Cheatography

Betting Odds and Implied Probability Cheat Sheet

by BetBetter via cheatography.com/219378/cs/48582/

One price, three formats

Decimal 2.50 = stake back x 2.50 (a $10 bet returns $25, profit $15)
Fractional 3/2 = profit 3 for every 2 staked (same as 2.50)
American +150 = profit $150 on a $100 bet (same as 2.50)
American -200 = stake $200 to win $100 (decimal 1.50)
Convert:
Decimal = 1 + fraction (3/2 -> 2.50)
Decimal from +A = 1 + A/100
Decimal from -A = 1 + 100/A
+A from decimal d >= 2: (d - 1) x 100
-A from decimal d < 2: 100 / (d - 1)
Free converter: betbetter.world/tools/odds--converter

All three formats describe the same bet; only the way of writing it changes.

Are the odds right? Checking calibration

Calibration = do events priced at X% happen about X% of the time?
1. Remove the margin from each closing price
2. Group outcomes into bands (50-60%, 60-70% ...)
3. Compare the average priced chance with the share that won
4. Judge gaps against the standard error: sqrt(p x (1-p) / n)
What open data shows: across 18,238 settled two-outcome markets (Nov 2024 - Jul 2026, five sports), outcomes landed within about 2 points of the margin-free price in every band. Small gaps like that are often inside sampling error.
Full dataset (36,476 rows, CC BY 4.0): DOI 10.5281/zenodo.21764674
Study: Do betting odds tell the truth?

Example: p = 0.8, n = 2,000 gives a standard error of about 0.9 points, so a 1.5-point gap is not significant.

Price to chance (implied probability)

Decimal d: chance = 1 / d
2.50 -> 1 / 2.50 = 40%
1.50 -> 66.7%
Fractional a/b: chance = b / (a + b)
3/2 -> 2 / 5 = 40%
American +A: chance = 100 / (A + 100)
+150 -> 100 / 250 = 40%
American -A: chance = A / (A + 100)
-200 -> 200 / 300 = 66.7%
Short-cut: an even-money price (2.00, 1/1, +100) means 50%.

This is the chance the price implies before the bookmaker margin is removed.

Key terms

Implied probability: the chance a price suggests (1 / decimal odds)
Margin / vig / overround: how far the implied chances add up above 100%
Fair (no-vig) odds: odds after the margin is removed
Closing price: the last price before the event starts
Favourite-longshot bias: favourites and longshots being priced too short or too long on average
Brier score: average squared error of a forecast chance (a coin flip scores 0.25)
Calibration: priced chances match how often things happen

Odds are forecasts. Knowing how to read them is a statistics skill, not a betting tip.

Removing the margin (the vig)

Both sides of a two-way market add up to more than 100%. The extra is the bookmaker's margin.
Example: Team A 1.80, Team B 2.10
Implied: 1/1.80 = 55.6%, 1/2.10 = 47.6%
Total = 103.2% -> margin about 3.2%
Fair chance (simple method): divide each by the total
A = 55.6 / 103.2 = 53.9%
B = 47.6 / 103.2 = 46.1%
Fair odds = 1 / fair chance
A = 1.86, B = 2.17
Other methods (Shin, power, odds ratio) spread the margin differently between favourite and longshot.

Typical margins, Jul-Sep 2026, 69.6M markets: about 4.8% on who-wins bets and 7.6% on player props.

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