

# CPA REVIEW SCHOOL OF THE PHILIPPINES

Manila

## AUDITING THEORY

### AUDIT SAMPLING

*Related PSA: PSA 530*

When designing audit procedures, the auditor should determine appropriate means of selecting items for testing. The means available to the auditor are:

- (a) Selecting all items (100% examination);
- (b) Selecting specific items, and
- (c) Audit sampling.

The decision as to which approach to use will depend on the circumstances, and the application of any one or combination of the above means may be appropriate in particular circumstances. While the decision as to which means, or combination of means, to use is made on the basis of audit risk and audit efficiency, the auditor needs to be satisfied that methods used are effective in providing sufficient appropriate audit evidence to meet the objectives of the test.

#### **Selecting All Items**

The auditor may decide that it will be most appropriate to examine the entire population of items that make up an account balance or class of transactions (or a stratum within that population). 100% examination is unlikely in the case of tests of control; however, it is more common for substantive procedures. 100% examination may be appropriate on the following:

- a) When the population constitutes a small number of large value items;
- b) When both inherent and control risks are high and other means do not provide sufficient appropriate audit evidence; or
- c) When the repetitive nature of a calculation or other process performed by a computer information system makes a 100% examination cost effective.

#### **Selecting Specific Items**

The auditor may decide to select specific items from a population based on such factors as knowledge of the client's business, preliminary assessments of inherent and control risks, and the characteristics of the population being tested. The judgmental selection of specific items is subject to non-sampling risk. Specific items selected may include:

- *High value or key items.* The auditor may decide to select specific items within a population because they are of high value, or exhibit some other characteristic, for example items that are suspicious, unusual, particularly risk-prone or that have a history of error.
- *All items over a certain amount.* The auditor may decide to examine items whose values exceed a certain amount so as to verify a large proportion of the total amount of an account balance or class of transactions.
- *Items to obtain information.* The auditor may examine items to obtain information about matters such as the client's business, the nature of transactions, accounting and internal control systems.
- *Items to test procedures.* The auditor may use judgment to select and examine specific items to determine whether or not a particular procedure is being performed.

While selective examination of specific items from an account balance or class of transactions will often be an efficient means of gathering audit evidence, it does not constitute audit sampling. The results of procedures applied to items selected in this way *cannot* be projected to the entire population. The auditor considers the need to obtain appropriate evidence regarding the remainder of the population when that remainder is material.

#### **Audit Sampling**

The auditor may decide to apply audit sampling to an account balance or class of transactions. *Audit sampling (sampling)* involves the application of audit procedures to less than 100% of items within an account balance or class of transactions such that all sampling units have a chance of selection.

*Terms normally associated with sampling:*

Population - means the entire set of data from which a sample is selected and about which the auditor wishes to draw conclusions. For example, all of the items in an account balance or a class of transactions constitute a population. A population may be divided into strata, or sub-populations, with each stratum being examined separately. The term population is used to include the term stratum.

Sampling unit - means the individual items constituting a population, for example checks listed on deposit slips, credit entries on bank statements, sales invoices or debtors' balances, or a monetary unit.

Sampling frame – means the documentary evidence which physically represents the sampling units in a given population.

Sample – the portion of the population that will be subjected to audit testing. The selected sample should be representative of the population.

Error - For purposes of PSA 530, means either control deviations, when performing tests of control, or misstatements, when performing substantive procedures.

Tolerable error - means the maximum error in a population that the auditor is willing to accept.

Stratification - is the process of dividing a population into subpopulations, each of which is a group of sampling units which have similar characteristics (often monetary value).

*Sampling is not involved in:*

- 1) 100% examination;
- 2) Selective testing; and
- 3) Audit procedures which either (1) have very limited purposes and provide only a small portion of the evidence needed to meet an audit objective or (2) intentionally exclude a portion of the population such as:
  - a) Performing a walkthrough test;
  - b) Testing controls that leave no audit trail (such as observing client personnel as they perform internal control activities);
  - c) Performing analytical procedures;

*Advantages of sampling over complete (100%) verification*

- 1) Timeliness – Sampling requires lesser time; audit would be completed on a more timely basis.
- 2) Efficiency – Sampling can considerably reduce audit costs.
- 3) Effectiveness – Sampling can provide valid conclusions that the sample reflects the same characteristics as the population.

Risk Considerations in Obtaining Evidence

Sampling risk and non-sampling risk can affect the components of audit risk.

*Sampling risk* arises from the possibility that the auditor's conclusion, based on a sample may be different from the conclusion reached if the entire population were subjected to the same audit procedure.

*Nonsampling risk* arises from factors that cause the auditor to reach an erroneous conclusion for any reason not related to the size of the sample, such as:

- 1) Failure to select appropriate audit procedures
- 2) Failure to recognize errors in documents examined
- 3) Misinterpreting the results of audit tests

For both tests of control and substantive tests, sampling risk can be reduced by increasing sample size, while non-sampling risk can be reduced by proper engagement planning, supervision, and review.

