

the fold and fault symbols point in the direction of dip.

Geologic Maps, Cross Sections, and Block Diagrams

Geologic information is compiled and displayed in three common ways, shown in Figure 14.5: geologic maps, geologic cross sections, and block diagrams.

Geologic maps show the distribution of rock units at or very near the surface of the Earth (Fig. 14.5A). They also portray the structure of the rock units by means of strike and dip symbols. An accompanying legend, or **explanation**, lists and briefly describes the rock units in order of age; major periods of erosion are also listed. Topography may be shown with an overlay

of contour lines. The next chapter focuses on geologic maps.

Geologic cross sections are vertical slices that show how the rocks would appear if they could be viewed on a cliff face (Fig. 14.5B). They are topographic profiles with the area below the surface filled in with representations of rocks. Because such cut-away views do not usually present themselves in nature, they are interpretations based on information obtained on the surface or from wells or geophysical data.

Block diagrams combine maps and cross sections to show the three-dimensional aspects (Fig. 14.5C). The three-dimensional blocks are drawn as two-dimensional perspective drawings, with the map view shown on the top and cross sections on the ends and sides. Most block diagrams have a flat upper surface and do not attempt to

show topography, but some, drawn by clever people, manage to illustrate topography as well as geology.

Folds

A **fold** is a bend in a layer of rock due to ductile (plastic) strain. Upward bends, or upfolds, with older rocks in the center, are called **anticlines**; downward bends, downfolds, with younger rocks in the center, are called **synclines** (Fig. 14.6). The sides or flanks of a fold are the **limbs**. The limbs join at the **hinge line** of the fold, which is the line of maximum curvature (Fig. 14.6). The **axial surface** (or **axial plane** if it's not curved) of a stack of folded layers passes through the hinge lines and most nearly divides the fold into two equal parts (Fig. 14.6). An **upright fold** has a vertical

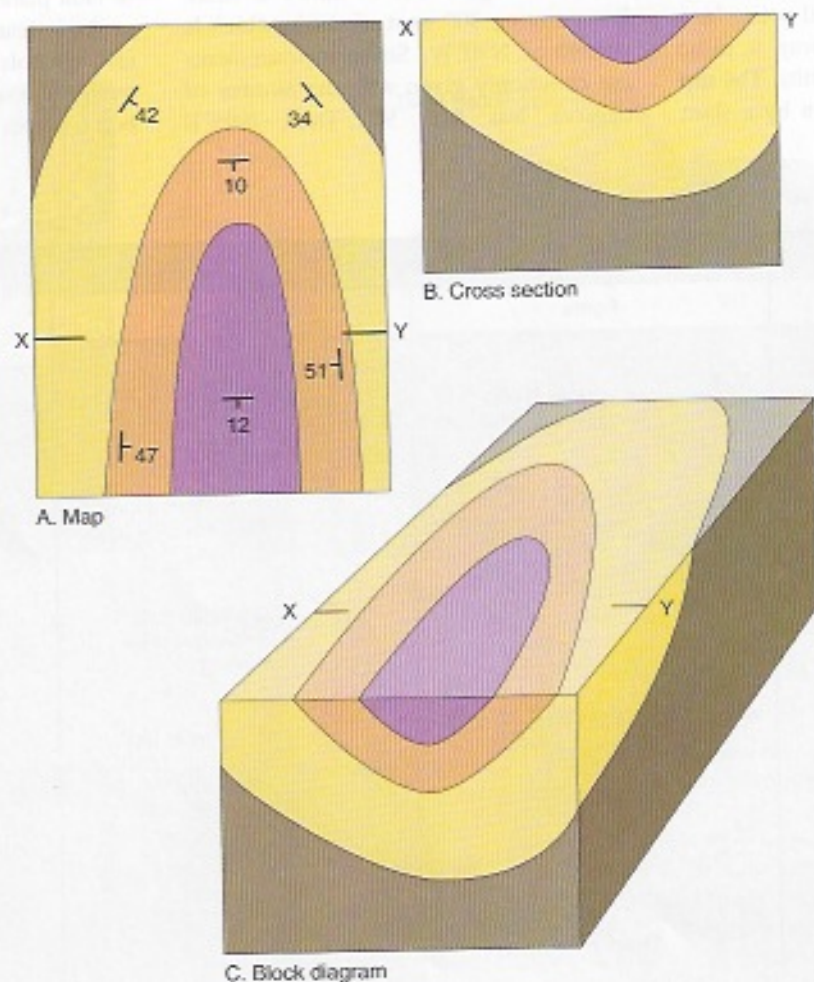


FIGURE 14.5

Three ways in which geologic information is illustrated: A. A geologic map shows rock units and geologic structure as they appear on the surface. You can use your hands to visualize the orientation of the bedding described by the strike and dip symbols. B. A geologic cross section of the map from X to Y is like a vertical slice into the Earth. C. Block diagrams combine map and cross-section views in a three-dimensional perspective drawing.