



Unit 5: Sampling Distributions

Subject Area: Mathematics	Course: AP Statistics		
Unit Title: Sampling Distributions	Grade(s): 12	Start: December	End: January
Unit Summary: In this unit, students apply probabilistic reasoning to sampling, introducing students to distributions of statistics they will use to perform inferential statistics in later units. Students learn that sample statistics can be used to estimate population parameters and that measures of center (mean) and variability (standard deviation) for these sampling distributions can be determined directly from the parameters when certain sampling criteria are met. When samples are large enough, these sampling distributions can be approximated by a normal distribution.			

Stage 1: Desired Results

Massachusetts Learning Standards

Making Inferences and Justifying Conclusions

- A. Understand and evaluate random processes underlying statistical experiments. Use calculators, spreadsheets, and other technology as appropriate.
- B. Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

Conditional Probability and the Rules of Probability

- A. Understand independence and conditional probability and use them to interpret data from simulations or experiments.
- B. Use the rules of probability to compute probabilities of compound events in a uniform probability model.

Using Probability to Make Decisions

- A. Calculate expected values and use them to solve problems.



Unit 5: Sampling Distributions

B. Use probability to evaluate outcomes of decisions.

Transfer (Authentic, relevant application of learning to new situations)

Students will be able to independently use their learning to...

Critically evaluate a claim made about an opinion poll made before an election using knowledge of sampling variability.

Meaning

Enduring Understandings

Students will understand that...

- Given that variation may be random or not, conclusions are uncertain
- The normal distribution may be used to model variation
- Probabilistic reasoning allows us to anticipate patterns in data

Essential Questions

Students will consider...

- By how much could I expect a survey result to vary if I took many surveys
- What is the probability of getting a given sample result if I know the population parameter
- When does a sampling distribution become close enough to a normal distribution?

Acquisition

Knowledge

Students will know...

- Statistic
- Parameter
- Sampling distributions
- Central Limit Theorem
- Large Counts Condition
- Inference
- Biased and unbiased estimators

Skills

Students will be skilled at...

- Describing probability distributions
- Interpreting statistical calculations and findings to assign meaning or assess a claim
- Determining when a sampling distribution is close enough to a normal distribution to begin using our knowledge of bell curves



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