



Audit Toolbar: Methodology Memo

Purpose: The Audit Toolbar supports a substantive testing procedure within Excel: **Monetary Unit Sampling (MUS)** for selecting items from a monetary population. It runs locally on the auditor's machine; client data is not transmitted externally.

Monetary Unit Sampling

What it does: Selects a sample from a monetary population where the probability of selection is proportional to each item's value — the standard MUS approach used in substantive testing.

How it works:

1. The auditor selects the population range and nominates the **transaction amount column**.
2. The auditor sets the **sampling interval** (directly) or a **target sample size** (from which the interval is calculated).
3. Optional filters may be applied: **material items** (100% inclusion above a threshold), **value/sign exclusions**, and **absolute values**.
4. The tool prepares the population, applies exclusions, removes material items from the interval base, and walks the population using a **cumulative monetary total** to select items at each interval point.
5. Output is a sample worksheet with items tagged **Sample (MUS)** or **Material**, plus a **procedure summary** (performer, parameters, population/sample value, and **coverage %**).

Reliance: The tool applies a recognised sampling methodology consistently and documents all parameters. The auditor retains judgment over population selection, interval/sample size, materiality, exclusions, and conclusion.



Substantive testing workflow

Step	Procedure	Audit Toolbar function
1	Define population and assess risk	Auditor judgment
2	Select sample (MUS)	Monetary Unit Sampling

Key limitations:

- Outcomes depend on the **completeness and quality** of the population and documents provided.
 - The auditor must correctly select the **population range, amount column, reference column, and parameters**.
 - **Exceptions require follow-up** — not-found and unverified items are indicators for further investigation, not automatic misstatements.
 - The tools are **procedure aids**; they do not replace professional judgment, firm sampling guidance, or ISA documentation requirements.
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Audit Toolbar: ISA Working Paper Cross-Reference Version

Monetary Unit Sampling

ISA reference	Requirement	How the Audit Toolbar supports compliance
ISA 530.4–5	The auditor must design and perform audit sampling to gather sufficient appropriate evidence when substantive procedures are applied to a population.	MUS is applied to the auditor-defined population using a documented interval or target sample size, producing a sample for substantive testing.
ISA 530.6(a)	Audit sampling involves applying audit procedures to less than 100% of a population.	Interval-based selection draws a subset of items; material items above a threshold may be 100% included per stratification.
ISA 530.A1	MUS is a method of variable sampling where selection probability is proportional to monetary value.	The tool walks the population on a cumulative monetary basis, selecting items at each interval point.
ISA 530.10–12	Sample design: population, materiality/stratification, expected misstatement, sample size.	The auditor defines the population, interval/sample size, materiality threshold, and exclusions. The tool applies these inputs and documents them in the output header.
ISA 530.11	Stratification may be used to reduce variability (e.g. high-value items tested in full).	Material items at or above a defined threshold are automatically included and separately tagged.
ISA 530.12	Sample size may be determined from	In fixed sample-size mode, the interval is derived from population value (excluding material items) divided by target sample size.

	population value and interval.	
ISA 530.13–14	Selection methods must result in every item having a chance of selection.	MUS cumulative selection ensures probability of selection is proportional to monetary value. A random or custom starting point within the first interval supports unpredictable selection.
ISA 530.15	Perform audit procedures on each selected item.	The sample listing is the basis for subsequent testing (e.g. vouching via Supporting Document Validation).
ISA 530.A25–A26	Document sampling rationale, population, method, sample size/interval, exclusions, and results.	The output worksheet records performer, date/time, parameters, exclusions, population/sample size, values, and coverage %.

Exception handling — ISA cross-reference

Outcome	Auditor action	Relevant ISA
MUS coverage below expectation	Reassess interval/sample size or perform additional procedures	ISA 530.12, ISA 330
Population incomplete or documents poor quality	Document limitation; consider impact on evidence	ISA 500.7, ISA 230

Note: ISA paragraph references are indicative. Firms should align wording with their own methodology, translation of the standards, and local auditing requirements.



Audit Toolbar: Monetary Unit Sampling (MUS) Process

Overview

The Audit Toolbar provides a Monetary Unit Sampling procedure directly within Excel. It allows auditors to select a sample from a monetary population — such as revenue transactions, expense lines, or a general ledger listing — using the standard MUS approach, where the probability of an item being selected is proportional to its monetary value.

