

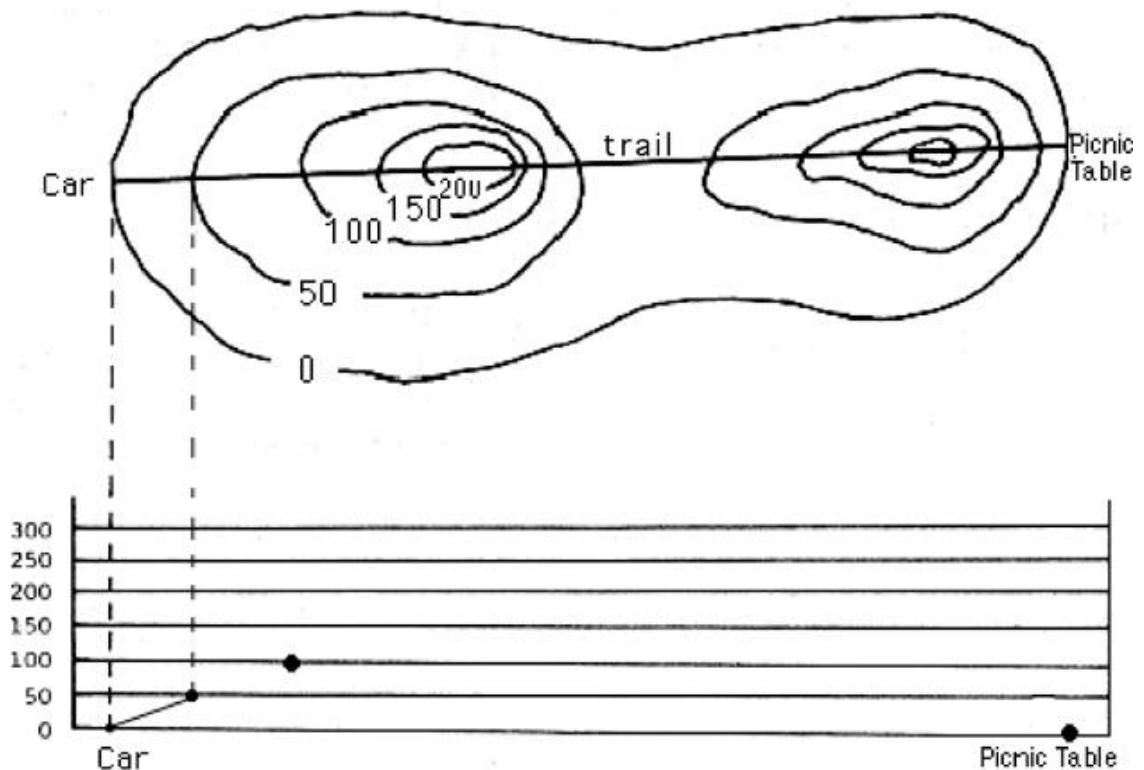
Understanding Topographic Maps with a Pretend Hike

Denise Dorn

McKemy Middle School
Tempe Elementary District #3

Pretend that you are going on a hike from your car to the picnic table. You walk on a trail shown by the line. In order to figure out whether you are going up or down, you make a topographic profile. This allows you to see when you go up hill and when you go down hill. You only know the elevation when the trail crosses the contour line. You know your car is at sea level at the 0-meter contour elevation.

See how the next 'dot' is put right underneath where your hike crosses the 50 meter contour. See how the dot is at the 50 line on the graph. You now know that you will be walking up hill, since the line goes up on the graph. The next point is started for you. Finish the topographic profile. First, you put all the dots where the trail crosses a contour line. Second, you connect the dots.