Types of Sampling Risks

*Tests of Controls*

- 1) Risk of under-reliance – Sample does not support the auditor’s planned degree of reliance on the control when true compliance rate supports such reliance. Also known as the risk of assessing control risk too high - the risk the auditor will conclude that control risk is higher than it actually is.
- 2) Risk of over-reliance – Sample supports the auditor’s planned degree of reliance on the control when true compliance rate does not justify such reliance. Also known as the risk of assessing control risk too low - the risk the auditor will conclude that control risk is lower than it actually is.

*Substantive Testing*

- 1) Risk of incorrect rejection – the risk the auditor will conclude that a material error *exists* when in fact *it does not*.
- 2) Risk of incorrect acceptance – the risk the auditor will conclude that a material error *does not exist* when in fact *it does*.

*Effect of sampling risk on audit*

- 1) Efficiency – The risk of under-reliance and the risk of incorrect rejection (both referred to as Alpha Risk) affect audit efficiency as it would usually lead to additional work to establish that initial conclusions were incorrect.
- 2) Effectiveness – The risk of over-reliance and the risk of incorrect acceptance (both referred to as Beta Risk) affect audit effectiveness and is more likely to lead to an inappropriate audit opinion.

General approaches to audit sampling

*Statistical sampling* – approach to sampling that has the characteristics of:

- random selection of a sample; and
- use of probability theory to evaluate sample results, including measurement of sampling risk.

Advantages	Disadvantages
Helps auditor	May involve additional costs in
1) Design an efficient sample;	1) Training auditors;
2) Measure the sufficiency of evidential matter obtained;	2) Designing samples;
3) Objectively evaluate sample results.	3) Selecting items to be tested.

When applying statistical sampling, the sample size can be determined using either probability theory or professional judgment.

*Nonstatistical sampling* – A sampling approach that does not have characteristics of statistical sampling.

Reasons for use – Often less costly and time-consuming to apply than statistical sampling, but can be as effective in achieving audit objectives.

Similarities – Both statistical and nonstatistical sampling

- 1) Can provide sufficient, competent evidential matter;
- 2) Involve judgment in planning, executing the sampling plan, and evaluating the sample results;
- 3) Require that sample item be selected in such a way that sample can be expected to be representative of the population.

Choice of approach – The decision whether to use a statistical or non-statistical sampling approach is a matter for the auditor's judgment regarding the most efficient manner to obtain sufficient appropriate audit evidence in the particular circumstances.

Sample size is not a valid criterion to distinguish between statistical and non-statistical approaches. Sample size is a function of various factors. When circumstances are similar, the effect on sample size of certain factors will be similar regardless of whether a statistical or non-statistical approach is chosen.

### Sample Selection Methods

#### *Appropriate for statistical and non statistical sampling*

- (a) Use of a computerized *random number* generator or random number tables.
- (b) *Systematic selection*, in which the number of sampling units in the population is divided by the sample size to give a sampling interval, for example 50, and having determined a starting point within the first 50, each 50th sampling unit thereafter is selected. Although the starting point may be determined haphazardly, the sample is more likely to be truly random if it is determined by use of a computerized random number generator or random number tables. When using systematic selection, the auditor would need to determine that sampling units within the population are not structured in such a way that the sampling interval corresponds with a particular pattern in the population.

#### *Not appropriate for statistical sampling*

- (c) *Haphazard selection*, in which the auditor selects the sample without following a structured technique. Although no structured technique is used, the auditor would nonetheless avoid any conscious bias or predictability (for example avoiding difficult to locate items, or always choosing or avoiding the first or last entries on a page) and thus attempt to ensure that all items in the population have a chance of selection. Haphazard selection is not appropriate when using statistical sampling.
- (d) *Block selection* involves selecting a block(s) of contiguous items from within the population. Block selection cannot ordinarily be used in audit sampling because most populations are structured such that items in a sequence can be expected to have similar characteristics to each other, but different characteristics from items elsewhere in the population. Although in some circumstances it may be an appropriate audit procedure to examine a block of items, it would rarely be an appropriate sample selection technique when the auditor intends to draw valid inferences about the entire population based on the sample.

### Characteristic of Interest

The characteristic of interest depends on the type of test that will be performed on the sample selected.

*Test of controls* – the characteristic of interest is the deviation or occurrence rate, which is the number of times a deviation from the prescribed internal control occurs in the sample.

*Substantive testing* – the characteristic of interest is the monetary amount of misstatement in an account balance.

### Types of Sampling Plans

*Attributes sampling* – a statistical sampling plan used in test of controls. This is appropriate:

- 1) When the auditor wishes to estimate the true but unknown population deviation rate;
- 2) If the expected deviation rate is high based on prior experience.

