Vault Heist

Specification v1 | 3 November 2026 | Model vh-fixed-iid-2

Virtual-credit prototype. Not laboratory-certified. No deposits, withdrawals or real-money prizes. Engineering tests are not regulatory approval.

Round and original board

Instant Win / symbol collection. A base bet B purchases 12 selections from a 6 x 6 board. Before the first selection, the existing server independently samples and stores all 36 original positions using the exact weights below. Repeated symbols are permitted. This is not a fixed-count inventory. Selecting a position reads its stored symbol, not the next sequential outcome. Only selected symbols are returned during play.

Goals, extra purchase and completion

Each symbol pays once when its target count is reached. Awards from different symbols stack. After 12 selections, finish the hand or buy exactly one Extra Reveals pack for 0.25B, granting four additional selections. Maximum 16 actual selections. No Key, separate bonus, early cashout or bonus multiplier is introduced. The 3 / 5 / 8 random buttons choose distinct unopened positions and use existing reveals; when fewer remain, they use only that remainder.

Symbol ID	Collect	Award / B	Integer weight
cherry	3	0.2x	1940
apple	3	0.5x	2449
banana	3	0.8x	2260
grapes	3	1x	375
strawberry	5	0.4x	614
flower	5	1x	518
brick	5	1.6x	436
cheese	5	2x	355
orange	8	0.8x	237
watermelon	8	1.5x	185
clover	8	2.5x	145
diamond	8	3x	105
crown	10	1.2x	144
ring	10	2.3x	115
coin	10	3.8x	86
chest	10	4.5x	58

Total weight 10022. Each original position is an independent weighted draw. Surplus copies of a completed symbol never pay again.

EXACT BEFORE / AFTER

Unchanged financial distribution

Metric	Base 12 / never extras	16 / always extras
Theoretical RTP	81.3175514755%	90.4006173379%
Any payout frequency	95.6008578186%	99.7156619861%
Net-win frequency	27.2533906373%	56.7497196952%
Gross SD per B	0.415279114990	0.393634241508
Maximum gross return	4.5B	6.5B
Probability of maximum	2.752315054712e-21	1.089952461008e-25
Total stake	1B	1.25B

Optional extra purchase

Exact ratio-optimal optional RTP: **95.9499638585%**. Exact purchase frequency: 53.3618318418%. Buy when the conditional expected extra payout / B exceeds 0.239874909646155. Exhaustive integer enumeration covers all 17,383,860 base count states; final rational inequalities certify the optimal ratio. Maximizing expected net money instead uses 0.25. Sufficient balance and use of the purchased budget are assumptions. Approximately 96% is not universal RTP.

Proof and exact data

Integer dynamic programming computes every payout atom at 12 and 16 selections, including zero, net wins and the maximum. For an IID original board, unplayed positions marginalize to one. At every revealed history, any chosen unopened position has conditional probability weight / 10022. This gives the same complete ordered observation law as the old stream. Induction through the identical financial state machine preserves the joint law of prizes, spending, balances and stopping for all common valid purchase and adaptive-position policies, including balance limits and idle completion. Random batch choices use the same kernel.

This full distribution identity preserves optional-policy hit/net-win frequency, SD and maximum-event probability as well. Exact ratio-optimal optional hit 99.7099277363%, net-win 53.1636260511%, gross SD 0.384647632849B, net SD 0.406044250474B. Maximum 6.5B probability 5.226754594886e-26. The exact conditional DP covers 99,074 grouped base signatures, refining old simulated estimates without changing the model. Complete fixed-policy rational distributions, the exact optional ratio and proof assumptions are published in the JSON/HTML/CSV certificate.

Money, limits and timeouts

Accepted bet: $0.01 to $1,000,000,000, in $0.01 steps. All accounting uses integer units of $0.0001; no intermediate cent rounding. A $0.01 bet has a $0.0025 extra fee. Net = total awards - base bet - extra fee. Paid-only idle completion occurs after 10 minutes inactivity or 30 minutes total, plus scheduler delay. It selects unplayed original positions, completes only the paid budget and never buys extras. Separate bonus frequency: zero.

PERSISTENCE / DISCLOSURE / REPLAY

Remaining cards after a settled loss

Only after irreversible server settlement with zero gross payout, the same session may read the original unplayed symbols. Cards turn over smoothly, with a reduced-motion alternative, and are labeled Not played. They remain separate from actual selections, symbol counts and winning highlights. They do not pay, create matches or bonuses, change money or reopen the round. Positive gross return forbids disclosure even when net is negative. Neutral label: Remaining cards. No post-loss RNG, decorative replacement or near-miss arrangement is used.

Existing backend and backward compatibility

The existing Supabase Heist function, native financial writer, ledger, immutable receipts, revision checks, session cookie, event/admin projection and idle scheduler are reused. New explicit starts use vh-fixed-iid-2 / fixed-board-iid-v2. The complete original board is stored privately, immutable for its owning round. The normal API returns only legitimately selected symbols. Authenticated own-session loss reads are checked against settled status and zero payout. The original board follows approved deletion of its parent round; this release adds no deletion period.

All newly accepted wagers use the fixed board, including starts from old open tabs. Previously committed start receipts replay without creating another board. Existing open and historical vh-1-server/private-tape-v1 rounds retain their original interpretation, receipts, paid-stream transport and settlement rules. They are never reinterpreted as positional boards. Request replay cannot create another board or debit twice. New-model clients must await the authoritative symbol response; no hidden outcome is preloaded to simulate zero network latency.

Restricted private admin

The existing authenticated read-only back office displays actual original positions/tickets/hash for new rounds, with played and unplayed cards distinct. Historical committed rolls remain explicitly sequential and are not drawn as original positions. Exact raw stored records are retained; rendering does not modify outcomes or finance. No hidden board is a public-history field and no service/database credential is sent to browsers.

Verification and current limitations

Regression tests cover immutable boards, authorization, timing, repeated requests, revisions, batch rollback, duplicate accounting, idle settlement, resume, legacy models and restricted replay. Browser engineering checks cover desktop/mobile viewports, DOM/network/storage leakage, smooth flips and reduced motion. Physical-device acceptance, long-duration load, independent laboratory certification and real-money/operator-wallet integration remain unperformed acceptance work. Publication and owned-round IDs are reported separately in the release record.

Reproduction and public references

Public demo | Exact HTML math sheet | Exact JSON | CSV

Run node tools/heist-exact-fixed-math.mjs; node --test tools/test-heist-fixed-rpc.mjs; node tools/test-heist-fixed-browser.mjs. Exact board/kernel proof: docs/VAULT_HEIST_FIXED_BOARD_PROOF_2026-11-03.md. Disclosure is informational only; virtual credits have no cash value.