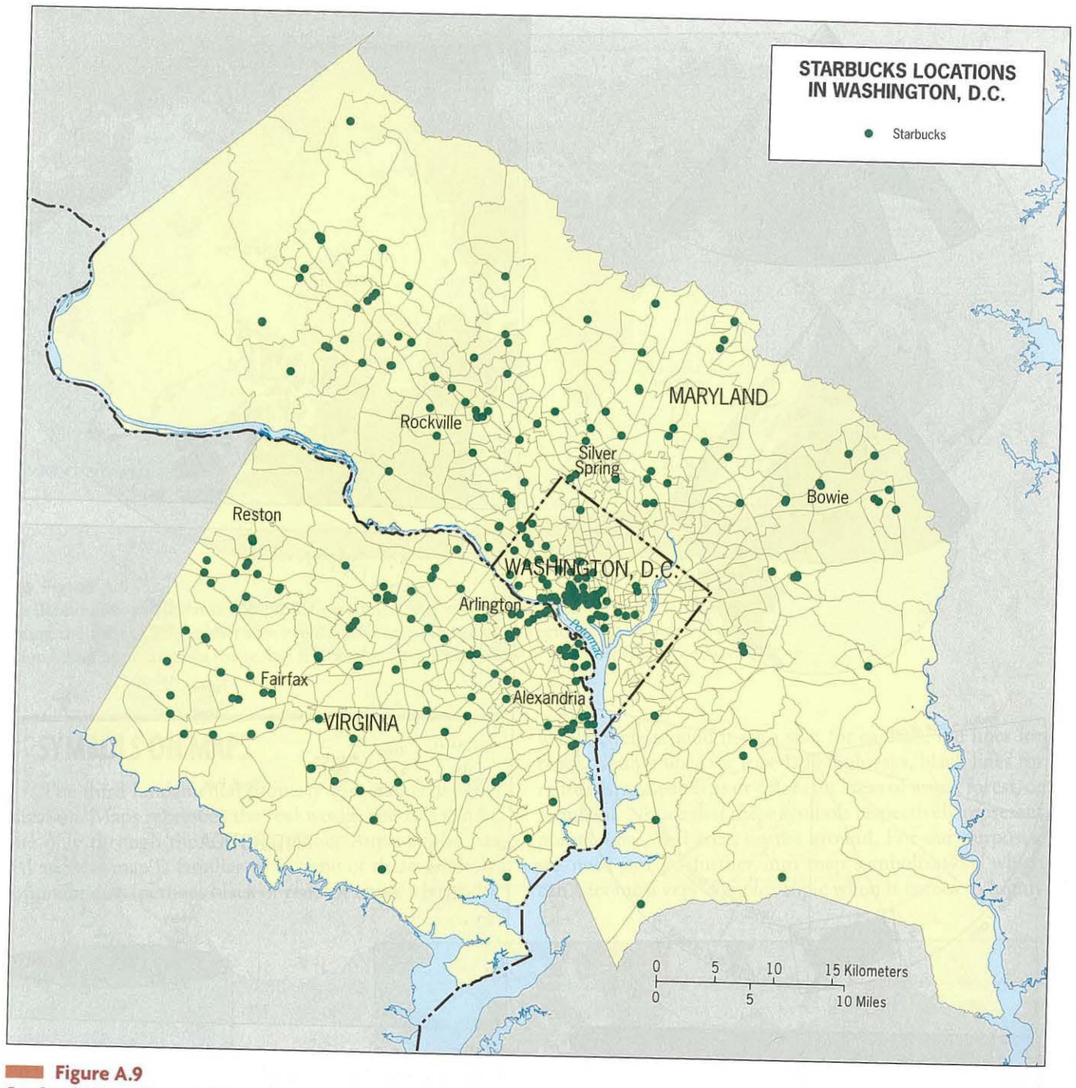

Figure A.9
Starbucks Locations in Washington, D.C. This map uses **dot symbols** to indicate the locations of Starbucks stores in the Washington, D.C. area. Data from: Map Muse, Inc, 2011.

A July 2005 story in the *Washington Post* reported a correlation between income and Starbucks locations in the city. Starbucks are clustered around federal and corporate buildings downtown and in northwest neighborhoods, where incomes are higher (see Fig. 1.17). Lower income neighborhoods in southeast D.C. have few Starbucks retail outlets.