*Variables sampling* – a sampling plan used in substantive testing to estimate the total peso amount (or possibly units) of a population or the peso amount of an error in a population.

**Attribute Sampling Plan**

- 1) Determine the objective(s) of the tests
- 2) Define the attribute (characteristic of a control) and deviation (absence of an attribute) conditions
- 3) Define the population
- 4) Determine the method of sample selection
- 5) Determine sample size
- 6) Perform the sampling plan
- 7) Evaluate sample results
- 8) Document the sampling plan, the procedures performed, and the conclusions reached

**Factors Influencing Sample Size for Tests of Control**

The following are factors that the auditor considers when determining the sample size for a test of control. These factors need to be considered together.

<u>FACTOR</u>	<u>EFFECT ON SAMPLE SIZE</u>
An increase in the auditor's intended reliance on accounting and internal control systems	Increase
An increase in the rate of deviation from the prescribed control procedure that the auditor is willing to accept ( <i>Tolerable deviation rate</i> )	Decrease
An increase in the rate of deviation from the prescribed control procedure that the auditor expects to find in the population ( <i>Expected deviation rate</i> )	Increase
An increase in the auditor's required confidence level (or conversely, a decrease in the risk that the auditor will conclude that the control risk is lower than the actual control risk in the population – <i>risk of assessing control risk too low</i> )	Increase
An increase in the number of sampling units in the population	Negligible effect

**Other Sampling Techniques for Test of Controls**

*Sequential (Stop-or-Go) sampling*

Audit sampling can be accomplished with either a fixed or sequential sampling plan.

- 1) *Fixed sampling plan* – the auditor tests a single plan, such as attribute estimation.
- 2) *Sequential sampling plan* – the sampling is performed in several steps. Following each step, the auditor decides whether to stop testing or to go on to the next step.

Sequential sampling plan can be used as an alternative to attribute estimation when an auditor expects zero or very few deviations within an audit population.

*Discovery sampling*

Discovery sampling plan may be appropriate when:

- 1) the audit objective is to observe at least one deviation at a specified critical rate;
- 2) the expected population deviation rate is near zero; and
- 3) the auditor desires a specified probability of observing at least one deviation of the actual population rate exceeds the *critical rate* (this is comparable to the tolerable rate in attribute estimation and sequential sampling).

**Variables Sampling Plan**

- 1) Determine the objective(s) of the tests
- 2) Define the population
- 3) Choose an audit sampling approach/technique
- 4) Determine sample size
- 5) Determine the method of sample selection
- 6) Perform the sampling plan
- 7) Evaluate sample results
- 8) Document the sampling plan, the procedures performed, and the conclusions reached

Sampling techniques

*Probability-proportional-to-size (PPS) sampling*

PPS sampling is a sampling technique that uses attribute sampling theory to evaluate the results when a large number of transactions are captured within a single account. In PPS sampling, the auditor randomly selects individual pesos from a population and then audits the balances, transactions, or documents – called *logical units* – that include the pesos selected. Each peso in the population has an equal chance of being selected, but the likelihood of selecting any one logical unit for testing is directly proportional to its size.

PPS sampling is most appropriate when:

- 1) no errors are expected (although it is also appropriate when one or few errors are expected); and
- 2) testing for overstatement (normally for assets and income).

*Classical variables sampling*

Classical variables sampling relies on normal distribution theory to evaluate audit samples. These may be appropriate when the audit objective is to estimate the true but unknown monetary balance. The three commonly used classical variables sampling techniques are:

- 1) *Ratio estimation* – uses the ratio of audited amounts to recorded amounts in the sample to estimate the total peso amount of the population (also called *point estimate*) and an allowance for sampling risk. Where: SAV = sample audited value; SBV = sample recorded book value; PBV = population book value; and EPAV = estimated population audited value, the formula is:

$$SAV/SBV \times PBV = EPAV +(-) \text{ sampling risk}$$

*The use of ratio estimation is appropriate when the misstatement in an account is directly proportional to its book value.*

- 2) *Difference estimation* – uses the average difference between audited amounts and individual recorded amounts in the sample to estimate the total audited amount of the population and an allowance for sampling risk. Where: SAV = sample audited value; SBV = sample recorded book value; SS = sample size; and P = number of items in population, the formula is:

$$(SAV - SBV)/SS \times P = \text{Projected error}$$

*The use of difference estimation is more appropriate when the misstatement in an account is not affected by the book value of the item being examined.*

- 3) *Mean-per-unit estimation* – projects sample average (mean) to the total population by multiplying the sample average by the number of items in the population. Using the same legend above, the formula is:

$$SAV/SS \times P = EPAV +(-) \text{ sampling risk}$$

*The use of mean-per-unit estimation is appropriate when the individual population items do not have recorded values.*

Before applying ratio or difference estimation, the following three conditions must exist:

- 1) Each population item must have a recorded value (e.g., perpetual rather than periodic, inventory)
- 2) Total population book value must be known (e.g., a recorded general ledger book value) and must correspond to the sum of all individual population items.
- 3) Expected differences between audited and recorded book values must not be too rare.

