4 Dealing with Uncertainty— An Introduction to Probability

**Data-Driven
Problem Solving**

Posing and refining questions

Collecting data and finding information

Making sense of the data

Making the case

Evaluating the conclusions
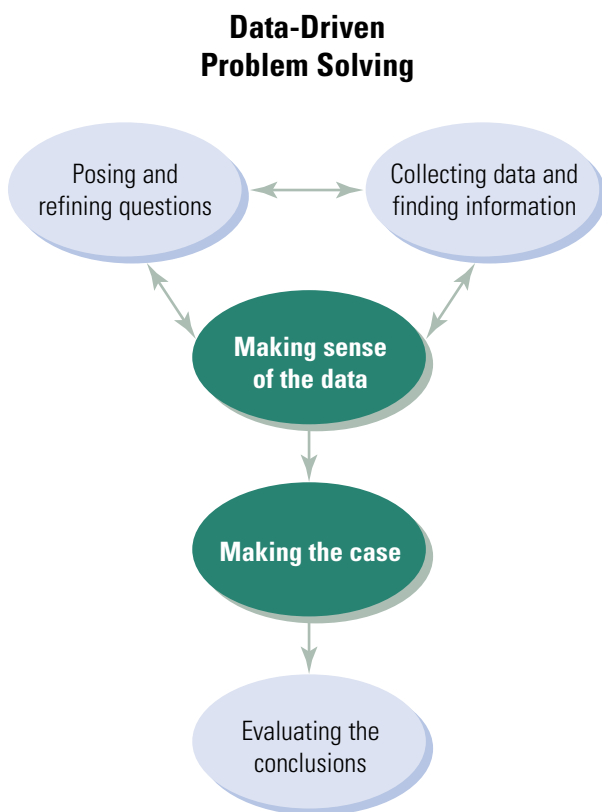
Throughout history, people have been interested in forecasting future events and making predictions. Mathematicians are no exception. One of the major branches of modern mathematics is the "mathematics of chance," commonly referred to as probability.

Our everyday lives are influenced by applications of probability. Meteorologists use probability to predict the weather for the days ahead. Governments and businesses use probability to plan budgets. Insurance companies calculate premiums using tables based on probabilities. Scientists and statisticians use probability to assess the validity of their research.

This chapter will lay the foundation for you to use probability as a means of assessing the validity of your research.

In this chapter, you will

- determine and interpret the experimental probability of an event

- design and carry out simulations

- determine and interpret the theoretical probability of a simple event

- determine and interpret the theoretical probability of a combination of events

- solve counting and probability problems when order matters

- solve counting and probability problems when order doesn't matter