



OCA MODEL RULES & SCORING

Exactly One Kilogram Challenge

Model Rules & Scoring for unaided mass estimation

MODEL RULE PRINCIPLE

One target. No scale. Closest honest estimate wins.

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PUBLIC MODEL RULESET

1. Scope and Purpose

The Exactly One Kilogram Challenge is an objective estimation competition in which entrants select from organizer-supplied objects to assemble a collection they believe has a total mass of exactly 1,000 grams. Competitors may handle permitted objects but may not use weighing devices or prohibited measurement aids. Closest valid mass to 1,000 g wins.

1.1 The Five Core Questions

Question	Exactly One Kilogram Answer
What is evaluated?	The actual mass of a competitor-selected object collection.
Against what?	Absolute deviation from the 1,000 g target.
How expressed?	Measured grams and absolute error.
How combined?	One best valid attempt or published multi-round formula.
What happens next?	Smallest error wins; ties use published precision and secondary rules.

2. Definitions

Term	Meaning
Target Mass	Exactly 1,000.0 g.
Object Pool	Organizer-supplied set of discrete objects available for selection.
Selection Tray	Standard container used to present a competitor's chosen objects for official weighing.
Official Scale	Calibrated scale used only by officials after the competitor locks the selection.
Absolute Error	$ \text{Official Mass} - 1,000.0 \text{ g} $.
Locked Selection	Selection formally submitted and no longer changeable.

3. Eligibility and Divisions

- Open Division: any eligible competitor.
- Youth, Team, Blind-Touch, or Speed divisions may be offered as separately defined variants.
- Competitors may not receive object-weight information from spectators, other competitors, officials, phones, smart devices, packaging, or external reference materials.
- Competitors who helped prepare, weigh, label, or select the object pool are ineligible for that division unless all object weights are public by design, which is not the standard model.

4. Equipment and Object Pool

4.1 Official Scale

- Resolution of at least 1 g is required; 0.1 g resolution is preferred for championship use.
- Scale capacity must exceed the maximum plausible submitted mass including tray.
- Scale is checked with a known calibration mass before competition and after any suspected disturbance.
- Competitors may not view live scale readings during selection.

4.2 Object Pool

- At least 30 discrete objects are recommended for individual competition.
- Objects should vary materially in size, shape, density, and mass to reward estimation rather than obvious counting.
- Objects must be clean, safe to handle, nonhazardous, and unlikely to leak, break, or change mass materially during the event.

- Individual objects should ordinarily weigh between 10 g and 600 g; the organizer may publish a different range.
- No object may display a manufacturer weight, volume-to-mass conversion, or other direct mass clue unless that information is intentionally part of the format.
- All competitors in a round must use the same pool or demonstrably equivalent duplicate pools.

4.3 Selection Tray

The organizer should use identical trays or containers. The official scale must either be tared to the tray or the tray mass must be excluded consistently. The competitor result is the net mass of selected objects only.

5. Standard Competition Procedure

- Competitor receives 3:00 minutes at the object pool.
- Competitor may lift, compare, hold, and transfer objects by hand.
- Objects may be combined, exchanged, or removed during the selection period.
- Competitor may not use balancing apparatus, improvised scales, string suspensions, leverage rigs, water displacement, measuring cups, marked rulers, phones, calculators with stored object data, or any device that functions as a mass-measurement aid.
- At any time before the horn, competitor places the final selection in the tray and declares “locked.”
- At time expiration, the current tray contents are automatically locked.
- Official moves the locked tray to the scale and records the net mass out of competitor reach.

6. Measurement and Scoring

6.1 Primary Score

FORMULA

Absolute Error = |Measured Mass – 1,000.0 g|. Lowest Absolute Error wins.

6.2 Published Precision

Competition measurement precision is determined by the official scale. If using a 0.1 g scale, results may be published to 0.1 g. If using a 1 g scale, no finer placement distinction may be claimed.

