Elementary Statistics: Picturing the World, 3rd Edition © 2006, (Larson/Farber)
Correlated to:
Arkansas Mathematics Curriculum, Statistics and Probability
(Grades 9-12)

ARKANSAS MATHEMATICS CURRICULUM, STATISTICS AND PROBABILITY	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
DESCRIPTIVE STATISTICS	
Content Standard 1. Students will create, compare, and evaluate data displays using such methods as histograms, cumulative distribution functions, and scatter plots. For these data, they calculate measures of central tendency (various kinds of means, the median, and the mode) and their derivatives (range, variance, and standard deviation).	
DS.1.S.1 Create, compare, and evaluate different graphic displays of the same data, using histograms, frequency polygons, cumulative distribution functions, pie charts, scatter plots, stem-and-leaf plots, and box-and-whisker plots and draw these by hand or use a computer spread sheet program (Ex: Gather data to answer the question: Which area of the country has the highest school dropout rate? Display your dropout data in various forms.)	SE/AIE: 38-42, 49-55, 92-97
DS.1.S.2 Compute and use mean, mode, weighted mean, geometric mean, harmonic mean, range, quartiles, variance, and standard deviation (Ex: Use spreadsheet formulas to compute measures that summarize your dropout data by state.)	SE/AIE: 50-65, 74-83, 93-98, 104, 176-177, 192, 198-201, 204
DATA COLLECTION	
Content Standard 2. Students will describe the method of data collection in a census, sample survey, experiment, and observational study, and identify an appropriate method of solution for a given familiar or unfamiliar contextual problem. Students will plan and conduct a survey. The plan will address sampling techniques (simple random and stratified) and methods to reduce bias.	
DC.2.S.1 Compare and contrast controlled experiments and observational studies and the conclusions one can draw from each	SE/AIE: 15-20, 495-496, 511-512
DC.2.S.2 Compare and contrast population and sample, and parameter and statistic	SE/AIE: 2-5, 15-20, 112-115
DC.2.S.3 Identify biased sampling methods	SE/AIE: 16-20, 21, 23, 319, 389, 445
DC.2.S.4 Describe simple random sampling	SE/AIE: 17-19

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DC.2.S.5 Select a data collection method appropriate for a given context	SE/AIE: 15-20, 49-51
DC.2.S.6 Investigate and describe sampling techniques, such as simple random sampling, stratified sampling, and cluster sampling	SE/AIE: 15-20, 425
DC.2.S.7 Determine which sampling technique is best, given a particular context	SE/AIE: 15-20, 425
DC.2.S.8 Plan and conduct a survey to answer a question or address an issue, identify possible sources of bias, and describe ways to reduce bias	SE/AIE: 16-20, 23, 105, 319, 389, 445, 499, 555, 607

DATA COLLECTION

Content Standard 3.
Students will construct and interpret display of data to solve problems.

DC.3.S.1 Analyze categorical data	SE/AIE: 3-5, 8-11, 52, 62
DC.3.S.2 Use and compare methods of data collection	SE/AIE: 15-20
DC.3.S.3 Apply statistical principles and methods in sample surveys; identify difficulties	SE/AIE: 16-20, 21, 23, 319, 389, 445
DC.3.S.4 Apply concepts of probability to solve familiar and unfamiliar contextual problems	SE/AIE: 116-124, 130-133, 140-144, 176
DC.3.S.5 Use simulations to develop an understanding of the Central Limit Theorem and its importance in confidence intervals and tests of significance	SE/AIE: 240-244, 246-254
DC.3.S.6 Recognize, construct and interpret results using confidence intervals in the context of a problem	SE/AIE: 279-285, 286-288, 294-299, 303-307, 312-315, 414, 423-424, 436, 444, 488-489

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DATA ANALYSIS	
Content Standard 4. Students will collect and analyze data to solve problems	
DA.4.S.1 Summarize distributions of univariate data by determining and interpreting measures of center, spread, position, boxplot, and effects of changing units on summary measures.	SE/AIE: 60-66, 74-83, 91 -99
DA.4.S.2 Analyze distribution of continuous univariate data (both normal and non-normal)	SE/AIE: 188-191, 206-209, 214-223, 228, 229-231, 237-241, 246-254, 259-264
DA.4.S.3 Construct and interpret graphical display of data	SE/AIE: 31-42, 49-55, 92-97, 216-223
DA.4.S.4 Compare distributions among sets of data.	SE/AIE: 67, 79, 198-201, 510-520
DATA ANALYSIS	
Content Standard 5. Students will use statistical models to describe and analyze sets of data.	
DA.5.S.1 Investigate and solve relevant problems, using technology to collect, organize, display, and analyze data in tabular, graphical, and symbolic forms	SE/AIE: 16-20, 28, 30, 42, 51, 78, 94, 112, 113-115, 168, 188, 212, 213, 231, 276, 277, 284, 326-329, 352, 369, 398-401, 408, 452, 453-455, 460, 463, 466, 495, 506, 507, 562, 563, 614, 615
DA.5.S.2 Use linear and nonlinear models to formulate predictions from data	SE/AIE: 458-461, 474-477, 482-489, 494-496
DA.5.S.3 Recognize the limitations of mathematical models based on sample data as representations of real world situations	SE: 16-20, 23, 105, 161, 205, 269, 319, 389, 445, 499, 555, 607
DA.5.S.4 Identify possible correlations between variables in a data set	SE/AIE: 458-468, 463-465
DA.5.S.5 Develop, use, and explain application and limitations of linear models and line of best fit (linear regression) in a variety of contexts	SE/AIE: 458-468, 467

