

# Fast Track Cash

Kansas K.A.R. 111-23-15 · eInstant Cert Pack v1

Issued: 2026-05-15T21:45:33.025896Z · Authority: Multi.Bingo iLottery RGS  
Signing key: Ed25519 · ID d651f1b9f793f40d

## Math validation

<b>Pool size</b>	1,000,000
<b>RTP @ unit denom</b>	88.4401%
<b>Top prize (max denom)</b>	\$60,000
<b>Bonus engine</b>	generic_bonus

## 1. Game specification (Kansas K.A.R. 111-23-15)

**Fast Track Cash** is an instant lottery game governed by Kansas K.A.R. 111-23-15. Finite-pool model with 1,000,000 shares per pool. The bit-exact payable below has been imported from the K.A.R. (j) odds table.

**Prize formula:**  $\text{prize\_cents} = \text{multiplier} \times \text{denom\_cents} \times \text{tickets\_purchased}$

## 2. Paytable (88 tiers)

Multiplier	Count in pool	Odds (1 in)
×2000.0	1	1,000,000.00
×500.0	10	100,000.00
×490.0	1	1,000,000.00
×480.0	1	1,000,000.00
×470.0	1	1,000,000.00
×460.0	1	1,000,000.00
×450.0	2	500,000.00
×440.0	1	1,000,000.00
×430.0	1	1,000,000.00
×420.0	1	1,000,000.00
×410.0	1	1,000,000.00
×400.0	1	1,000,000.00
×390.0	3	333,333.33
×380.0	1	1,000,000.00
×360.0	3	333,333.33
×350.0	2	500,000.00
×340.0	2	500,000.00
×330.0	2	500,000.00
×320.0	2	500,000.00
×310.0	1	1,000,000.00
×300.0	1	1,000,000.00
×290.0	2	500,000.00
×280.0	2	500,000.00
×270.0	1	1,000,000.00
×260.0	2	500,000.00
... (63 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/FAST_TRACK_CASH/paytable
GET /api/ilottery/games/FAST_TRACK_CASH/config?jur=GLI-SANDBOX
POST /api/ilottery/games/FAST_TRACK_CASH/open-pool
POST /api/ilottery/games/FAST_TRACK_CASH/play
POST /api/ilottery/vector/replay (game_code=FAST_TRACK_CASH)
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/fast\\_track\\_cash/vectors\\_v1.json](https://kobowlotto.com/mathforge/ilottery/gdd/fast_track_cash/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-----
```