The procedure is designed to support substantive testing where auditors need to obtain audit coverage over a population of monetary items without testing every line. All processing takes place locally within the auditor's Excel workbook; no data is transmitted externally.

The procedure has five stages: **set-up, parameter configuration, population preparation, sample selection, and results and documentation.**

Stage 1 — Set-up (within Excel)

The auditor begins with the population they wish to sample — typically a listing exported from the client's accounting system or a working paper schedule already open in Excel.

1. The auditor highlights the data range containing the population to be sampled.
2. The Monetary Unit Sampling form opens and automatically detects the selected range, including only **visible rows** (so filters applied in Excel are respected).
3. The tool identifies the column headers and presents them for selection.
4. The auditor confirms whether the first row of the selected range contains column headings.

The form displays the address of the selected range so the auditor can confirm the correct population has been captured before proceeding.

Stage 2 — Parameter configuration

The auditor defines how the sample should be drawn. The key inputs are:

Transaction column. The auditor selects the column containing the monetary value to be used for sampling (for example, transaction amount, invoice total, or net balance). This is the value that drives both the population total and the selection intervals.

Sampling approach. The auditor chooses one of two methods to determine the sampling interval:

Method	Description
Monetary unit interval	The auditor specifies the interval directly (for example, based on materiality or a planned sample size derived elsewhere). The tool uses this interval to walk through the population.
Fixed sample size	The auditor specifies the target number of sample items. The tool calculates the required monetary interval automatically from the population value.

Starting point. The auditor chooses where the first selection point falls within the first interval:

- A **random** starting point within the interval (supporting unpredictable selection)
- A **custom** starting value specified by the auditor
- **Start from zero** or **start from excess** (controlling how the cumulative counter resets after each selection)

Advanced options (optional). Where the engagement requires more tailored sampling, the auditor can access additional controls:

Option	Purpose
Include material items	Items at or above a defined monetary threshold are automatically included in the sample in full (100% selection), consistent with standard stratification practice for high-value items
Exclude by value	Remove items below and/or above defined monetary thresholds from the sampling population
Exclude positive / negative values	Limit the population to debits only, credits only, or a single direction of flow
Use absolute values	Treat all amounts as positive for interval calculation, regardless of sign
Include first item	Ensure the first item that crosses the starting threshold is captured



Highlight selection	Colour-code selected items in the original source data for easy cross-reference
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Before processing begins, the form validates that all required fields are completed and that numeric inputs are valid. If the population is empty after exclusions, or no items can be selected, the auditor is notified and no sample sheet is created.

Stage 3 — Population preparation

When the auditor confirms the parameters, the tool creates a dedicated working sheet for the sampling run.

1. The selected population is copied to a new worksheet, preserving values and formats.
2. The data is cleaned — empty rows and columns are removed, and merged cells are unmerged — so that the population is in a consistent, workable structure.
3. A temporary reference is maintained so that selections can be traced back to the original source rows.
4. The **population value** is calculated as the sum of the transaction column across all items in the prepared population.

Applying exclusions. If the auditor has chosen to exclude certain items (by sign, or by value thresholds), those items are removed from the sampling population before selection begins. The tool checks after each exclusion pass that sufficient items remain; if the population is eliminated entirely, processing stops with a clear message.

Material items. Where a materiality threshold has been set, every item at or above that value is identified and set aside. These items are always included in the final sample. Their value is removed from the population total used to calculate the sampling interval, so that the interval-based selections apply only to the remaining (non-material) population — consistent with standard audit stratification.

reaches or exceeds the sampling interval, the item at that point is selected. The counter is then reset (or the excess carried forward, depending on the auditor's starting-point settings) and the process continues through the remainder of the population.

Large items. Where a single item's value exceeds the sampling interval, it may be selected more than once — reflecting the fact that a large monetary item represents multiple "monetary units" within the population. When the relevant option is enabled, a weight column records how many times each such item was hit.

Material items. Items identified as material are added to the sample alongside the interval-based selections. They are clearly tagged separately from the MUS-selected items.

The result is a sample in which higher-value items have a proportionally greater chance of selection — the defining characteristic of Monetary Unit Sampling.

Stage 4 — Sample selection

The tool applies the Monetary Unit Sampling methodology to the prepared population.

Interval calculation. Depending on the approach chosen:

- If a **monetary interval** was specified, that value is used directly.
- If a **fixed sample size** was specified, the interval is derived by dividing the population value (after removing material items) by the target sample size.

