

Gambling Mathematics Cheat Sheet

The five formulas of our "Gambling Mathematics" page, on one sheet, with the worked examples.

1 • Expected value

$$EV = \Sigma (\text{probability} \times \text{outcome})$$

The average outcome of a repeated decision. Example (10 MAD stake, cash out at 2.00x, frequencies measured over one million rounds): $0.488 \times (+10) + 0.512 \times (-10) = \mathbf{-0.24 \text{ MAD per round}}$.

2 • House edge

$$\text{Edge} = 100\% - \text{RTP}$$

Game	Published RTP	House edge	Average loss / 1,000 MAD wagered
Chicken Road	98%	2%	20 MAD
European roulette	97.3%	2.7%	27 MAD
Chicken Road 2	95.5%	4.5%	45 MAD
Online slot machines	92 to 97%	3 to 8%	30 to 80 MAD

3 • Probability of reaching a target (crash games)

$$P = (1 - \text{edge}) \div \text{target multiplier}$$

At a 4.5% edge: target 1.50x → **63.7%** · target 2.00x → **47.8%** · target 10x → **9.6%**. The target changes the probability, never the expected value.

4 • Law of large numbers

$$\text{Standard deviation of a frequency} \approx \sqrt{(p \times (1 - p) \div n)}$$

For $p = 51.2\%$ (rounds below 2.00x): 100 rounds → ≈ 5 points · 10,000 rounds → ≈ 0.5 point · 1,000,000 rounds → ≈ 0.05 point. A session measures nothing; a million rounds do.

5 • Variance of one round (crash games)

$$\text{Standard deviation} = \text{stake} \times \text{multiplier} \times \sqrt{(p \times (1 - p))}$$

10 MAD stake, 4.5% edge: target 1.50x → ≈ **7 MAD** · target 10x → ≈ **29 MAD**. Same expected value (−0.45 MAD/round), four times the swing.

What these formulas do not do: predict the next round. They give the average prices of decisions — never signals.

[Play Chicken Road at the operator](#)

[Play Chicken Road 2 at the operator](#)

Partner links · 18+ · Play responsibly — gambling carries risks of financial loss and addiction.