IDENTIFY THE INFERENCE METHODS PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. **A CDC report found arthritis among adults: 51 of 100 men and 80 of 782 women. To estimate the difference in proportions with 95% confidence, which method would you use?**

   A. 2-proportion z-interval

   B. 2-proportion z-test

   C. 1-proportion z-interval

   D. Chi-square interval

2. **A student weighs 10 candy bars; test whether the average weight differs from the expected value using a t-test. Which test is appropriate?**

   A. 2-sample t-test

   B. Z-test

   C. 1-sample t-test with 9 degrees of freedom

   D. Paired t-test

3. **A wildlife biologist wants to determine the mean weight of adult red squirrels. She weighs 10 squirrels and records a mean of 12.32 grams and a standard deviation of 1.88 grams. Which method would be used to construct a confidence interval for the mean?**

   A. 1-sample t-interval with 9 degrees of freedom

   B. 1-sample z-interval

   C. 2-sample t-interval

   D. Matched pairs t-test

4. **A quality-control team wants to test whether the average wait time is 6 minutes using a large sample where the population standard deviation is known. Which test is appropriate?**

   A. One-Sample Z-Test

   B. One-Sample T-Test

   C. Two-Sample T-Test

   D. Matched-Pairs T-Test

5. **In a chi-square test of independence with five rows and two columns, what is the degrees of freedom?**

   A. (5-1)(2-1) = 4

   B. (5-1)+(2-1) = 5

   C. 4

   D. 10

6. What is the odds ratio for death comparing depressed vs non-depressed?

A. 0.90

B. 2.50

C. 1.80

D. 1.10

7. In a study examining four bathroom stalls, which statistical test would determine if stalls are used with equal frequency?

A. Chi-square goodness-of-fit

B. Chi-square test of independence

C. Paired t-test

D. One-way ANOVA

8. In a two-sample t-test comparing lifetimes of halogen and incandescent bulbs, the null hypothesis states that the difference in means equals zero. Which statement expresses that null hypothesis?

A. mu_halogen - mu_incandescent ≠ 0

B. mu_halogen = mu_incandescent

C. mu_halogen - mu_incandescent = 0

D. mu_halogen > mu_incandescent

9. A 2013 Gallup poll asked randomly selected U.S. adults about staying at their current weight. Among 562 men, 242 wanted to stay; among 477 women, 172 wanted to stay. Which test should be used to compare these two proportions?

A. 2-proportion z-test

B. Chi-square test of homogeneity

C. Fisher's exact test

D. Z-test for proportions

10. To determine if there is a linear relationship between two quantitative variables, which test would you use?

A. 2-proportion z-test

B. 1-proportion z-test

C. Linear regression t-test

D. Chi-square test of independence

Answers

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

Explanations

1. A CDC report found arthritis among adults: 51 of 100 men and 80 of 782 women. To estimate the difference in proportions with 95% confidence, which method would you use?

A. 2-proportion z-interval

B. 2-proportion z-test

C. 1-proportion z-interval

D. Chi-square interval

Estimating the difference between two independent proportions with a confidence interval. When you want a 95% confidence interval for p1 − p2 based on two independent samples, you use a two-proportion z-interval. Take the sample proportions and compute the standard error as SE = sqrt[p1 (1−p1)/n1 + p2 (1−p2)/n2]. Then use the 1.96 multiplier (for 95% confidence) to form the interval: (p1 − p2) ± 1.96 × SE. Here, p1 = 51/100 = 0.51, p2 = 80/782 ≈ 0.1023, and the difference is about 0.4077. The standard error is SE ≈ sqrt(0.51×0.49/100 + 0.1023×0.8977/782) ≈ sqrt(0.002499 + 0.000118) ≈ 0.0512. So the 95% confidence interval for the difference is approximately 0.4077 ± 0.1004, i.e., (0.307, 0.508). This means we're estimating that arthritis is higher among men by about 30.7 to 50.8 percentage points in this sample. The 2-proportion z-interval is the standard method for this kind of estimate; the 2-proportion z-test would be used for testing whether the two proportions are equal, not for a confidence interval, and the other options are for different goals.