*Comparative advantages and disadvantages of PPS and classical variables sampling*

Probability-proportional-to size (PPS) sampling	Classical variables sampling
<u>Advantages</u>	<u>Advantages</u>
<ul style="list-style-type: none"><li>• Automatically results in stratified sample because items are selected in proportion to their peso amounts.</li><li>• Usually results in a smaller sample size than classical variables sampling when no errors are expected.</li></ul>	<ul style="list-style-type: none"><li>• May result in smaller sample size if there are many individual differences between recorded and audited amounts in the population.</li><li>• Selection of zero or negative balances within a sample does not require special sample design considerations.</li></ul>

Probability-proportional-to size (PPS) sampling

Advantages

- Can be designed more easily and sample selection can begin before the complete population is available.

Disadvantages

- Evaluation of the sample will require special sample design considerations if sample includes understatement errors
- Evaluation may overstate the allowance for sampling risk when errors are found.
- Generally includes an assumption that the audited amount of a sampling unit should not be less than zero or greater than the recorded amount.

Classical variables sampling

Advantages

- If necessary, it is easier to expand samples than PPS.

Disadvantages

- More complex than PPS
- To determine sample size, the auditor must have an estimate of the population standard deviation.
- Normal distribution theory, the basis underlying classical variables sampling, may not be appropriate when the sample size is not large and there are either very large items or very large differences between recorded and audited amounts in the population

Factors Influencing Sample Size for Substantive Procedures

The following are factors that the auditor considers when determining the sample size for a substantive procedure. These factors need to be considered together.

<u>FACTOR</u>	<u>EFFECT ON SAMPLE SIZE</u>
An increase in the auditor's assessment of inherent risk	Increase
An increase in the auditor's assessment of control risk ( <i>or a decrease in reliance on internal controls</i> )	Increase
An increase in the use of other substantive procedures directed at the same financial statement assertion	Decrease
An increase in the auditor's required confidence level (or conversely, a decrease in the risk that the auditor will conclude that a material error does not exist, when in fact it does exist – <i>risk of incorrect acceptance</i> )	Increase
An increase in the total error that the auditor is willing to accept ( <i>tolerable error</i> )	Decrease
An increase in the amount of error the auditor expects to find in the population ( <i>expected error</i> )	Increase
Stratification of the population when appropriate	Decrease
The number of sampling units in the population	Negligible Effect

MULTIPLE CHOICE QUESTIONS

Basic Sampling Concepts/PSA 530 – Audit Sampling and Other Selective Testing Procedures

1. The entire set of data about which the auditor wishes to draw conclusions is called
  - a. **Population.**
  - b. Sample.
  - c. Sampling frame.
  - d. Sampling unit.
2. Which of the following constitutes audit sampling?
  - a. Selecting and examining specific items to determine whether or not a particular procedure is being performed.
  - b. Examining items to obtain information about matters such as the client's business, the nature of transactions, accounting and internal control systems.
  - c. Examining items whose values exceed a certain amount so as to verify a large proportion of the total amount of an account balance or class of transactions.
  - d. **Applying audit procedures to less than 100% of items within an account balance or class of transactions such that all sampling units have a chance of selection.**