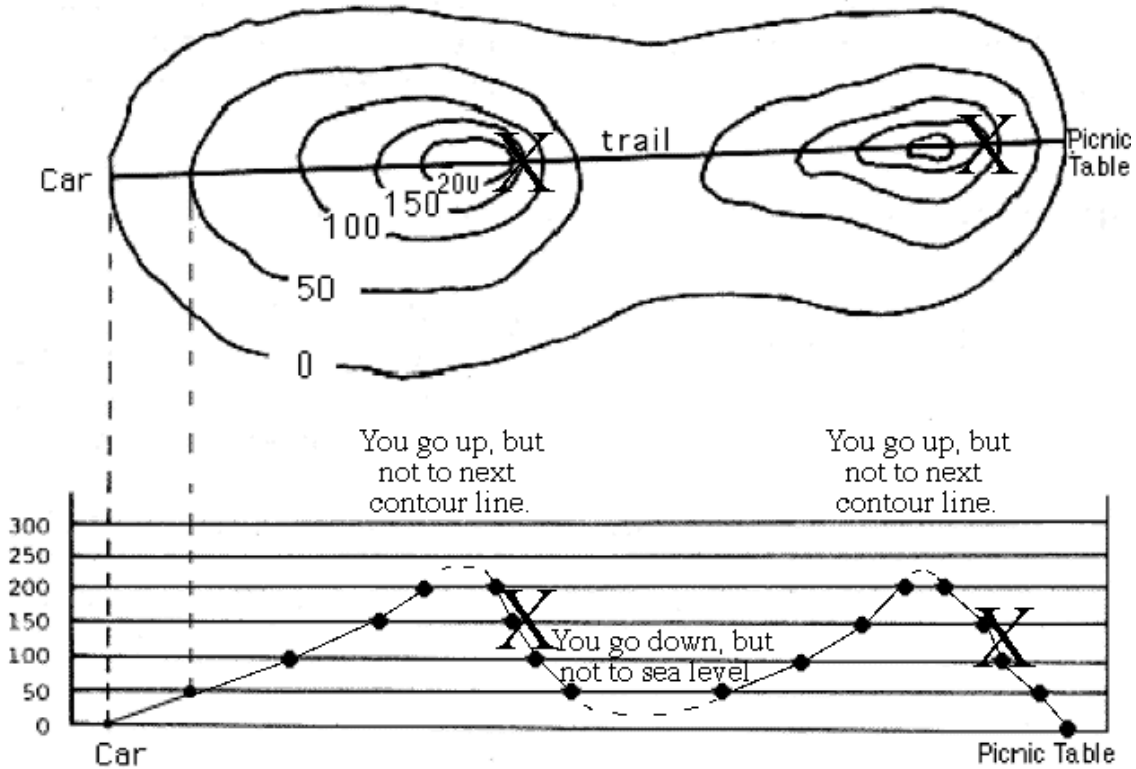


Where is the slope the steepest? Put an X on the map and on the profile where the steepest places are.

Finish these sentences. When contour lines are close together, the slope is _____. When contour lines are far apart, the slope is _____.

Teacher Key

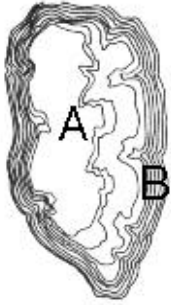
Understanding Topographic Maps with a Pretend Hike



When the contour lines are close together, the slope is **steep**. when the contour lines are far apart, the slope is **flat**.

Which Side is Steeper?

