Understand independence and conditional probability and use them to interpret data (Standards S.CP.1, 4–5).
Standard II.S.CP.1: Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
Concepts and Skills to Master
- Use correct set notation, with appropriate symbols and words, to identify sets and subsets within a sample space.   - Identify an event as a subset of a set of outcomes (a sample space).   - Draw Venn diagrams and two-way tables that show relationships (unions, intersections, or complements) between sets within a sample space.

Related Standards: Current Course	Related Standards: Future Courses
II.S.ID.5, II.S.CP.4, II.S.CP.5, II.S.CP.6, (IIH.S.CP.2, IIH.S.CP.3)	III.S.IC.6, AP Statistics

Support for Teachers

Critical Background Knowledge
- Represent sample spaces (7.SP.8)   - Construct and interpret frequencies and relative frequencies in a two-way table (8.SP.4)
Academic Vocabulary
sample space, subset, outcome, union, intersection, complement, $\cup$, $\cap$; A^c, A', $-A$, $\overline{A}$ (Note: Various notations are commonly used for complement.)
Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5620#71517

Understand independence and conditional probability and use them to interpret data (Standards S.CP.1, 4–5).
Standard II.S.CP.4: Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
Concepts and Skills to Master
• Construct and interpret two-way frequency tables, identifying the associations between categories. • Recognize that the conditional probability, $P(A\mid B)$ represents the joint probability for *A and B* divided by the marginal probability of *B.* This association can be obtained from the two-way table. • Given a two-way table, decide if events are independent based on conditional probability (if *A* and *B* are independent, then $P(A) = P(A\mid B)$)

Related Standards: Current Course	Related Standards: Future Courses
II.S.ID.5, II.S.CP.5, II.S.CP.6, (IIH.S.CP.2, IIH.S.CP.3)	III.S.IC.6, AP Statistics

Support for Teachers

Critical Background Knowledge
• Construct and interpret frequencies and relative frequencies in a two-way table (8.SP.4) • Find probabilities of compound events from two way tables (7.SP.8) • Calculate relative frequency (7.SP.6)
Academic Vocabulary
conditional, independence, joint probability ($P(A \cap B)$), conditional probability ($P(A\mid B)$), marginal probability ($P(A)\ or\ P(B)$)
Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5620#71517

Understand independence and conditional probability and use them to interpret data (Standards S.CP.1, 4–5).

Standard S.CP.5: Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. (For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.)

Concepts and Skills to Master
• Interpret conditional probabilities and independence and explain in context.

Related Standards: Current Course	Related Standards: Future Courses
II.S.CP.1, II.S.CP.4, II.S.CP.6, (IIH.S.CP.2, IIH.S.CP.3)	III.S.IC.6, AP Statistics

Support for Teachers

Critical Background Knowledge
• Summarize categorical data in a variety of ways. (II.S.ID.5)
• Find probabilities of events (7.SP.7)
• Understand and calculate conditional probabilities (II.S.CP.4)
• Understand independence. (II.S.CP.4)

Academic Vocabulary
conditional probability, independence

Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5620#71517

Use the rules of probability to compute probabilities of compound events in a uniform probability model (Standard S.CP.6).
Standard II.S.CP.6: Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A*, and interpret the answer in terms of the model.
Concepts and Skills to Master
• Find and interpret conditional probabilities using different representations (such as a two-way table, Venn diagram, or tree diagram) and explain in context.

Related Standards: Current Course	Related Standards: Future Courses
II.S.CP.1, II.S.CP.4, II.S.CP.6, (IIH.S.CP.2, IIH.S.CP.3)	III.S.IC.6, AP Statistics

Support for Teachers

Critical Background Knowledge
• Summarize categorical data in two-way frequency tables. (II.S.ID.5)
• Understand and calculate conditional probabilities (II.S.CP.4)
• Find probabilities of events (7.SP.7)
• Design and use a simulation to generate frequencies for compound events (7.SP.8)
Academic Vocabulary
random variable, probability model
Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5620#71517