3. Audit sampling is not involved in the following, except
  - a. Performing a walkthrough test.
  - b. Performing analytical procedures
  - c. **Selecting the sample without following a structured technique.**
  - d. Testing controls that leave no audit trail.
4. The following situations will likely lead the auditor to use 100% testing, except
  - a. When the population constitutes a small number of large value items.
  - b. When both inherent and control risks are high and other means do not provide sufficient appropriate audit evidence
  - c. When the repetitive nature of a calculation or other process performed by a computer information system makes a 100% examination cost effective.
  - d. **When testing controls that leave audit trail.**
5. An error that arises from an isolated event that has not recurred other than on specifically identifiable occasions and is therefore not representative of errors in the population is called
  - a. Sampling error.
  - b. Non-sampling error.
  - c. **Anomalous error.**
  - d. Projected error.
6. Which of the following is true about sampling and non-sampling risks?
  - a. **Sampling risk can be reduced by increasing sample size.**
  - b. Sampling risk cannot be eliminated.
  - c. Non-sampling risk can be eliminated by proper engagement planning, supervision, and review.
  - d. Non-sampling risk arises from the possibility that the auditor's conclusion, based on a sample may be different from the conclusion reached if the entire population were subjected to the same audit procedure.
7. Which statement is incorrect about sampling risk?
  - a. Sampling risk arises from the possibility that the auditor's conclusion, based on a sample may be different from the conclusion reached if the entire population were subjected to the same audit procedure.
  - b. **Risk of assessing control risk too low and risk of incorrect acceptance affects audit effectiveness as it would usually lead to additional work to establish that initial conclusions were incorrect.**
  - c. The mathematical complements of sampling risks are termed confidence levels.
  - d. Risk of assessing control risk too high is the risk that the auditor will conclude, in the case of a test of control, that control risk is higher than it actually is.
8. An advantage of statistical sampling over nonstatistical sampling is that statistical sampling helps an auditor to
  - a. Minimize the failure to detect errors and frauds.
  - b. Eliminate nonsampling risk.
  - c. Reduce the level of audit risk and materiality to a relatively low amount.
  - d. **Measure the sufficiency of the evidential matter obtained.**
9. Each time an auditor draws a conclusion based on evidence from a sample, an additional risk, sampling risk, is introduced. An example of sampling risk is
  - a. Projecting the results of sampling beyond the population tested.
  - b. Properly applying an improper audit procedure to sample data.
  - c. Improperly applying a proper audit procedure to sample data.
  - d. **Drawing an erroneous conclusion from sample data.**
10. Which of the following best illustrates the concept of sampling risk?
  - a. **A randomly chosen sample may not be representative of the population as a whole on the characteristic of interest.**
  - b. An auditor may select audit procedures that are not appropriate to achieve the specific objective.
  - c. An auditor may fail to recognize errors in the documents examined for the chosen sample.
  - d. The documents related to the chosen sample may not be available for inspection.
11. Which of the following statements is not correct?
  - a. It is acceptable for auditor to use statistical sampling methods.
  - b. It is acceptable for auditor to use non-statistical sampling methods.



- c. The primary benefit of statistical sampling methods is the quantification of sampling risk.
  - d. An advantage of using statistical sampling is that the cost/benefit ratio is always positive.
12. A sample in which every possible combination of items in the population has an equal chance of constituting the sample is a
- a. Representative sample
  - b. Statistical sample
  - c. Random sample
  - d. Judgment sample
13. The process which requires the calculation of an interval and then selects the items based on the size of the interval is
- a. Statistical sampling
  - b. Random selection
  - c. Systematic selection
  - d. Computerized selection
14. When the auditor goes through a population and selects items for the sample without regard to their size, source, or other distinguishing characteristics, it is called
- a. Block selection
  - b. Random selection
  - c. Systematic selection
  - d. Haphazard selection
15. Which of the following statistical selection techniques is least desirable for use by an auditor?
- a. Systematic selection
  - b. Stratified selection
  - c. Block selection
  - d. Sequential selection

Sampling for Attributes

1. Tests of controls provide reasonable assurance that controls are applied as prescribed. A sampling method that is useful when testing controls is:
- a. Nonstatistical sampling
  - b. Attribute estimation sampling
  - c. Discovery sampling
  - d. Stratified random sampling
2. Statistical sampling may be applied to test controls when a client’s control procedures
- a. Depend primarily on segregation of duties.
  - b. Are carefully reduced to writing and are included in client accounting manuals.
  - c. Leave an audit trail as evidence of compliance.
  - d. Enable the detection of fraud.
3. Since auditors are interested in the occurrence of exceptions in population, they refer to the occurrence as
- a. Exception rate
  - b. Population rate
  - c. Deviation rate
  - d. Confidence level
4. The deviation rate the auditor will permit in the population and still be willing to reduce the assessed level of control risk is called the
- a. Tolerable deviation rate
  - b. Estimated population deviation rate
  - c. Acceptable risk of over-reliance
  - d. Sample deviation rate
5. Which of the following statements is correct?
- a. The expected population deviation rate has little or no effect on sample size.
  - b. As the population size doubles, the sample size also should double.
  - c. For a given tolerable rate, a larger sample size should be selected as the expected population deviation rate decreases.
  - d. The population size has little or no effect on sample size except for very small populations.
6. When sampling for attributes, which of the following would decrease sample size?
- |    | Risk of assessing<br>Control risk too low | Tolerable rate<br>of deviation | Expected population<br>deviation rate |
|----|---|--------------------------------|---------------------------------------|
| a. | Increase                                  | Decrease                       | Increase                              |
| b. | Decrease                                  | Increase                       | Decrease                              |
| c. | Increase                                  | Increase                       | Decrease                              |
| d. | Increase                                  | Increase                       | Increase                              |
7. A statistical sampling technique that will minimize sample size whenever a low deviation rate is expected is
- a. Ratio-estimation sampling.
  - b. Difference-estimation sampling.
  - c. Stratified mean-per-unit sampling.
  - d. Stop-or-go sampling.

