Identify the Inference Methods Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. **Two categorical variables from a single population, test whether they are related. Which test is appropriate?**

   A. Chi-square test of independence with 2 degrees of freedom

   B. Chi-square test of homogeneity

   C. Two-proportion z-test

   D. Chi-square test of independence

2. **Two dog parks in a city are studied. Dogs are categorized by size: toy, small, medium, large, and giant. Is the breed size distribution different between the two parks?**

   A. ANOVA

   B. Paired t-test

   C. 2-proportion z-test

   D. Chi-square test for homogeneity

3. **A factory installed scrubbers; measurements of sulfate levels before and after installation were taken, but not paired. Which test compares the two independent samples?**

   A. Paired t-test

   B. 1-sample t-test

   C. ANOVA

   D. 2-sample t-test

4. **An owner of a construction company wants to know if work times for room additions can be completed faster than the contract times. Which test is appropriate to analyze the evidence?**

   A. 1-sample t-test

   B. 2-sample t-test

   C. 1-proportion z-test

   D. Matched pairs t-test

5. Two groups: homeopathic vs placebo; pain response categorized into four levels. Which test compares the distributions of responses between the two groups?

A. Chi-square test of homogeneity with 3 degrees of freedom

B. Chi-square test of independence with 3 degrees of freedom

C. Linear regression

D. Multinomial logistic regression

6. A friend claims he scores 1400 on a game; you collect a random sample of 12 scores; is there evidence that the population mean is less than 1400?

A. Two-Sample T-Test

B. One-Sample T-Test

C. One-Proportion Z-Test

D. Matched-Pairs T-Test

7. Which test would determine whether there is an association between gender and whether or not college-age drivers were ticketed?

A. 2-proportion z-test

B. Chi-square test of independence with 1 degree of freedom

C. Linear regression

D. ANOVA

8. A policeman believes that more than 40% of older drivers speed on highways, but a confidential survey found that 49 of 88 randomly selected older drivers admitted speeding. Is this strong evidence that the policeman was wrong?

A. 2-Proportion Z-Test

B. Chi-Square Test for Proportions

C. Paired T-Test

D. 1-Proportion Z-Test

9. A health professional sampled 100 patients from each of four major hospital emergency rooms to see if primary reasons for ER visits are similar across hospitals. Primary reasons: accident, illegal activity, illness, or other. What test evaluates whether the distribution across hospitals is the same?

A. Chi-Square Test of Homogeneity

B. ANOVA

C. T-Test

D. Regression Analysis

10. The Associated Press and petside.com survey (2009) found that 63% of dog owners and 53% of cat owners would be likely to give CPR to their pet. Which test would compare these two proportions?

A. 2-proportion z-test

B. Fisher's exact test

C. Paired t-test

D. ANOVA

Answers

1. D
2. D
3. D
4. D
5. A
6. B
7. B
8. D
9. A
10. A

Explanations

1. Two categorical variables from a single population, test whether they are related. Which test is appropriate?

A. Chi-square test of independence with 2 degrees of freedom

B. Chi-square test of homogeneity

C. Two-proportion z-test

D. Chi-square test of independence

When two categorical variables come from the same population and you want to know if they are related, you use the chi-square test of independence. This test examines a contingency table of the two variables and checks whether the observed counts in each cell differ from what would be expected if the variables were independent. You compute expected counts under independence as (row total × column total) / grand total, then sum (observed − expected)² / expected across all cells. A small p-value indicates evidence of an association between the variables. This fits the scenario precisely, because you're looking for a relationship between two categorical factors within a single population. The chi-square test of homogeneity would be used to compare distributions of a single categorical variable across different populations, which isn't what's being asked here. The two-proportion z-test compares two proportions for a binary outcome between two groups and doesn't assess the relationship between two categorical variables. Even though one option mentions a specific degrees-of-freedom value, the standard and most widely used label for this situation is the chi-square test of independence.

2. Two dog parks in a city are studied. Dogs are categorized by size: toy, small, medium, large, and giant. Is the breed size distribution different between the two parks?

A. ANOVA

B. Paired t-test

C. 2-proportion z-test

D. Chi-square test for homogeneity

When you want to know if the distribution of a categorical variable is the same across two independent groups, you use a chi-square test for homogeneity. Here, dogs are categorized by size into five groups, and you're comparing how those size categories are distributed between the two parks. You'd put the counts in a 2-by-5 contingency table (parks by size categories), test the null that the distributions are identical across parks, and look at the chi-square statistic with degrees of freedom $(2-1)\times(5-1) = 4$. A significant result means the size distribution differs between parks; a non-significant result suggests the distributions are similar. This approach is appropriate because it analyzes multiple categorical outcomes simultaneously across two groups. ANOVA is for continuous outcomes, so it wouldn't fit here. A paired t-test requires related or paired data, which isn't the case since the parks are independent. A 2-proportion z-test compares only a single proportion between two groups and doesn't assess the full distribution across all five size categories, whereas the chi-square test for homogeneity evaluates the entire distribution at once.

