves \$1. Think of it as delta's sensitivity.

| Value             | What it means                                                   |
|-------------------|-----------------------------------------------------------------|
| High (0.05+)      | Delta changes rapidly — option is very sensitive to price moves |
| Low (0.001–0.005) | Delta barely changes with price moves                           |
| Near expiration   | Gamma spikes dramatically                                       |

“ **Your BHP put:** Gamma  $\approx 0.07 \rightarrow$  If BHP drops \$1, delta moves from about  $-0.20$  to roughly  $-0.27$ . Meaningful, because this put is only 15 days out and close to the strike.

## Theta ( $\Theta$ )

**What it is:** How much value the option **loses each day** just from time passing, assuming the stock price stays flat. Always negative for buyers.

| Value              | What it means                          |
|--------------------|----------------------------------------|
| $-0.01$ to $-0.05$ | Slow decay — often far from expiration |
| $-0.05$ to $-0.20$ | Moderate decay                         |

| Value  | What it means                                   |
|--------|-------------------------------------------------|
| -0.20+ | Fast decay — usually near expiration or high IV |

“ **Your BHP put:** Theta  $\approx -0.04 \rightarrow$  Loses about four cents per day ( $\times 100$  shares per contract) just from time passing. As a seller, this works *for* you — every day BHP stays above \$80, the option you sold decays toward zero.

# Vega (v)

**What it is:** How much the option's price changes when **IV moves 1%**.

| Value           | What it means                        |
|-----------------|--------------------------------------|
| High (0.50+)    | Very sensitive to volatility changes |
| Low (0.01-0.10) | Less affected by volatility shifts   |
| Long options    | You benefit when IV rises            |
| Short options   | You benefit when IV falls            |

“ **Example:** If your BHP put has a Vega of 0.05 and IV jumps from 24% to 28%, the option gains roughly \$0.20 in value ( $\times 100 = \$20$  per contract) — bad news if you're short the put.

# Rho (ρ)

**What it is:** How much the option's price changes when **interest rates move 1%**. Usually the least important Greek for short-term traders.

| Value            | What it means                             |
|------------------|-------------------------------------------|
| Positive (calls) | Rising rates slightly increase call value |
| Negative (puts)  | Rising rates slightly decrease put value  |
| Near zero        | Short-dated options barely affected       |

With only 15 days to expiry, Rho has almost no practical effect on your BHP put.

# Delta as a Probability Estimate

Delta is commonly used as a rough estimate of the **probability an option expires in the money**. It's not mathematically exact (the true theoretical probability is a related figure called  $N(d_2)$ ), but it's close enough that most traders use it this way in practice.

| Delta      | Rough probability of expiring ITM |
|------------|-----------------------------------|
| $\pm 0.10$ | ~10% chance                       |
| $\pm 0.25$ | ~25% chance                       |
| $\pm 0.50$ | ~50% chance (coin flip)           |
| $\pm 0.80$ | ~80% chance                       |

“ Traders often pick strikes by targeting a delta — e.g. selling puts around 0.20–0.30 delta (like your BHP \$80 put) to aim for roughly a 70–80% chance of keeping the full premium.

# Buying vs. Selling Options — Risk Profile

|                          | Buying (long)                  | Selling (short/writing)                                                                        |
|--------------------------|--------------------------------|------------------------------------------------------------------------------------------------|
| Max loss                 | Limited to premium paid        | Can be very large (naked calls: unlimited; naked/cash-secured puts: strike price $\times$ 100) |
| Max gain                 | Can be large/unlimited (calls) | Limited to premium collected                                                                   |
| Time decay (theta)       | Works against you              | Works for you                                                                                  |
| Why WSB accounts blow up | Rarely from buying alone       | Usually from selling naked options with leverage, then getting caught by a big move            |

# Income Strategies

**Cash secured put:** Sell a put and set aside cash equal to  $\text{strike} \times 100$ . Keep the premium regardless. If assigned, you buy 100 shares at the strike price — often used on stocks you're happy to own anyway, effectively lowering your cost basis by the premium received.

**Covered call (stock secured call):** Own 100 shares, sell a call against them. Keep the premium regardless. If assigned, you sell your shares at the strike — a way to generate income from stock you already hold.

**The wheel strategy:** Sell cash secured puts to acquire shares you want; once assigned, sell covered calls against those shares to generate ongoing income; if called away, go back to selling puts. A cyclical income strategy combining both.

“ **Important nuance:** If you get assigned on a cash secured put and plan to hold long-term, this isn't a realized loss — you've simply bought shares at  $(\text{strike} - \text{premium})$ , even if the market price is temporarily lower. It only becomes a real cash loss if you close the *option* itself at a worse price than you sold it for (e.g. via a stop loss).