8. For which of the following audit tests would an auditor most likely use attribute sampling?
  - a. Making an independent estimate of the amount of a FIFO inventory.
  - b. Examining invoices in support of the valuation of fixed asset additions.
  - c. Selecting accounts receivable for confirmation of account balances.
  - d. **Inspecting employee time cards for proper approval by supervisors.**
9. In addition to evaluating the frequency of deviations in tests of controls, an auditor also considers certain qualitative aspects of the deviations. The auditor most likely will give broader consideration to the implications of a deviation if it is
  - a. The only deviation discovered in the sample.
  - b. Identical to a deviation discovered during the prior year's audit.
  - c. Caused by an employee's misunderstanding of instructions.
  - d. **Initially concealed by a forged document.**
10. An auditor plans to test a sample of 20 checks for counter signatures as prescribed by the client's control procedures. One of the checks in the chosen sample of 20 cannot be found. The auditor should consider the reasons for this limitation and
  - a. Evaluate the results as if the sample size had been 19.
  - b. **Treat the missing check as a deviation for the purpose of evaluating the sample.**
  - c. Treat the missing check in the same manner as the majority of the other 19 checks, i.e., countersigned or not.
  - d. Choose another check to replace the missing check in the sample.
11. The tolerable rate of deviation for tests of controls necessary to justify a control risk assessment depends primarily on which of the following?
  - a. The cause of errors.
  - b. **The extent of reliance to be placed on the procedures.**
  - c. The amount of any substantive errors.
  - d. The limit used in audits of similar clients.
12. If the auditor is concerned that a population may contain exceptions, the determination of a sample size sufficient to include at least one such exception is a characteristic of
  - a. **Discovery sampling**
  - b. Variable sampling
  - c. random sampling
  - d. PPS
13. At times a sample may indicate that the auditor's assessed level of control risk for a given control is reasonable when, in fact, the true compliance rate does not justify the assessed level. This situation illustrates the risk of
  - a. **Assessing control risk too low**
  - b. Assessing control risk too high
  - c. Incorrect precision
  - d. Incorrect rejection
14. In attribute estimation, which of the following must be known in order to appraise the results of the auditor's sample?
  - a. Estimated peso value of the population
  - b. Standard deviation of the values in the population
  - c. Actual occurrence rate of the attribute in the population
  - d. **Sample size**
15. Assuming the tolerable deviation rate is 5 percent, the expected population rate is 3 percent, and the allowance for sampling risk is 2 percent, what should an auditor conclude if tests of 100 randomly selected documents reveals 4 deviations?
  - a. Accept the sample results as support for assessing control risk below the maximum because the tolerable rate less the allowance for sampling risk equals the expected population deviation rate.
  - b. **Assess control risk at the maximum because the sample deviation rate plus the allowance for sampling risk exceeds the tolerable rate.**
  - c. Assess control risk at the maximum because the tolerable rate plus the allowance for sampling risk exceeds the expected population deviation rate.
  - d. Accept the sample results as support for assessing control risk below the maximum because the sample deviation rate plus the allowance for sampling risk exceeds the tolerable rate.

16. As a result of tests of controls, an auditor assessed control risk too low and decreased substantive testing. This assessment occurred because the true deviation rate in the population was
- Less than the risk of assessing control risk too low, based on the auditor's sample.
  - Less than the deviation rate in the auditor's sample.
  - More than the risk of assessing control risk too low, based on the auditor's sample.
  - More than the deviation rate in the auditor's sample.**
17. The diagram below depicts the auditor's estimated maximum deviation rate compared with the tolerable rate, and also depicts the true population deviation rate compared with the tolerable rate.

Auditor's Estimate Based on Sample Results	True State of Population	
	Deviation Rate Exceeds Tolerable Rate	Deviation Rate is Less Than Tolerable Rate
Maximum Deviation Rate Exceeds Tolerable Rate	I	III
Maximum Deviation Rate is Less Than Tolerable Rate	II	IV

As a result of testing controls, the auditor assesses control risk too high and thereby increases testing. This is illustrated by situation

- I.
  - II.
  - III.**
  - IV.
18. As a result of sampling procedures applied as tests of controls, an auditor incorrectly assesses control risk lower than appropriate. The most likely explanation for this situation is that
- The deviation rates of both the auditor's sample and the population exceed the tolerable rate.
  - The deviation rates of both the auditor's sample and the population are less than the tolerable rate.
  - The deviation rate in the auditor's sample is less than the tolerable rate, but the deviation rate in the population exceeds the tolerable rate.**
  - The deviation rate in the auditor's sample exceeds the tolerable rate, but the deviation rate in the population is less than the tolerable rate.
19. The likelihood of assessing control risk too low is the risk that the sample selected to test controls
- Does not support the tolerable misstatement for some or all of management's assertions.
  - Does support the auditor's planned assessed level of control risk when the true operating effectiveness of the control does not justify such an assessment.**
  - Contains misstatements that could be material to the financial statements when aggregated with misstatements in other account balances.
  - Contains proportionately more deviations from prescribed internal control policies or procedures than exist in the population.
20. The likelihood of assessing control risk too high is the risk that the sample selected to test controls
- Does not support the auditor's planned assessed level of control risk when the true operating effectiveness of the control justifies such an assessment.**
  - Contains misstatements that could be material to the financial statements when aggregated with misstatements in other account balances or transaction classes.
  - Contains proportionately fewer monetary errors or deviations from prescribed internal control policies or procedures than exist in the balance or class as a whole.
  - Does not support the tolerable misstatement for some or all of management's assertions.
21. The tolerable rate of deviations for a test of controls is generally
- Lower than the expected rate of errors in the related accounting population.
  - Higher than the expected rate of errors in the related accounting records.**
  - Identical to the expected rate of errors in the related accounting records.
  - Unrelated to the expected rate of errors in the related accounting records.
22. If a selected random number matches the number of a voided voucher, the voucher ordinarily should be replaced by another voucher in the sample if the voucher
- Constitutes a deviation
  - Has been properly voided**
  - Cannot be located
  - Represents an immaterial peso amount

