

MATH 210 - Review Sheet - Test #3

(updated 4/11/01)

- 6.1 Concepts - Point estimate, confidence interval, margin of error (m), confidence level (C), relationship of margin of error to sample size (n) and confidence level.

Calculations

- Construct a $C\%$ confidence interval for a population mean μ (when σ is *known*).
- Determine the required sample size for a given confidence level and margin of error.

- 6.2 Concepts - Null and alternative hypotheses, significance level (α), P-value (P)

Calculations - Compute z-score and P-value for test of a population mean μ (when σ is *known*).

- 6.3,4 Concepts

- What are Type I and Type II errors?
- What is the relationship of α to Type I error?
- When would you use a fixed α ? When might you just report the P-value?
- When would you use a very low α ?
- What is the “power” of a test?

- 7.1 Concepts

- Compare and contrast a “Student's t ” distribution with a normal distribution. What is similar? What is different? How does this relate to confidence intervals?
- When do we use each of these distributions in relation to population *means*?
- What is the meaning of “robust?” Are t-procedures robust?

Calculations

- Construct confidence intervals and do hypothesis tests for a population mean μ (when σ is *unknown*).
- Analyze data using “matched pairs” methodology.

- 7.2 Given a specific objective, describe either a Matched Pairs Experiment or a Randomized-Comparative Experiment to assess a cause-and-effect relationship.

- Justify your choice of experimental designs.
- Describe how the experiment would be set up.
- Describe how the statistical analysis would be done.

Calculations

- Construct confidence intervals for the difference in two populations means.
- Conduct hypothesis tests comparing two population means (using the t-statistic).

- 8.1 Calculations

- Construct a confidence interval for a population proportion.
- Determine the sample size needed for a given confidence level and margin of error.
- Conduct a hypothesis test for a single population proportion.