2. A student weighs 10 candy bars; test whether the average weight differs from the expected value using a t-test. Which test is appropriate?

A. 2-sample t-test

B. Z-test

C. 1-sample t-test with 9 degrees of freedom

D. Paired t-test

When you want to know if a sample mean differs from a known value, you use a one-sample t-test. Here you have a single sample of ten candy bars and you're comparing the average weight to the expected mean, with the population standard deviation unknown. With n = 10, the degrees of freedom are n − 1, which is 9, so the test uses nine degrees of freedom. The test statistic is t = (x − μ0) / (s/√n), reflecting how far the observed mean is from the expected mean in units of the standard error. If the population standard deviation were known, a Z-test would be used, but that's rare in practice. It's not a two-sample test since there aren't two independent groups to compare, and it's not a paired test because there's no pairing of measurements. So the appropriate method is a one-sample t-test with nine degrees of freedom.

3. A wildlife biologist wants to determine the mean weight of adult red squirrels. She weighs 10 squirrels and records a mean of 12.32 grams and a standard deviation of 1.88 grams. Which method would be used to construct a confidence interval for the mean?

A. 1-sample t-interval with 9 degrees of freedom

B. 1-sample z-interval

C. 2-sample t-interval

D. Matched pairs t-test

Estimating a population mean from a small sample when the population standard deviation is unknown uses a one-sample t-interval. Here you have ten squirrels, so the degrees of freedom are n minus one, which is nine. The confidence interval for the mean is built as the sample mean plus or minus a t critical value with nine degrees of freedom times the sample standard deviation divided by the square root of the sample size. This approach accounts for the extra uncertainty introduced by estimating sigma from the sample. The z-interval would be used only if the population standard deviation were known (or the sample were very large), which isn't the case here. The two-sample t-interval is for estimating the difference between two independent means, and the matched-pairs t-test is for paired data, not for estimating a single mean. So a one-sample t-interval with nine degrees of freedom is the appropriate method.

4. A quality-control team wants to test whether the average wait time is 6 minutes using a large sample where the population standard deviation is known. Which test is appropriate?

A. One-Sample Z-Test

B. One-Sample T-Test

C. Two-Sample T-Test

D. Matched-Pairs T-Test

Testing a single population mean when you know the population standard deviation uses a Z-test for the mean. With a known sigma, the standard normal distribution determines the critical values, and the test statistic is Z = (Xbar − mu0) / (sigma / sqrt(n)). The large sample size supports the normal approximation of the sampling distribution of the mean, making the Z approach appropriate. The one-sample t-test would be used only if sigma were unknown. The two-sample t-test compares two independent means, not a mean against a fixed value. The matched-pairs t-test is for paired measurements, not a single mean against 6.

5. In a chi-square test of independence with five rows and two columns, what is the degrees of freedom?

A. (5-1)(2-1) = 4

B. (5-1)+(2-1) = 5

C. 4

D. 10

The concept being tested is how to determine degrees of freedom for a chi-square test of independence in a contingency table. For a table with r rows and c columns, the degrees of freedom are calculated as (r−1) × (c−1). This reflects how many cell counts can vary independently once the row and column totals are fixed. With five rows and two columns, the degrees of freedom are (5−1) × (2−1) = 4 × 1 = 4. Intuitively, you can freely set the counts in four cells, and the remaining counts are determined by the row and column totals, leaving four independent pieces of information. Adding the row and column reductions would overcount the constraints, and using the total number of cells (which is 10) ignores the margins entirely, so it isn't appropriate for calculating degrees of freedom.