## Stop Loss & Take Profit on Options

These trigger a **buy-back** (if you're short) or a **sell** (if you're long) at a set option price, not the stock price.

### If you sold (short) an option:

- Option price **rising** = bad for you (stock moving against your position)
- Set **stop loss above** your entry price (e.g. sold at \$1.15 → stop loss at \$2.15) to cap losses
- Set **take profit below** your entry price (e.g. take profit at \$0.50) to lock in gains
- P&L formula:  **$(\text{entry price} - \text{exit price}) \times 100$  per contract**

### If you bought (long) an option:

- Option price **falling** = bad for you
- Set **stop loss below** entry price
- Set **take profit above** entry price

**Example:** Sell BHP put at \$1.15, stop loss at \$2.15. If triggered, you buy back at \$2.15 having only received \$1.15 — that's a **real cash loss of \$100 per contract**, not a discount. This is different from being assigned shares at expiration, which is a stock purchase, not a cash loss (assuming you're happy to hold the shares).

## Open Interest

The total number of contracts of a specific strike/expiry currently open (not yet closed, exercised, or expired) — different from **volume**, which is how many traded *today*.

- New contract created (both sides opening) → open interest **+1**
- Existing position closed (either side) → open interest **-1**
- One trader takes over another's existing position → open interest **unchanged**, volume still rises

**Why it matters:** Higher open interest generally means tighter spreads and easier entry/exit. Low open interest — common on many ASX options strikes, especially further OTM ones — often means wide spreads and harder fills. It's also watched as a sentiment/positioning indicator, especially around major expiries.

## Trading Options on the ASX

- ASX-listed options trade through **ASX Trade**, cleared via **ASX Clear** — you never deal directly with your counterparty
- Requires a broker and a signed Client Agreement before trading options
- ASX options generally have **much lower liquidity** than US options — wider spreads, fewer strikes/expiries available
- Common brokers: **Interactive Brokers** (lowest fees, broadest access to both ASX and international options), **CMC Markets**, **IG Australia**

## Quick Reference: Your BHP Put (\$80 Strike, 15 Days to Expiry)

| Greek           | Approx. Value | Plain English                                                                         |
|-----------------|---------------|---------------------------------------------------------------------------------------|
| IV              | ~24%          | Normal volatility for BHP                                                             |
| Delta           | ~-0.20        | Gains ~\$20 per contract for every \$1 BHP falls; roughly 20% chance of finishing ITM |
| Gamma           | ~0.07         | Delta shifts noticeably as BHP moves — this put is close to the strike                |
| Theta           | ~-0.04        | Loses ~\$4/day per contract from time alone (works in your favour as the seller)      |
| Contract credit | \$115         | \$1.15 quote × 100 shares                                                             |

## Key Concepts to Remember

- **One contract = 100 shares.** Always multiply the quoted price by 100 to get your actual cost (or credit received).
- **Out of the money (OTM):** The stock price hasn't reached your strike yet. For puts, this means the stock is *above* your strike price.
- **In the money (ITM):** Your option has intrinsic value. For puts, this means the stock is *below* your strike.
- **Time decay accelerates** as expiration approaches — the last 30 days are the fastest decay period.
- **IV crush:** After major news events (earnings, etc.), IV often drops sharply, taking option prices with it even if the stock moves in your favour.
- **Assignment ≠ automatic loss.** Being assigned shares on a cash secured put just means buying stock at (strike – premium). It's only a realized cash loss if you close the option position itself at a worse price than you opened it.

## Worked Example: BHP Cash Secured Put

Stock price: \$83.33 | Strike: \$80 | Expiry: 15 days | Option price: \$1.15 (sell to open)

| Scenario                      | What happens                                                             |
|-------------------------------|--------------------------------------------------------------------------|
| Option price <b>decreases</b> | Good for you — stock staying above \$80, option losing value toward zero |

| Scenario                             | What happens                                                                                      |
|--------------------------------------|---------------------------------------------------------------------------------------------------|
| Option price <b>increases</b>        | Bad for you — stock falling toward/below \$80, higher chance of assignment                        |
| Stop loss at \$2.15 hit              | You buy back at \$2.15 vs. sold at \$1.15 → <b>real loss of \$100/contract</b>                    |
| Held to expiry, assigned at \$80     | You buy 100 shares at \$80, keep the \$1.15 premium → effective cost basis ≈ <b>\$78.85/share</b> |
| Assigned but happy to hold long-term | Not a realized loss — you own shares you wanted, at a discount from the premium                   |

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