3. A factory installed scrubbers; measurements of sulfate levels before and after installation were taken, but not paired. Which test compares the two independent samples?

A. Paired t-test

B. 1-sample t-test

C. ANOVA

D. 2-sample t-test

When you're comparing the means of two groups that don't influence each other, you use a two-sample t-test. In this scenario, the sulfate measurements before installation and after installation come from separate, independent sets of observations, not paired measurements from the same units. The two-sample t-test assesses whether the average sulfate level differs between these two independent groups, which is exactly the question here about the effect of the scrubbers. If the data had been paired—each unit measured before and after—the paired t-test would be more appropriate because it analyzes the differences within each unit, increasing power. A 1-sample t-test would compare a single group to a known reference value, not two groups. ANOVA would be used for comparing means across three or more groups (though it can handle two groups, the two-sample t-test is the direct, standard choice for two independent samples).

4. An owner of a construction company wants to know if work times for room additions can be completed faster than the contract times. Which test is appropriate to analyze the evidence?

A. 1-sample t-test

B. 2-sample t-test

C. 1-proportion z-test

D. Matched pairs t-test

When you have paired measurements from the same projects, you compare the differences within each pair. Here, each room addition has both a contract time and an actual time, so you form the difference for every project (for example, contract time minus actual time). The goal is to see if, on average, the actual times are shorter than the contract times. A matched pairs (paired) t-test is designed exactly for this: it tests whether the mean of those differences differs from zero. If the average difference is positive (meaning actual time is less than contract time), and this difference is statistically significant, you have evidence that work times can be completed faster. This approach is preferred over a two-sample t-test because the two measurements for each project are related; treating them as independent samples would ignore the pairing and could lead to incorrect conclusions. The 1-sample t-test compares a single set of observations to a fixed value, which doesn't leverage the paired structure here, and the 1-proportion z-test is meant for binary outcomes, not continuous time measurements.

5. Two groups: homeopathic vs placebo; pain response categorized into four levels. Which test compares the distributions of responses between the two groups?

A. Chi-square test of homogeneity with 3 degrees of freedom

B. Chi-square test of independence with 3 degrees of freedom

C. Linear regression

D. Multinomial logistic regression

When you want to know if the pattern of four-category pain responses is the same across two independent groups, you compare distributions using a chi-square test of homogeneity. Here the data form a 2-by-4 contingency table (two groups by four response levels). The null hypothesis is that the distribution of responses is identical in both groups, so any differences are due to sampling variation. The chi-square statistic measures how much the observed counts deviate from what would be expected if the distributions were the same. The degrees of freedom come from multiplying the number of categories minus one by the number of groups minus one: (2−1) × (4−1) = 3. So a test with 3 degrees of freedom is appropriate. Why not linear regression? That's for a continuous outcome, not a four-category categorical one. Multinomial logistic regression could model the outcome as a function of group, but for simply testing whether the distributions differ between the two groups, the chi-square test of homogeneity gives a direct and standard assessment.

6. A friend claims he scores 1400 on a game; you collect a random sample of 12 scores; is there evidence that the population mean is less than 1400?

A. Two-Sample T-Test

B. One-Sample T-Test

C. One-Proportion Z-Test

D. Matched-Pairs T-Test

Testing whether a single population mean is below a claimed value based on a small random sample with an unknown population standard deviation calls for a one-sample t-test. You're evaluating if mu, the true mean, is less than 1400 using data from one sample of 12 scores. Set up hypotheses: the null says the mean is 1400, while the alternative claims the mean is smaller than 1400. Because the population standard deviation isn't known and the sample size is small, you use the t distribution with degrees of freedom equal to n minus 1 (11). The test statistic is t = ($\bar{x}$ − 1400) / (s / sqrt(n)), where $\bar{x}$ is the sample mean and s is the sample standard deviation. You then compare that t value to the appropriate one-sided critical value, or compute a p-value for the lower tail. If the result is statistically significant, you have evidence that the population mean is less than 1400. Why not the other tests: a two-sample t-test compares means from two independent groups, which isn't the situation here. a one-proportion z-test is for categorical data analyzed as proportions, not means. a matched-pairs t-test is for paired observations (such as before-and-after measurements on the same subjects), not a single random sample meant to reflect a population mean.