6. What is the odds ratio for death comparing depressed vs non-depressed?

A. 0.90

B. 2.50

C. 1.80

D. 1.10

The odds ratio tells you how the odds of death change with being depressed versus not depressed. If the odds ratio is 1.80, that means the depressed group has 1.8 times the odds of dying compared with the non-depressed group — an 80% higher odds. To get a feel, think in terms of odds: if non-depressed have odds of death of about 0.11 (roughly a 10% risk), multiplying by 1.80 gives about 0.20 odds for the depressed group, which translates to a risk around 16–17%. So the effect is a clear increase in death odds, but not an extremely large jump. Values below 1 would indicate lower odds with depression, while a much larger number (like 2.50) would indicate a stronger association.

7. In a study examining four bathroom stalls, which statistical test would determine if stalls are used with equal frequency?

A. Chi-square goodness-of-fit

B. Chi-square test of independence

C. Paired t-test

D. One-way ANOVA

You're assessing whether four categories (the stalls) are used as often as each other. That means you're comparing observed counts in each stall to what you'd expect if usage were equal across all stalls. The right approach is a chi-square goodness-of-fit test. You set the expected count for each stall to be the total number of uses divided by four, then compute the chi-square statistic across the four stalls. With degrees of freedom equal to the number of categories minus one (three), you see whether the observed distribution matches the equal-usage expectation. A non-significant result suggests no evidence against equal usage; a significant result indicates some stalls are used more or less frequently. This test is appropriate because it handles one categorical variable with multiple categories and checks how the observed frequencies align with a specified (equal) distribution. The other tests don't fit: the chi-square test of independence looks for a relationship between two categorical variables, not whether one categorical distribution is uniform; the paired t-test compares means of paired continuous data; and one-way ANOVA compares means of a continuous outcome across groups.

8. In a two-sample t-test comparing lifetimes of halogen and incandescent bulbs, the null hypothesis states that the difference in means equals zero. Which statement expresses that null hypothesis?

A. mu_halogen - mu_incandescent ≠ 0

B. mu_halogen = mu_incandescent

C. mu_halogen - mu_incandescent = 0

D. mu_halogen > mu_incandescent

Null hypotheses express no effect or no difference. For a two-sample t-test comparing lifetimes, the null claim is that the two population means are the same, so the difference between them is zero. In notation, that's mu_halogen - mu_incandescent = 0, which is also equivalent to mu_halogen = mu_incandescent. The other statements describe a difference or a direction of difference, which align with the alternative hypothesis in a two-sided test or a one-sided test, not the null.

9. A 2013 Gallup poll asked randomly selected U.S. adults about staying at their current weight. Among 562 men, 242 wanted to stay; among 477 women, 172 wanted to stay. Which test should be used to compare these two proportions?

A. 2-proportion z-test

B. Chi-square test of homogeneity

C. Fisher's exact test

D. Z-test for proportions

When you want to compare proportions across two independent groups, think in terms of a 2x2 table: group by outcome (stay vs not stay). The chi-square test of homogeneity asks whether the distribution of the outcome is the same across groups. It uses all four counts and compares observed counts to what would be expected if the two groups shared the same proportion. With large samples in both groups, the chi-square approximation is reliable, making this a natural choice for testing whether staying at current weight differs between men and women. A two-proportion z-test would also assess the difference in proportions and is closely related, but the chi-square test of homogeneity is the standard contingency-table approach used for this kind of comparison. Fisher's exact test isn't needed here because all expected counts are well above five, and a Z-test for proportions is suited to testing a single proportion rather than comparing two groups.

10. To determine if there is a linear relationship between two quantitative variables, which test would you use?

A. 2-proportion z-test

B. 1-proportion z-test

C. Linear regression t-test

D. Chi-square test of independence

Evaluating whether a straight-line relationship exists between two quantitative variables is done by fitting a linear regression model and testing whether the slope is zero. The linear regression t-test specifically tests the null hypothesis that the slope equals zero; if the slope is significantly different from zero, that indicates a linear relationship between the variables. The other tests aren't designed for this purpose: tests for proportions deal with categorical outcomes, and the chi-square test of independence examines relationships between categorical variables.

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!