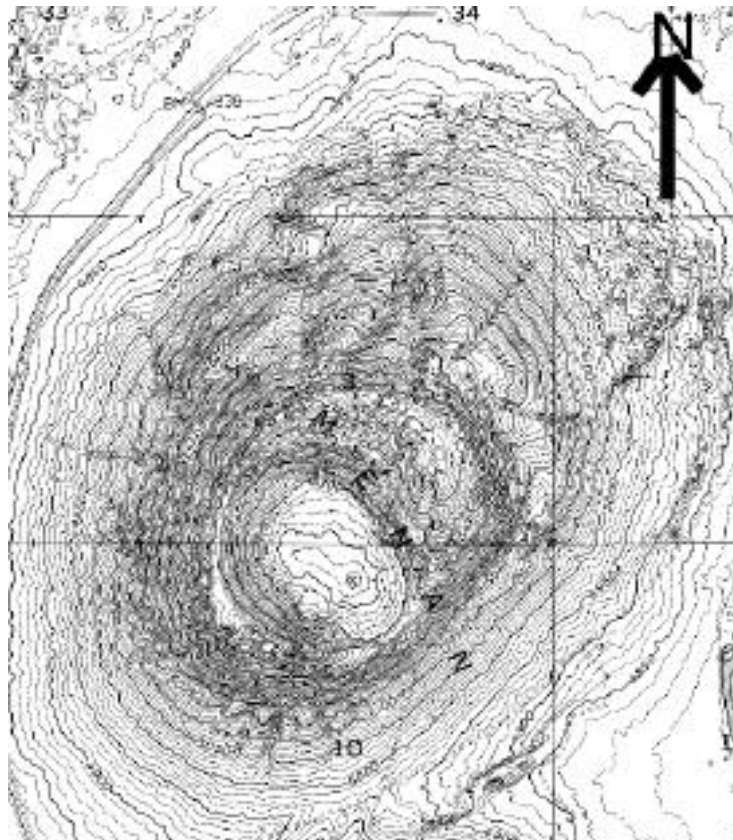
Where do you think it is steeper, A or B? _____



What side of the hill is steeper?

This is a real contour map of a volcano in Idaho. When the volcano erupted, the ash was pushed by a strong wind. The strong wind blew from southwest to northeast.

Use a ruler and draw a line from the southwest corner to the northeast corner of your map. Next, look at the contour lines. Which side of this volcano is steeper, the side on the southwest or the side on the northeast? _____



Teacher Key
Which Side is Steeper?

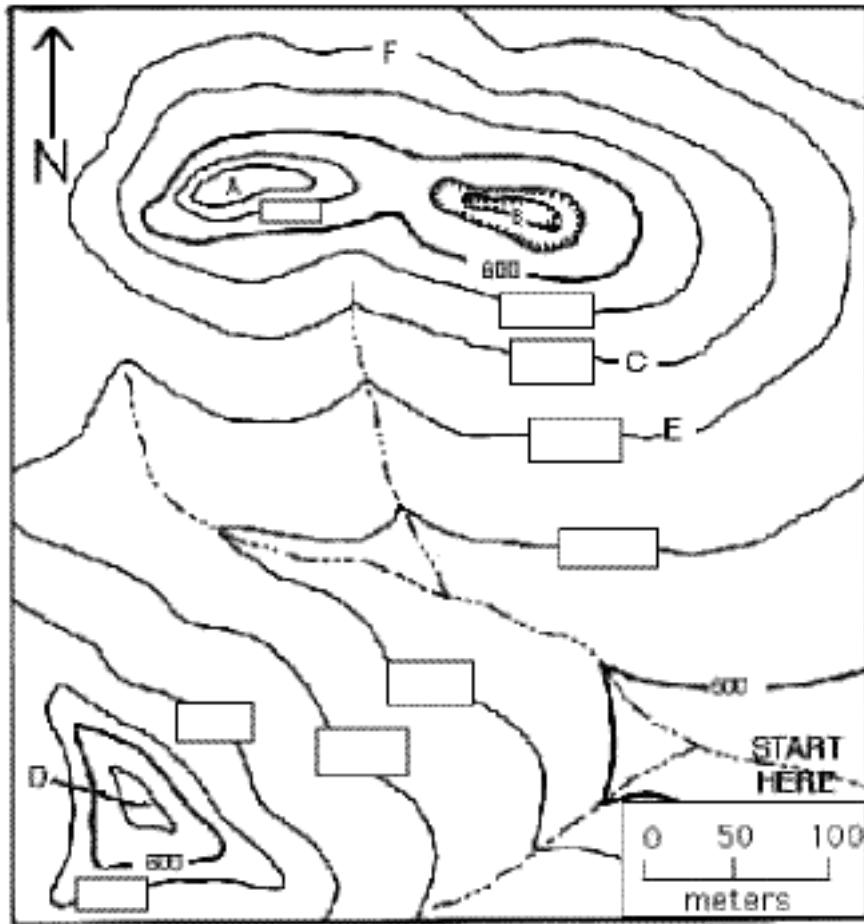
Where do you think it is steeper, A or B? B is steeper, because the contour lines are closer together.

