1. At the base of a cliff you are standing on top of geological Unit A. The cliff face is formed along a normal fault (nearly vertical). The top of Unit A is also exposed at the top of the cliff face. You walk a distance \( x = 200 \) feet away from the fault scarp. Looking back toward the cliff, you use your Brunton and measure and note that the top of the cliff is \( 23^\circ \) above the horizon. What is the offset along this fault?

2. A group trekking through the Himalayas quickly gets lost having forgotten their top maps. They did bring their radio transmitter though.

How can they help the rescue team determine their location? Assume they have a digital altimeter/barometer and all-purpose Brunton compass.

List known variables:

Continued next page
• Note what variables you can measure directly or calculate.

• Note what the rescue team needs to know in order to find you and provide that information. Assume that the summit of Mt. Everest is located along the bearing N25E from your location.

3. In the example illustrated below, a stream erodes less resistant fault gauge leaving an exposed fault scarp on the distant bank. You are unable to traverse the stream or make your way to the top of the exposure. Using your Brunton compass, you stand on the left edge of the stream and measure the angle (a) formed by the top of the cliff and the horizontal. You walk to the left 175 feet and measure angle (b). Angle a measure 31° and angle b, 19°. How can you determine the cliff height? What is the width of the stream?
4. The three point problem uses elevations measured at three points on a stratigraphic surface to determine the strike and dip of that surface. The elevations and locations of these points can be measured at the surface or, more likely, in the borehole. In the following problem, you have data from three boreholes (located in the map below) indicating subsea depths to the top of the Oriskany Sandstone as shown.