GENERAL

ap statistics chapter 19 quiz b answer key

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Introduction

When you're tackling the AP Statistics curriculum, Chapter 19—**Hypothesis Testing for Means and Proportions**—is often one of the most challenging yet rewarding sections. It bridges the gap between descriptive statistics and inferential reasoning, allowing students to make evidence based conclusions about populations. A common way to gauge mastery of this material is through the end of chapter quizzes, and Quiz B is a popular choice among teachers for its balanced mix of conceptual and computational questions.

In this article we'll walk you through the entire **AP Statistics Chapter 19 Quiz /B Answer Key** You'll find detailed solutions, step by step explanations, and practical study tips that will help you master the content and ace the exam. Whether you're a student looking to sharpen your skills, a teacher seeking a reliable resource for grading, or a tutor wanting to support your students, this guide will serve as a comprehensive reference.

Let's dive in.

Overview of Chapter 19: Hypothesis Testing

Chapter /19 is the heart of inferential statistics in the AP curriculum. It covers:

- Formulating null and alternative hypotheses
- Choosing appropriate test statistics (z test, t test, chi square, etc.)
- Calculating p values and critical values
- Making decisions about population parameters
- Interpreting results in real world contexts

Because the AP exam emphasizes conceptual understanding alongside mathematical precision, Quiz B is designed to test both your ability to set up a hypothesis test and your computational accuracy.

Key Concepts Covered in Quiz /B

1. Hypothesis Formulation – Writing correct null (H €) and alternative (H •) statements.
2. Significance Levels – Understanding ; Ò ã RÂ ã Â WF2à
3. Test Selection – Knowing when to use z tests, t tests, or chi square tests.
4. P Value Calculation – Using tables or technology to find the probability of observing a test statistic.
5. Decision Making – Rejecting or failing to reject H € based on p value vs. ; à
6. Interpretation – Translating statistical conclusions back into the problem's context.

Why Quiz /B Matters

Quiz B is typically the second quiz in the chapter, often featuring more nuanced scenarios that require a deeper understanding of the material. It helps students:

- Apply concepts to varied contexts (e.g., proportions, means, paired data).
- Practice critical thinking about assumptions (normality, independence, sample size).
- Build confidence in using statistical software or calculators.
- Prepare for the AP exam's free response and multiple choice sections.

The Answer Key: What to Expect

Below is a full answer key for Quiz B, including explanations that illuminate why each answer is correct. The key is organized question by question, with step by step solutions that mirror the reasoning a test taker should follow.

Sample Questions and Solutions

Assume the quiz consists of 10 questions. We'll walk through each one in detail.

Answer: Fail to reject H €.

Solution:

- Step 1: State the hypotheses.\\n\\nH €: ;Â Ò S ör †Ö àufacturer's claim)
- H •: ;Â & S ör ‡Gpo tailed)

z = (x0B b ¼ €) / (<2 ò !¦â' Ò ƒC"r b S ' ò ƒ " ò !£3 ' Ò c2 ò ƒ " ò RãCsr' $, c2 ò "ã " $, c ã3rà

Using the standard normal table, P(|Z| "e 1.37) "H 0.17.

0.17 > 0.05, so we fail to reject H €.

The data do not provide sufficient evidence to contradict the manufacturer's claim.

A survey of 200 students finds that 48% prefer online learning. Test whether the true proportion of students who prefer online learning is greater than 40% at the 0.01 level.

Answer: Reject H €.

Solution:

- Step 1: Hypotheses.\\n\\nH €: p = 0.40
- H •: p > 0.40 (right tailed)

z = (p0" b ' ò !¥· ƒ b 'öåÒ Ò ƒ ãC, b ãC ' ò !¥³ ãC s ãc ó# Ò Ò ã , ò !¥³ ã#Bó# Ò Ò ã , ò !£ ã " $, ã , ò ã 3Cb $, "ã3 à

For z = 2.31, one tailed p value "H 0.0104.

0.0104

The sample does not provide strong enough evidence, at the 1 % level, to conclude that the true proportion exceeds 40 /%. A slightly higher ; †P.g., 0.05) would lead to rejection.

Two independent samples of students were given different study guides. Sample A (n=25) has mean score 78 with <3Óc° Sample /B (n=30) has mean score 82 with <3ÓRà Test whether the difference in means is significant at ; Ó ã Rà

Answer: Reject H €.

Solution:

- H €: ;Â Ò ¼ ,; H •: ;Â & ¼ ,.
- Test statistic: z = (x0B b ƒ ,) / " [(<2 "öâ '²ƒÃ ,²/n ,)] = (78 – 82) / " [(36/25)+(25/30)] = (–4) / " [(1.44)+(0.833)] = –4 / " 2.2 1.506 "H –2.66.
- p value "H 0.0079.
- Since 0.0079
- Interpretation: The study guide in Sample /B leads to a statistically significant higher mean score.

A bag contains 100 marbles: 40 red, 30 blue, 30 green. You randomly pick 20 marbles. Is the distribution of colors consistent with the expected proportions at ; Ó ã Sð

Answer: Fail to reject H €.

Solution:

- Expected counts: Red 8, Blue 6, Green 6.
- Observed counts (assume 9 red, 5 blue, 6 green).
- Chi square: <{" Ò £[(O E)²/E] = (9 8)²/8 + (5 6)²/6 + (6 6)²/6 = 1/8 + 1/6 + 0 "H 0.125 + 0.167 = 0.292.
- df = k 1 = 2. Critical value at 0.05 "H 5.991.
- 0.292
- Interpretation: No evidence of deviation from expected proportions.

A sample of 12 students has a mean score of 85.2 with a sample standard deviation of 4.3. Test whether the true mean is greater than 80 at ; Ó ã Rà

Answer: Reject H €.

Solution:

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