Line symbols include not only roads and railroads, but also political and administrative boundaries, rivers, and other linear features. Again scale plays a crucial role: on a large-scale map, it is possible to represent the fenced boundaries of a single farm, but on a small-scale map, such detail cannot be shown.

Some lines on maps do not actually exist on the ground. When physical geographers do their field work they use contour maps, lines that represent a certain consistent height above mean sea level (Fig. A.10). All points

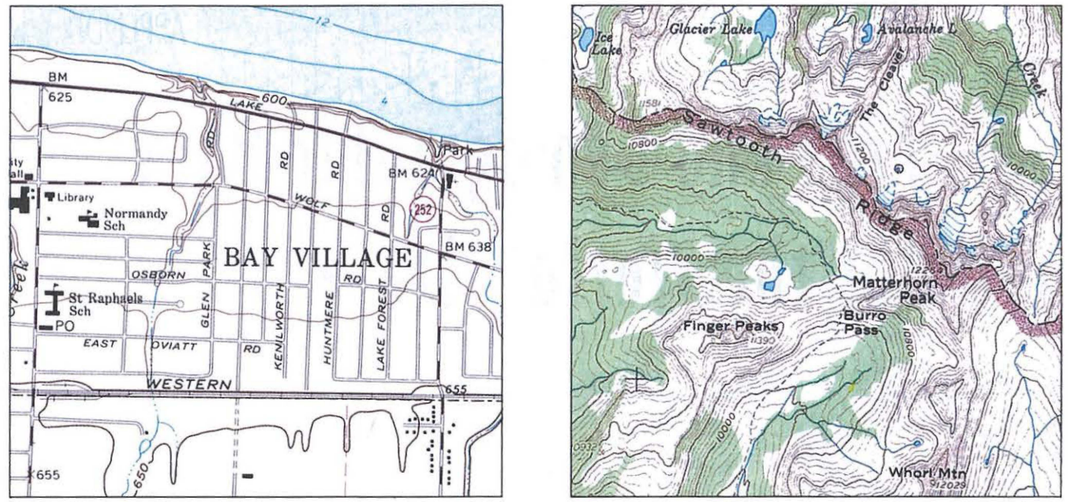

Figure A.10
Contour lines reflecting low relief (left) and high relief (right). The map at left is part of the U.S.G.S. North Olmstead Quadrangle, Ohio; the map at right is part of the U.S.G.S. Matterhorn Peak Quadrangle, California.

on such a contour line thus are at the same elevation. The spacing between contour lines immediately reveals the nature of the local topography (the natural land surface). When the contour lines at a given interval (e.g., 100 feet) are spaced closely together, the slope of the ground is steep. When they are widely separated, the land surface slopes gently. Of course contour lines cannot be found in the real world, and neither can the lines drawn on the weather maps in our daily newspaper. These lines connect points of equal pressure (isobars) and temperature (isotherms) and show the development of weather systems. Note that the letters *iso* (meaning "the same") appear in these terms. Invisible lines of this kind are collectively known as isolines, lines of equal or constant value. These are abstract constructions, but they can be of great value in geographic research and representation.

Area symbols take many forms, and we will see some of them on the maps in this book. Area symbols are used in various ways to represent distributions and magnitudes. Maps showing distributions (of such phenomena as regionally dominant languages or religions in human geography, and climates or soils in physical geography) show the world, or parts of it, divided into areas shaded or colored in contrasting hues. But be careful: those sharp dividing lines are likely to be transition zones in the real world, and a dominant language or religion does not imply the exclusion of all others. So distribution maps, and there are many in this book, tend to be small-scale generalizations of much more complex patterns than they can reveal. Maps showing magnitudes also must be read with care. Here the objective is to reveal how much of a phenomenon prevails in one unit (e.g., country) on the map, compared to others. The maps on population in chapter 2 are examples of such maps. The important cartographic decision has to do with color. Darker should mean more, and lighter implies less. That is relatively easily done when the dominant color is the same. But on a multicolored map, the use of reds, greens, and yellows can be confusing, and first impressions may have to be revised upon examination of the key.

Some students who are first drawn to the discipline of geography go on to become professional cartographers, and their work is seen in atlases, newspapers, magazines, books, websites, and many other venues.