6.3 Worked Examples

Competitor	Measured Mass	Absolute Error	Relative Result
A	1,014.2 g	14.2 g	Beats B
B	981.0 g	19.0 g	Behind A
C	1,000.8 g	0.8 g	Leads field

7. Competition Formats

Format	Rule
Single Attempt	One locked selection determines result.
Best of Three	Three separate attempts; smallest Absolute Error counts. Object pool is reset between attempts.
Average of Three	Mean Absolute Error across three attempts; rewards consistency.
Progressive Cut	All competitors make Attempt 1; top N errors advance to new object pool(s). Scores reset each round unless published otherwise.
Head-to-Head	Two competitors use equivalent pools; smaller error wins the match.

8. Penalties and Invalid Attempts

Violation	Consequence
Use or attempted use of weighing/measuring device	Disqualification from round.
Receiving prohibited weight information	Invalid attempt; possible event disqualification if deliberate.
Handling objects after lock	+10.0 g penalty for accidental contact that could not alter selection; deliberate alteration = invalid attempt.
Object dropped outside controlled area	Clock continues; official may replace same object if identifiable.
Damaging or modifying object to change mass	Disqualification.
Selection materially over scale capacity	Invalid attempt; organizers should design pool to avoid this.

9. Ties

- If Absolute Error differs at official measurement precision, lower error wins.
- If error is exactly equal, the lighter-side result (below 1,000 g) does not automatically beat the heavier-side result; they remain tied.
- First tiebreak: competitor with smaller error on the next-best valid attempt, if the event uses multiple attempts.
- Second tiebreak: one 60-second tiebreak attempt using a fresh object pool of comparable difficulty.
- If the authorized tiebreak also ties, placement is shared unless a single qualifier is required. If one qualifier is required, a second tiebreak may be held; thereafter random draw may be used only if published as the final mechanism.

10. Officials and Integrity

- Minimum roles: Pool Official, Measurement Official/Scorekeeper. One person may fill both roles in small events if competitors cannot see official measurements before all relevant attempts are locked.
- Official object weights should be recorded privately before competition for integrity checking, but competitors do not need access to individual object weights.
- The Measurement Official announces or publishes results only according to the event's reveal policy.
- If multiple pools are used, organizers should test their difficulty and mass distribution for reasonable comparability.

11. Results, Corrections, and Records

- Retain competitor, round, object-pool identifier, measured mass, Absolute Error, penalties/status, tie procedure, and certified placement.
- A scale transcription error may be corrected from the official scale log or contemporaneous record.
- If a scale is later shown to have been materially miscalibrated, affected results should be voided or recomputed only when a defensible correction factor is documented; otherwise a rerun is preferred where feasible.

12. Organizer-Selectable Options

- Single Attempt, Best of Three, Average of Three, Progressive Cut, or Head-to-Head.
- Selection time from 1:00 to 5:00 minutes.
- Scale precision of 1 g or 0.1 g.
- Individual vs Team division.
- Standard visual handling vs separately published Blind-Touch variant with identical safety and selection rules.
- Live-reveal or sealed-results presentation.

Appendix A. Document Control

Field	Value
Document	OCA Model Rules: Exactly One Kilogram Challenge
Publisher	Open Competition Alliance
Ruleset ID	OCA-MR-E1K-1
Edition	Version 1.0
Publication date	August 2026
Status	OCA Public Model Ruleset
Purpose	Voluntary model competition standard intended for adoption or adaptation by organizers.

Adoption Statement

An organizer adopting this model ruleset should identify the exact edition in the event announcement and disclose every organizer-selectable option before the applicable entry deadline. Material changes should be published as event-specific modifications rather than applied informally during competition.

Appendix B. Pre-Event Rules Check

- ☐ Eligibility and divisions are published.
- ☐ Organizer-selectable options are declared.
- ☐ Officials are assigned and briefed.
- ☐ Equipment, prompts, materials, or course layout have been checked for equivalence.
- ☐ Scoring or measurement procedure has been tested.
- ☐ Tie procedures are understood by the scorekeeper.
- ☐ Safety, safeguarding, accessibility, and incident-response arrangements are in place.
- ☐ Results can be reconstructed from retained official records.