23. Assessing control risk too high is the risk that the sample
- Does not support tolerable error for some or all of management's assertions.
  - Contains proportionately more deviations from prescribed control procedures than actually exist in the population as a whole.
  - Contains monetary misstatements that could be material to the financial statements when aggregated with misstatements in other account balances or classes of transactions.
  - Contains proportionately fewer deviations from prescribed control procedures than actually exist in the population as a whole.
24. When using statistical sampling for tests of controls, an auditor's evaluation would include a statistical conclusion about whether:
- Deviations in the population are within an acceptable range.
  - Monetary precision exceeds a predetermined amount.
  - The population's total monetary value is not in error by more than a predetermined amount.
  - Population characteristics occur at least once in the population.
25. An auditor, planning an attribute sample from a large number of invoices, intends to estimate the actual rate of deviations. Which factor below is the most important for the auditor to consider?
- Audit objective
  - Desired confidence level
  - Population size
  - Population variance

### Variables Sampling

- "Whenever a sample is taken, there is a risk that the quantitative conclusions about the population will be incorrect."
  - This is always true.
  - This is always true unless 100 percent of the population is tested.
  - This is true for statistical sampling, but not for non-statistical sampling.
  - This is true for non-statistical sampling but not for statistical sampling.
- Which of the following sampling methods is used to estimate a numerical measurement of a population, such as a dollar value?
  - Attribute sampling.
  - Stop-or-go sampling.
  - Variables sampling.
  - Random-number sampling.
- In applying variables sampling, an auditor attempts to
  - Estimate a qualitative characteristic of interest.
  - Determine various rates of occurrence for specified attributes.
  - Discover at least one instance of a critical deviation.
  - Predict a monetary population value within a range of precision.
- Several risks are inherent in the evaluation of audit evidence that has been obtained through the use of statistical sampling. An example of a beta or Type II error related to sampling risk is the failure to
  - Properly define the population to be sampled.
  - Draw a random sample from the population.
  - Reject the statistical hypothesis that a book value is not materially misstated when the true book value is materially misstated.
  - Accept the statistical hypothesis that the book value is not materially misstated when the true book value is not materially misstated.
- As lower acceptable levels of both audit risk and materiality are established, the auditor should plan more work on individual accounts to
  - Find smaller misstatements.
  - Find larger misstatements.
  - Increase the tolerable misstatement in the accounts.
  - Decrease the risk of assessing control risk too low.
- In performing substantive tests, the auditor is concerned with two risks or errors of sampling:
  - The risk of incorrect rejection (an alpha or Type I error)
  - The risk of incorrect acceptance (a beta or Type II error)

Which of the following is true about alpha and beta errors?

  - The alpha error is of greater concern to the auditor than the beta error.
  - The beta error is of greater concern to the auditor than the alpha error.