Cumulative selection. The tool walks through the population in sequence, maintaining a running cumulative total of the transaction values. Each time the cumulative total reaches or exceeds the sampling interval, the item at that point is selected. The counter is then reset (or the excess carried forward, depending on the auditor's starting-point settings) and the process continues through the remainder of the population.

Large items. Where a single item's value exceeds the sampling interval, it may be selected more than once — reflecting the fact that a large monetary item represents multiple "monetary units" within the population. When the relevant option is enabled, a weight column records how many times each such item was hit.

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Stage 5 — Results and documentation

The tool produces a structured output worksheet containing both the sample and a documented summary of the procedure.

Sample listing. The selected items are presented in a dedicated worksheet, with each row tagged as either:



Tag	Meaning
Sample (MUS)	Selected through the monetary unit interval procedure
Material	Automatically included because it exceeded the materiality threshold

Where applicable, a weight column indicates how many interval hits a single item received.

Procedure summary. A header block is inserted above the sample, recording:

Field	Description
Performed by	User initials, date, and time of the sampling run
Material items	The materiality threshold applied (if any)
Excluded values	A description of any exclusion filters that were active
Methodology	The full set of parameters used (interval, starting point, absolute values, sample size mode, etc.)
Sample size	Number of items in the final sample
Population size	Number of items in the original population
Sample value	Total monetary value of the selected sample
Population value	Total monetary value of the population
Coverage obtained	Sample value as a percentage of population value

This header provides a self-contained audit trail of what was done, by whom, and with what parameters — supporting documentation of the sampling procedure in the working papers.

Optional outputs. The auditor can also:

- **Highlight** selected items in the original source data (green for material items, yellow for MUS selections)
- **Email** the sample listing directly from Excel
- **Insert** the sample into a nominated audit working paper template from the firm's template library

Why auditors can place reliance on this procedure

The Audit Toolbar MUS procedure supports a defined, repeatable, and documented sampling approach. The key reasons it is suitable for reliance in audit working papers are:

1. **Established methodology.** The tool implements Monetary Unit Sampling — a recognised statistical sampling technique widely used in audit substantive testing. Selection probability is proportional to monetary value, which is the appropriate approach for testing monetary populations.
2. **Documented parameters.** Every run records the full set of inputs (interval, starting point, exclusions, materiality threshold) in the output worksheet. Another auditor can see exactly how the sample was derived without reverse-engineering the workbook.
3. **Stratification for material items.** High-value items that warrant 100% testing are handled separately and clearly identified, consistent with professional standards for stratification.
4. **Transparent population definition.** The tool works on the range the auditor selects, respects Excel filters (only visible rows are included), and documents exclusions. The population is not altered silently — what was excluded and why is recorded in the procedure summary.
5. **Coverage metric.** The sample value and coverage percentage are calculated and displayed, giving the auditor an immediate sense of the monetary coverage achieved by the sample.
6. **Traceability.** Selections can be highlighted back in the original source data, and the sample can be inserted directly into firm working paper templates — supporting a clear link between the population, the sample, and the audit file.
7. **Human judgment retained.** The auditor retains responsibility for selecting the population, choosing the transaction column, setting the interval or sample size, defining materiality and exclusions, and interpreting the results. The Audit Toolbar performs the mechanical selection and documentation; it does not replace professional judgment on sample design or conclusion.



Limitations the auditor should document

To give a balanced picture, clients should also note:

- **Population completeness.** The sample is only as representative as the population provided. The auditor is responsible for ensuring the selected range is complete, accurate, and appropriate for the audit objective.
- **Column selection.** The sampling outcome depends on the auditor correctly identifying the monetary column. An incorrect choice will produce a sample that does not reflect the intended population.
- **Random start point.** When a random starting point is used, re-running the procedure with the same parameters will produce a different sample (though with equivalent statistical properties). The starting value is documented in the output for reproducibility of that specific run.
- **Filtered data.** If Excel filters are active, only visible rows are included in the population. The auditor must confirm that filters have been applied intentionally and documented.
- **Exclusions reduce the population.** Value-based and sign-based exclusions permanently remove items before sampling. The auditor should confirm these exclusions are appropriate and that the remaining population still represents the account or assertion being tested.
- **Not a substitute for sample size determination.** The tool applies the MUS methodology once the auditor has decided on the interval or sample size. Determining an appropriate interval (based on materiality, assessed risk, and expected misstatement) remains a matter of auditor judgment, typically informed by the firm's sampling guidance or statistical tables.