

About This Book

The Data Analysis and Probability Standard for grades 3–5 in *Principles and Standards for School Mathematics* (National Council of Teachers of Mathematics [NCTM] 2000) emphasizes investigations involving data. These investigations should give students opportunities to depict the shape of data sets and use statistical characteristics of the data, such as the range and measures of center, to describe similarities and differences among related sets. In addition, the formulation of conclusions and arguments based on the data should be included in the investigations. The use of appropriate language and symbols should accompany the development of data analysis and simple probability ideas.

The introduction to the volume gives an overview of the development of ideas in data analysis and probability from prekindergarten through grade 12. Each of the four chapters that follow the introduction focuses on a different element of the Data Analysis and Probability Standard. The activities and investigations require students to collect, examine, analyze, and make conclusions about sets of data. Probability activities emphasize the collection of data to develop the idea of probability as a measure of the likelihood of events that are meaningful and real to the students.

In chapter 1, “From Questions to Method: Beginning the Process,” the topics include—

- formulating questions that can be addressed with data;
- collecting data using observations, surveys, and experiments; and
- representing data using tables and graphs such as line plots and bar graphs.

Topics in Chapter 2, “Using Data Analysis Methods,” include—

- analyzing, summarizing, and describing data sets according to their distributions;
- describing data sets using measures of center; and
- comparing different representations of the same data set.

In chapter 3, “Inferences and Predictions,” the topics include—

- making and justifying conclusions and predictions that are based on data.

Topics in Chapter 4, “What Are the Chances?” include—

- exploring the degree of the likelihood of occurrence of certain events; and
- predicting the probability of outcomes of simple experiments and testing the predictions.

Each chapter begins with a discussion of the basic ideas addressed in the topic, followed by student activities and investigations that introduce, and promote familiarity with, the ideas. For each activity, the recommended grade level is identified, and the goals to be achieved, the prerequisite skills and knowledge, and the materials necessary for conducting the activity are presented. Blackline masters, which are

Key to Icons



Principles and Standards



CD-ROM



Blackline Master

Three different icons appear in the book, as shown in the key.

One alerts readers to material quoted from *Principles and Standards for School Mathematics*, another points them to supplementary materials on the CD-ROM that accompanies the book, and a third signals the blackline masters and indicates their locations in the appendix.

signaled by an icon and identified in the materials list, are included and can be found in the appendix. They can also be printed from the CD-ROM that accompanies the book. The CD, also signaled by an icon, contains applets for students to manipulate and resources for professional development.

All the activities have the same format. Each consists of three sections: “Engage,” “Explore,” and “Extend.” The “Engage” section presents tasks designed to address students’ interests. “Explore” presents the core investigation that all students should be able to do. “Extend” suggests additional activities intended to expand the ideas that students gained in the core section. Margin notes include teaching tips, anticipated student responses to some of the questions or investigations, references to some of the resources included on the CD-ROM, and quotations from *Principles and Standards for School Mathematics* (NCTM 2000). The assessment section suggests strategies for evaluating students, offers insights about students’ performance, and suggests ways to modify the activities for students who are experiencing difficulty or who need enrichment.

As with the other Navigations books, the activities presented are not intended to be a complete curriculum for data analysis and probability in this grade band. Rather, this book presents a collection of activities and investigations that should be used in conjunction with other instructional materials.