Mecha Bandit

Kansas K.A.R. 111-23-13 · eInstant Cert Pack v1

Issued: 2026-05-15T21:45:32.297807Z · Authority: Multi.Bingo iLottery RGS
Signing key: Ed25519 · ID `d651f1b9f793f40d`

Math validation

Pool size	1,000,000
RTP @ unit denom	86.0550%
Top prize (max denom)	$50,000
Bonus engine	generic_bonus

1. Game specification (Kansas K.A.R. 111-23-13)

Mecha Bandit is an eInstant lottery game governed by Kansas K.A.R. 111-23-13. Finite-pool model with 1,000,000 shares per pool. The bit-exact paytable below has been imported from the K.A.R. (j) odds table.
Prize formula: prize_cents = multiplier × denom_cents × tickets_purchased

2. Paytable (28 tiers)

Multiplier	Count in pool	Odds (1 in)
×10000.0	1	1,000,000.00
×3500.0	1	1,000,000.00
×3250.0	2	500,000.00
×3000.0	2	500,000.00
×2500.0	2	500,000.00
×330.0	15	66,666.67
×300.0	15	66,666.67
×250.0	25	40,000.00
×150.0	100	10,000.00
×125.0	60	16,666.67
×60.0	125	8,000.00
×50.0	99	10,101.01
×37.0	200	5,000.00
×35.0	300	3,333.33
×25.0	2,000	500.00
×16.0	1,000	1,000.00
×13.0	250	4,000.00
×12.0	4,500	222.22
×10.0	5,500	181.82
×8.0	11,000	90.91
×7.0	14,000	71.43
×6.0	1,000	1,000.00
×5.0	1,500	666.67
×4.0	23,000	43.48
×3.0	750	1,333.33
... (3 more)		

3. Pool architecture

Each pool consists of 1,000,000 shares. Pool generation: RGS service `multibingo-rng:9443` provides the server seed (RNG_STRICT=true, no local fallback). Paytable counts written into array, shuffled with mulberry32(SHA-256(server_seed)) Fisher-Yates. Pool audit_hash chained via Ed25519 signature. Tickets consumed sequentially; outcome = multiplier at position in shuffled array.

4. Audit chain (K.A.R. h)

Daily Merkle root signed with Ed25519 (key ID `d651f1b9f793f40d`). Leaves = ticket_hash + pool_hash. Persisted in WORM-locked PG row + audit blob to disk (S3 Object Lock in prod). Each day's row stores `prev_root_sha256` forming a hash chain.

5. Verifier endpoints

```
GET /api/ilottery/games/MECHA_BANDIT/paytable
GET /api/ilottery/games/MECHA_BANDIT/config?jur=GLI-SANDBOX
POST /api/ilottery/games/MECHA_BANDIT/open-pool
POST /api/ilottery/games/MECHA_BANDIT/play
POST /api/ilottery/vector/replay (game_code=MECHA_BANDIT)
GET /api/ilottery/verify/:ticket_id
GET /api/ilottery/merkle/proof/:ticket_id
GET /api/ilottery/audit/public-key
```

6. Test vectors v1

URL: `https://kobowlotto.com/mathforge/ilottery/gdd/mecha_bandit/vectors_v1.json`
600 vectors × 5 denoms = 3,000 prize data points (6 tiers × 100 each).

7. Operator Ed25519 public key

```
-----BEGIN PUBLIC KEY-----
MCowBQYDK2VwAyEAU2k0zXnm09QHDuKLSEQYUAFeACAEOTUceEuiRGLSiXs=
-----END PUBLIC KEY-----
```