



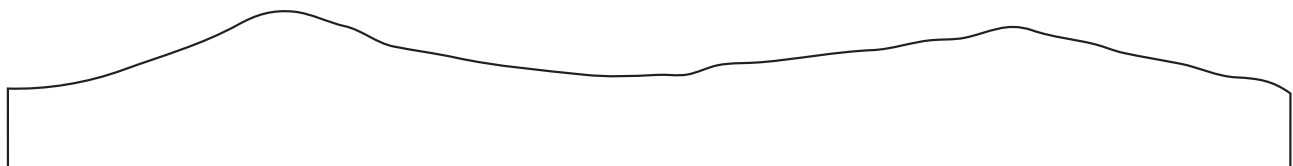
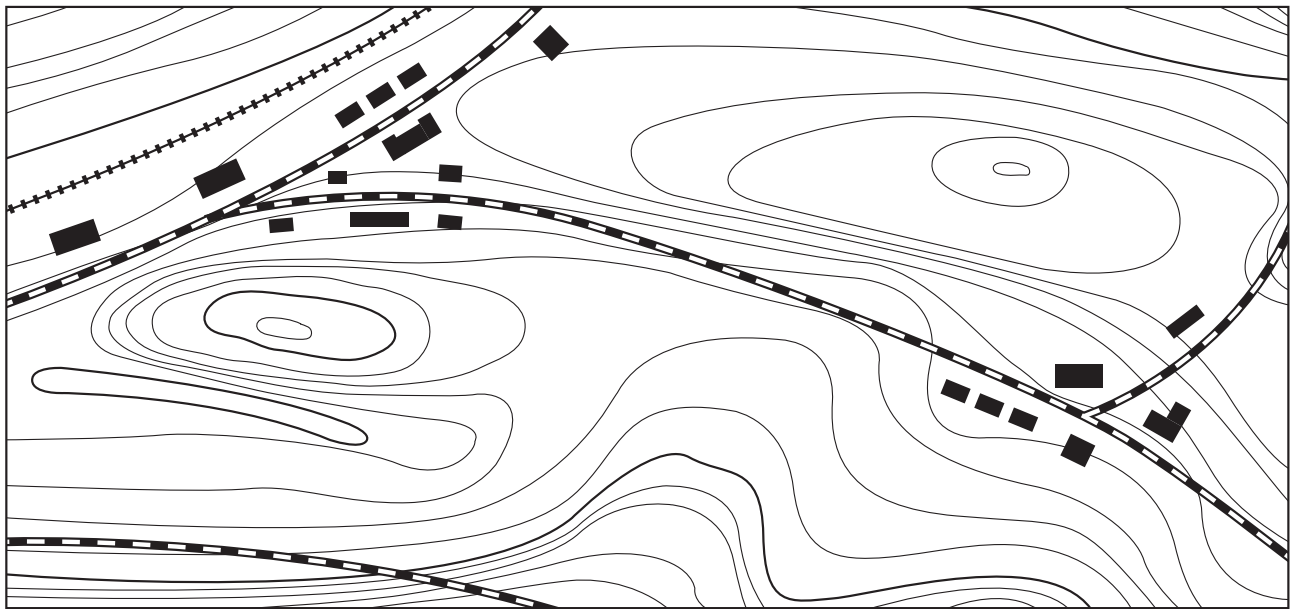
Visualization Chapter 7

Topographic Drawings

Most of us have used maps to find directions to an unfamiliar location, whether by using a GPS device, a website, or a traditional paper map. The ability to make three-dimensional mental pictures of our route from the two-dimensional information given on these maps can help us get where we want to go. Visualization, technology, science, math, and engineering are all needed to create these maps.

Civil engineers often deal with designs, drawings, and detailed maps that show more features than the basic information we need for a road trip. These civil engineering drawings may show both the natural and human-made features of terrain. Some topographic drawings also use orthographic projection to show multiple views of areas of land. The plan view (the view from above) uses contour lines to show changes in elevation, while the projected profile view shows a sectional elevation across a given plane.

Exercise 1 The graphic shows a contour map and a profile view of the elevations. You will be creating a similar map. Think about the route between your home and your school. Without referencing anything except the picture in your mind, sketch the route at an appropriate scale. Are there changes in elevation? Are there any bridges across rivers or ravines? What about buildings? Make sure to include all the details you can picture.





Visualization Chapter 7

Topographic Drawings

The plan view should show as many details as possible of natural and human-made features on the surface. The profile view should show only the changes in elevation. If you do not know the actual elevation, use 0 as the lowest point.

When you are done with your sketch, try to find an actual map of the area and compare your sketch to the map. How accurate was your sketch? What details did you remember correctly? What did you leave out?





Visualization Chapter 7

Topographic Drawings

Exercise 2 Referencing your previous sketch of the route from your home to your school, ask yourself: Is this the most direct route? Is it the most interesting route? What would you change about it if you could? Visualize all of the changes and sketch your idea of an improved route. Would you have to remove buildings? Add new roads and bridges? Flatten hills or fill in valleys? Make sure you include all of the changes in your sketch.

