Anticlines, Synclines, Monoclines, Domes and Basins

**FIGURE 9.11** Geometric characteristics of folds.

(a) An anticline looks like an arch. The beds dip away from the hinge.

(b) A syncline looks like a trough. The beds dip toward the hinge.

(c) A monocline looks like a stair step, and is commonly draped over a fault block.

(d) A plunging anticline has a tilted hinge.

(e) A dome has the shape of an overturned bowl.

(f) A basin has the shape of an upright bowl.
Summary of Types of Faults

Normal, Reverse, Thrust, Strike-Slip, and Oblique

(b) Displacement on a dip-slip fault is parallel to the slope (dip) of the fault.

Strike-slip faults

(c) Displacement on a strike-slip fault moves one block horizontally, with respect to the other. There is no up-and-down motion.

Oblique-slip faults

(d) Displacement on an oblique-slip fault combines dip-slip and strike-slip displacement. One block moves diagonally relative to the other.
Summary

Faults and the Stresses That Cause Them

Dip-slip faulting is caused by tensional or compressive forces that move blocks up or down the dip of the fault plane.

(a) Fault plane

Extension

Normal faulting is caused by tensional forces that stretch a rock and tend to pull it apart.

(b) Reverse faulting is caused by compressive forces that squeeze and shorten a rock.

(c) A thrust fault is a reverse fault with a shallow-dipping fault plane.

Strike-slip faulting is caused by horizontal shearing forces that move blocks left-laterally or right-laterally.

(d) Left-lateral strike-slip fault

(e) Right-lateral strike-slip fault

(f) Oblique-slip faulting is caused by a combination of forces, in this case left-lateral shearing with tension.
Tectonic Forces and Stress Regimes that cause Normal, Reverse (thrust), and Strike-slip Faulting

(a) **Tensional tectonics:** Extension of continental crust produces normal faults with high dip angles in the upper crust that flatten with depth, forming curved fault surfaces.

(b) **Compressive tectonics:** Compression of continental crust occurs on thrust faults with low dip angles.

(c) **Shearing tectonics:** Shearing of continental crust occurs on a nearly vertical strike-slip fault. The case shown here is for a right-lateral fault.