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DA.5.S.6	Use data from samples to make inferences about a population and determine whether claims are reasonable or unreasonable	SE/AIE: 5, 216, 253, 280-319, 332-389, 404-453, 461, 484-485, 510-563, 566-608
DA.5.S.7	Determine and use measures of central tendency and dispersion to describe and compare sets of data	SE/AIE: 60-66, 74-83 AIE: 92-97
DA.5.S.8	Design, conduct, interpret, and justify the results of a probability experiment, sample, or statistical simulation	SE/AIE: 15-20, 30, 118, 122, 161, 168, 173, 184, 196, 246, 510
PROBABILITY		
Content Standard 6. Students will compute and distinguish between permutations and combinations and use technology for application.		
P.6.S.1	Understand the counting principle, permutations and combinations and use them to solve problems	SE/AIE: 150-160
P.6.S.2	Compare and contrast permutations and combinations	SE/AIE: 151-156
P.6.S.3	Calculate the number of permutations of n objects taken r at a time	SE/AIE: 15I-154
P.6.S.4	Calculate the number of combinations of n objects taken r at a time	SE/AIE: 151-156
P.6.S.5	Calculate relative frequency and expected frequency	SE/AIE: 38-40, 176, 192, 204, 230, 511, 521-523
P.6.S.6	Find conditional probabilities for dependent, independent, and mutually exclusive events	SE/AIE: 120-124, 130-133, 140-144
PROBABILITY		
Content Standard 7. Students will identify random variables as independent or dependent and find mean and standard deviations for sums and differences of independent random variables.		
P.7.S.1	Compare and contrast independent and dependent random variables	SE/AIE: 130-132, 172-174, 176-178, 521-526

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P.7.S.2	Find the standard deviation for sums and differences of independent random variables	SE/AIE: 74-79, 172-177, 192, 204
PROBABILITY		
Content Standard 8. Students will find probabilities, including conditional probabilities for events that are either dependent or independent, by applying the law of large numbers, the addition rule, and the multiplication rule.		
P.8.S.1	Understand and use the addition rule to calculate probabilities for mutually exclusive and other events	SE: 140-144
P.8.S.2	Understand and use the multiplication rule to calculate probabilities for independent and dependent events	SE: 130-133
P.8.S.3	Develop the binomial distribution within a real world context	SE: 184-192, 259-264
P.8.S.4	Calculate the mean and standard deviation for a binomial variable	SE: 184-192, 251-253, 259-264
P.8.S.5	Use the binomial distribution to calculate probabilities associated with experiments for which there are only two possible outcomes	SE: 184-192
PROBABILITY		
Content Standard 9. Students will develop, interpret, and apply the binomial probability distribution for discrete random variable, including computing the mean and standard deviation for the binomial variable.		
P.9.S.1	Design and conduct an experiment that simulates a binomial distribution.	SE: 184-192
P.9.S.2	Design and conduct an experiment that simulates a geometric distribution.	SE: 198-201
P.9.S.3	Simulate probability distributions, including binomial and geometric.	SE: 184-192, 198-201

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STATISTICAL INFERENCE		
Content Standard 10. Students will use probability distributions to make statistical inferences.		
SI.10.S.1	Explore the characteristics and applications of the normal distribution and standardized scores	SE: 215-270
SI.10.S.2	Explore a variety of statistical tests such as chi-squares and t-tests and understand the meaning of hypothesis testing	SE: 295-297, 364-369, 380-384, 391, 425-430, 466, 510-515, 521-526, 533-538, 542-548
SI.10.S.3	Use relative frequency and expected values to represent and solve problems involving uncertainty	SE: 34-39, 168, 176, 178, 192 , 204, 230, 511, 522
STATISTICAL INFERENCE		
Content Standard 11. Students will use confidence intervals and hypothesis tests, fit curves to data, and calculate correlation coefficients.		
SI.11.S.1	Compute and use confidence intervals to make an estimate	SE: 280-318
SI.11.S.2	Understand hypothesis tests of means and differences between means and use them to reach a conclusion	SE: 332-390, 404-446
SI.11.S.3	Use the principle of least squares to find the curve of best fit for a set of data	SE: 457-461, 473, 494
SI.11.S.4	Calculate and interpret the correlation coefficient of a set of data	SE: 457-473

REFERENCE: http://arkedu.state.ar.us/curriculum/word_files/statistics.doc