

# Probability and Statistics

## Grades Eight Through Twelve - Mathematics Content Standards

**This discipline is an introduction to the study of probability, interpretation of data, and fundamental statistical problem solving. Mastery of this academic content will provide students with a solid foundation in probability and facility in processing statistical information.**

**1.0** Students know the definition of the notion of independent events and can use the rules for addition, multiplication, and complementation to solve for probabilities of particular events in finite sample spaces.

**2.0** Students know the definition of conditional probability and use it to solve for probabilities in finite sample spaces.

**3.0** Students demonstrate an understanding of the notion of discrete random variables by using them to solve for the probabilities of outcomes, such as the probability of the occurrence of five heads in 14 coin tosses.

**4.0** Students are familiar with the standard distributions (normal, binomial, and exponential) and can use them to solve for events in problems in which the distribution belongs to those families.

**5.0** Students determine the mean and the standard deviation of a normally distributed random variable.

**6.0** Students know the definitions of the mean, median, and mode of a distribution of data and can compute each in particular situations.

**7.0** Students compute the variance and the standard deviation of a distribution of data.

**8.0** Students organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem-and-leaf displays, scatterplots, and box-and-whisker plots.