7. Which test would determine whether there is an association between gender and whether or not college-age drivers were ticketed?

A. 2-proportion z-test

B. Chi-square test of independence with 1 degree of freedom

C. Linear regression

D. ANOVA

Testing whether gender is related to being ticketed uses a chi-square test of independence. It examines two categorical variables in a contingency table (gender and ticketed status) and asks if the distribution of ticketing is the same across genders or if there's an association. If there's a real relationship, the observed counts in the cells differ from what we'd expect if gender and ticketing were independent. For a 2x2 table, the degrees of freedom are (2−1)(2−1) = 1, which matches this scenario. Other methods aren't suited for this question: a 2-proportion z-test compares a single proportion between two groups, not the full cross-tabulation; linear regression and ANOVA focus on numeric outcomes or mean differences, not the association between two categoricals (though logistic regression can model a binary outcome, the standard test for independence between two categoricals is the chi-square test).

8. A policeman believes that more than 40% of older drivers speed on highways, but a confidential survey found that 49 of 88 randomly selected older drivers admitted speeding. Is this strong evidence that the policeman was wrong?

A. 2-Proportion Z-Test

B. Chi-Square Test for Proportions

C. Paired T-Test

D. 1-Proportion Z-Test

The idea is to test a single population proportion against a specific value. Here you're checking whether the true proportion of older drivers who speed is greater than 0.40, so you set up a one-proportion z-test with p0 = 0.40. Compute the sample proportion: p-hat = 49/88 ≈ 0.557. Under the null, the standard error is sqrt(p0(1−p0)/n) = sqrt(0.4×0.6/88) ≈ 0.0522. The z-statistic is (p-hat − p0)/SE ≈ (0.557 − 0.40)/0.0522 ≈ 3.0. A one-sided p-value for z ≈ 3.0 is about 0.0013, which is far below common significance levels (like 0.05). So you reject the null in favor of p > 0.40, meaning there is strong evidence that more than 40% of older drivers speed. This supports the policeman's belief rather than showing he was wrong. The other tests aren't appropriate here: a two-proportion z-test compares two independent proportions, a chi-square test for proportions is an alternative for categorical data but not needed when testing a single proportion, and a paired t-test is for comparing means of paired measurements.

9. A health professional sampled 100 patients from each of four major hospital emergency rooms to see if primary reasons for ER visits are similar across hospitals. Primary reasons: accident, illegal activity, illness, or other. What test evaluates whether the distribution across hospitals is the same?

A. Chi-Square Test of Homogeneity

B. ANOVA

C. T-Test

D. Regression Analysis

This question examines whether the pattern of primary ER visit reasons is the same across different hospitals, using a method suited for categorical data across multiple groups. You have a 4-by-4 table: four hospitals and four reason categories. The goal is to test if the distribution of reasons is identical across all hospitals. The appropriate approach is a chi-square test of homogeneity. The null hypothesis states that the distribution of categories is the same in every hospital; the alternative is that at least one hospital has a different distribution. To do the test, pool the data across all hospitals to get the overall category proportions, then compute expected counts for each hospital by multiplying its 100 patients by those overall proportions. Sum (observed − expected)² / expected across all cells to obtain the chi-square statistic, and compare it to a chi-square distribution with degrees of freedom (rows − 1) × (columns − 1) = (4 − 1) × (4 − 1) = 9. Why not the other options: ANOVA, T-test, or regression are designed for numerical outcomes or for assessing relationships between variables, not for comparing distributions of a categorical variable across groups. They don't directly test whether the category distributions are the same across hospitals.

10. The Associated Press and petside.com survey (2009) found that 63% of dog owners and 53% of cat owners would be likely to give CPR to their pet. Which test would compare these two proportions?

A. 2-proportion z-test

B. Fisher's exact test

C. Paired t-test

D. ANOVA

When you're comparing two independent groups on a yes/no outcome, you're looking at two proportions and asking if the difference you observe is real or just due to sampling variation. The best-fitting test is the two-proportion z-test. It evaluates whether the difference between the sample proportions (63% for dog owners vs 53% for cat owners) is large enough to conclude a real difference in the population proportions. It does this by comparing the observed difference to the standard error of that difference under the null hypothesis that the true proportions are equal. Large-sample conditions enable the normal (z) approximation to the binomial, which is why this test is appropriate here. If the counts were very small, Fisher's exact test or a chi-square test on a 2x2 table might be used instead; the other options—paired t-test and ANOVA—are designed for different situations (means, not independent proportions).

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://identifyinferencemethods.examzify.com

We wish you the very best on your exam journey. You've got this!