- c. The beta error and the alpha error are of equal importance to the auditor.  
d. Neither the alpha error nor the beta error need be considered by the auditor.
7. While performing a substantive test of details during an audit, the auditor determined that the sample results supported the conclusion that the recorded account balance was materially misstated. It was, in fact, not materially misstated. This situation illustrates the risk of  
a. Assessing control risk too low. c. **Incorrect rejection.**  
b. Assessing control risk too high. d. Incorrect acceptance.
8. Conducting a substantive test of an account balance, an auditor hypothesizes that no material misstatement exists. The risk that sample results will support the hypothesis when a material misstatement actually does exist is the risk of  
a. Incorrect rejection. c. **Incorrect acceptance.**  
b. Alpha error. d. Type I error.
9. The risk of incorrect acceptance and the risk of assessing control risk too low relate to the  
a. Preliminary estimates of materiality levels c. Efficiency of the audit  
b. Allowable risk of tolerable error d. **Effectiveness of the audit**
10. When would difference estimation or ratio estimation sampling methods be inappropriate?  
a. **If differences between the book values and audit values of a population are rare.**  
b. If the average difference between the audit value and book value of a population is small.  
c. If differences between the book value and audit value of a population are numerous.  
d. If the average difference between the audit value and book value of a population is large.
11. Which of the following most likely would be an advantage in using classical variables sampling rather than probability-proportional-to-size (PPS) sampling.  
a. An estimate of the standard deviation of the population's recorded amounts is not required.  
b. The auditor rarely needs the assistance of a computer program to design an efficient sample.  
c. **Inclusion of zero and negative balances generally does not require special design considerations.**  
d. Any amount that is individually significant is automatically identified and selected.
12. An auditor is preparing to sample accounts receivable for overstatement. A statistical sampling method that automatically provides stratification when using systematic selection is  
a. Attribute sampling. c. **Probability proportionate to size sampling**  
b. Ratio-estimation sampling. d. Mean-per-unit (MPU) sampling.
13. An auditor wishes to sample 200 sales receipts from a population of 5,000 receipts issued during the last year. The receipts have preprinted serial numbers and are arranged in chronological (and thus serial number) order. The auditor randomly chooses a receipt from the first 25 receipts and then selects every 25<sup>th</sup> receipt thereafter. The sampling procedure described here is called  
a. **Systematic random sampling.** c. Judgment interval sampling.  
b. Monetary-unit sampling. d. Variables sampling.
14. Which of the following sample planning factors would influence the sample size for a substantive test of details for a specific account?
- |    | <u>Expected amount of misstatements</u> | <u>Measure of tolerable misstatement</u> |
|----|---|--|
| a. | No                                      | No                                       |
| b. | <b>Yes</b>                              | <b>Yes</b>                               |
| c. | No                                      | Yes                                      |
| d. | Yes                                     | No                                       |
15. Which of the following courses of action would an auditor most likely follow in planning a sample of cash disbursements if the auditor is aware of several unusually large cash disbursements?  
a. Set the tolerable rate deviation at a lower level than originally planned.  
b. **Stratify the cash disbursements population so that the unusually large disbursements are selected.**  
c. Increase the sample size to reduce the effect of the unusually large disbursements.  
d. Continue to draw new samples until all the unusually large disbursements appear in the sample.



16. In statistical sampling methods used in substantive testing, when would an auditor most likely stratify a population into meaningful groups?
- If the population has highly variable recorded amounts.
  - If probability proportional to size sampling is used.
  - If the auditor's estimated tolerable misstatement is extremely small.
  - If the standard deviation of recorded amounts is relatively small.

17. How would increases in tolerable misstatement and assessed level of control risk affect the sample size in a substantive test of details?

	Increase in tolerable <u>misstatement</u>	Increased in assessed level of <u>control risk</u>
a.	Increase sample size	Increase sample size
b.	Increase sample size	Decrease sample size
c.	Decrease sample size	Increase sample size
d.	Decrease sample size	Decrease sample size

18. Using statistical sampling to assist in verifying the year-end accounts payable balance, an auditor has accumulated the following data:

	Number of <u>Accounts</u>	Book <u>Balance</u>	Balance Determined by <u>the Auditor</u>
Population	4,100	P5,000,000	?
Sample	200	P 250,000	P300,000

Using the ratio estimation technique, the auditor's estimate of year-end accounts payable balance is

- P6,150,000
  - P6,000,000
  - P5,125,000
  - P5,050,000
19. An auditor is applying a difference estimation sampling plan. Recorded book value is P1,000,000 and the auditor estimates a P75,000 understatement difference. In this case, the auditor's estimated population value is
- P925,000
  - P1,075,000
  - P1,000,000
  - P1,025,000
20. An auditor is applying mean-per-unit estimation. Assuming estimated audited value is P950,000, the achieved allowance for sampling risk is P75,000, and recorded book value is P925,000, what is the auditor's conclusion?
- Recorded book value is not likely misstated by a material amount.
  - Recorded book value is misstated by a material amount.
  - Recorded book value is not likely misstated by a material amount, assuming the client records an adjusting journal entry equal to the allowance for sampling risk.
  - There is insufficient evidence to reach a conclusion.

21. In a probability-proportional-to-size sample interval of P10,000, an auditor discovered that a selected account receivable with a recorded amount of P5,000 had an audit amount of P2,000. The projected error of this sample is

- P3,000
- P4,000
- P6,000
- P8,000

22. An auditor is evaluating the results of a variables sampling plan. Which of the following is not relevant to the auditor's judgment about the sample?

- Management's explanations for why errors in the sample occurred.
- Projecting the sample error to the population.
- Considering the effects of sampling risk.
- Qualitative information that lends insight into errors found.

23. When using classical variables sampling for estimation, an auditor normally evaluates the sampling results by calculating the possible error in either direction. This statistical concept is known as

- Precision.
- Reliability.
- Projected error.
- Standard deviation.

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