

## Math 138: Statistics

### Quiz #3 Topics

Chapters 16 and 18–20.

- Chapter 16: Random variables: Interpreting and creating probability models. Expected value and standard deviation of probability models. Sums, differences, and constant multiples of random variables.

Practice problems: 23 (Batteries), 31 (Repair calls), 35 (Fire!), 37 (Cereal)

- Chapter 18: Sampling distributions: The random variables  $\hat{p}$  and  $\bar{y}$ , and their means and standard deviations. Finding probabilities using  $\hat{p}$  and  $\bar{y}$ . The sample distribution vs. the sampling distribution vs. the population distribution, and the Central Limit Theorem.

Practice problems: 7 (More coins), 9 (Just unlucky?), 15 (Loans), 23 (Apples), 33 (GPAs)

- Chapter 19: Confidence intervals for proportions: Finding and interpreting 1-proportion  $z$ -intervals with standard levels of confidence. Standard error, margin of error, and critical values. Identifying incorrect statements about confidence intervals.

Practice problems: 5 (Conclusions), 7 (Confidence intervals), 9 (Cars), 11 (Contaminated chicken), 23 (Rickets), 27 (Deer ticks)

- Chapter 20: Hypothesis tests: Performing and interpreting 1-proportion  $z$ -tests, and making precise conclusions based on these tests. Interpreting the  $P$ -value coming from a hypothesis test. Null and alternative hypotheses.

Practice problems: Chapter 20: 1 (Hypotheses), 3 (Negatives), 5 (Relief), 9 (Cell phones), 11 (Dowsing), 23 (WebZine), 29 (Lost luggage)