

## Interdisciplinary Application

For use with pages 465–471

### Map Making

**GEOGRAPHY** Cartography is the study of map making. We have knowledge of map making dating back to the early Babylonians. These maps were little more than rough descriptions and relative positions of landmarks familiar to the cartographer. Map making did not start to take a modern form until the Greeks. Aristotle was one of the ancient scholars who argued through observation and logic that Earth is a sphere, and Dicaearchus, a disciple of Aristotle, first used lines of reference which were precursors to longitude and latitude lines. The Greeks drew on information gathered by Phoenecian sailors and others to make more accurate maps based on relative position and proportional distances. During the age of Discovery and Exploration in the 15th century, Europeans used their new technology in ship building, compass making and other navigation innovations to create more comprehensive and accurate global maps. Modern maps are accurate reproductions of the true shape and size of the world. Advanced surveying techniques and aerial observations allow us to make more precise maps. These maps are proportional reproductions of this new data we are able to gather.

**In Exercises 1–5, use the area of each of four Mid-Atlantic states given below.**

North Carolina: 53,821 mi<sup>2</sup>, or 139,391 km<sup>2</sup>

South Carolina: 31,055 mi<sup>2</sup>, or 80,432 km<sup>2</sup>

Maryland: 9837 mi<sup>2</sup>, or 25,476.85 km<sup>2</sup>

Virginia: 40,817 mi<sup>2</sup>, or 105,716 km<sup>2</sup>

1. If you were going to cut an image of Virginia out of a piece of cardboard, how many square inches would you need if the scale was 1 square inch for every 100 square miles (1:100)?
2. How large would the cardboard have to be in order to cut out all of the Mid-Atlantic states?
3. If 20% of a square piece of cardboard were wasted because the shapes of the states do not fit precisely, how large (in square inches) would the cardboard square have to be in order to cut out all of the Mid-Atlantic states? (*Hint:* Total area of states = 80% of total area of cardboard square.)
4. What are the dimensions of the cardboard square in Exercise 3? Round your answer to the nearest tenth of an inch.
5. Set up a proportion and find the scale needed to fit the shapes onto a square piece of cardboard that is 15 inches by 15 inches. Use the same 20% figure for waste and round to the nearest tenth.