To help you with the exercises in this activity, you can use the valley strike and dip applet. This applet has a crustal block with a valley in the top.

1. Figure 1 shows two maps of rock units crossing a stream valley. Black bands on opposite sides of the maps identify the outcrops of the unit, and the numbers indicate the elevations of the contour lines. Complete the outcrop pattern for a rock body with a vertical dip (A) and a horizontal dip (B).

2. In general, most rock layers will have dips that are between horizontal and vertical. When a valley cuts such beds, the map outcrop pattern will be deflected along the valley. The direction of the deflection is determined by the bed’s dip relative to the slope of the valley. Fig. 2 shows two dipping units across a small stream valley in block diagrams (left) and map views (right). Both types of diagrams should illustrate how contour lines deflect in the valley, but the outcrop pattern in the map view is only shown up to the valley rim. Complete the outcrop pattern, and draw it on each map.
3. Complete the rule of Vs.
   a. If a bed is vertical, contacts will (circle one) point upstream/point downstream/run straight across a valley.

   b. The contacts of horizontal beds will point (circle one) upstream/downstream and (circle one) parallel/cross contour lines.

   c. If a bed dips upstream, its contacts will point (circle one) upstream/downstream and (circle one) parallel/cross contour lines.

   d. Beds that dip downstream will have contacts that point (circle one) upstream/downstream.

4. With the rule of Vs, you can predict the dip of a bed from the way a stream valley deflects its outcrop pattern on a map. Figure 3 shows map views (top) and cross sections through a stream valley (bottom). Determine the dip of the shaded bed from the map and draw the bed as it appears in the valley wall.