The southwest side of the volcano is steeper.

Pretend Hike

This is a map of a pretend topographic map for a hike. The contour lines are in meters. First, mark the missing elevations for the contour lines. The distance between each contour is _____ meters.

From the “start here” position, pretend you walk to the position marked with the letter “D”. Would you be walking _____ (north, east, south or west)?



When you get to point D, how high are you? _____ meters.”

Then, imagine traveling to the peak on the hill to the north of point D.

As you travel north, you go _____ (up or down) until you cross a stream and then you go _____ (up or down).

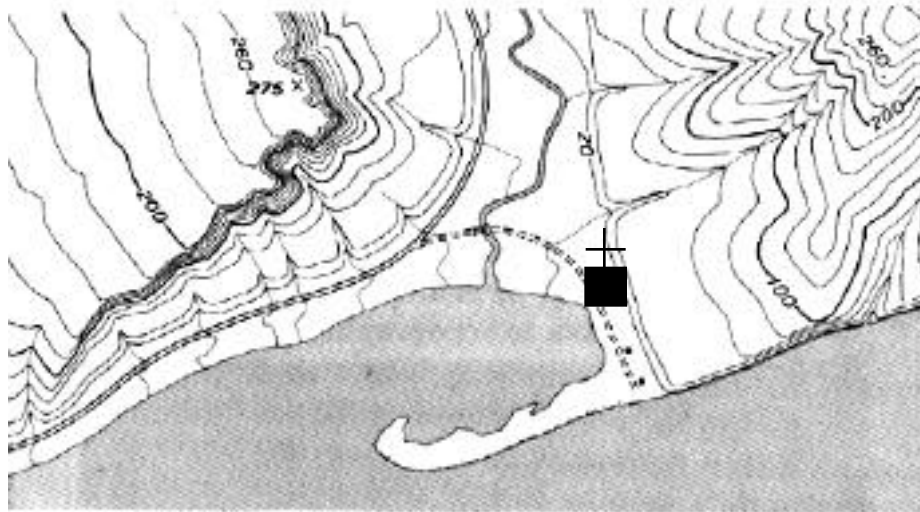
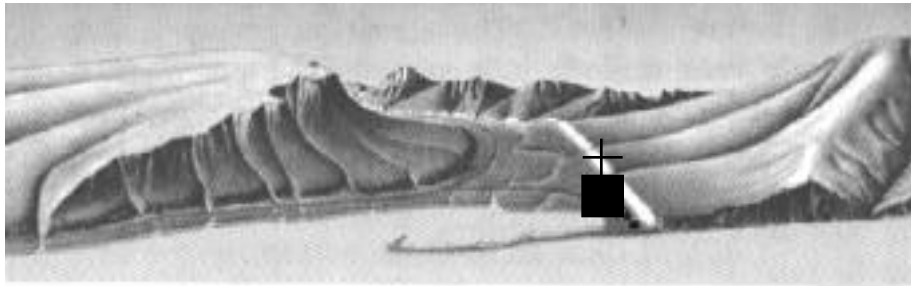
You walk to this hill at point _____. You see hatchure marks on the map that mean a closed depression. To get to that closed depression you walk in a() _____ direction and drop _____ meters in elevation to point _____ in the pit.

Draw your route on the map. Now, measure it with the ruler and compare it with the scale.

How many meters did you walk? _____ meters.

Pretend Hike - Page 2

Now examine the diagram below.



From the U.S. Geological Survey

This topographic map and picture shows the same place. These contour lines are in feet above the sea level. What is the interval between these contour lines? _____
(Hint 1: compare the elevations that are marked on some of the contour lines.)

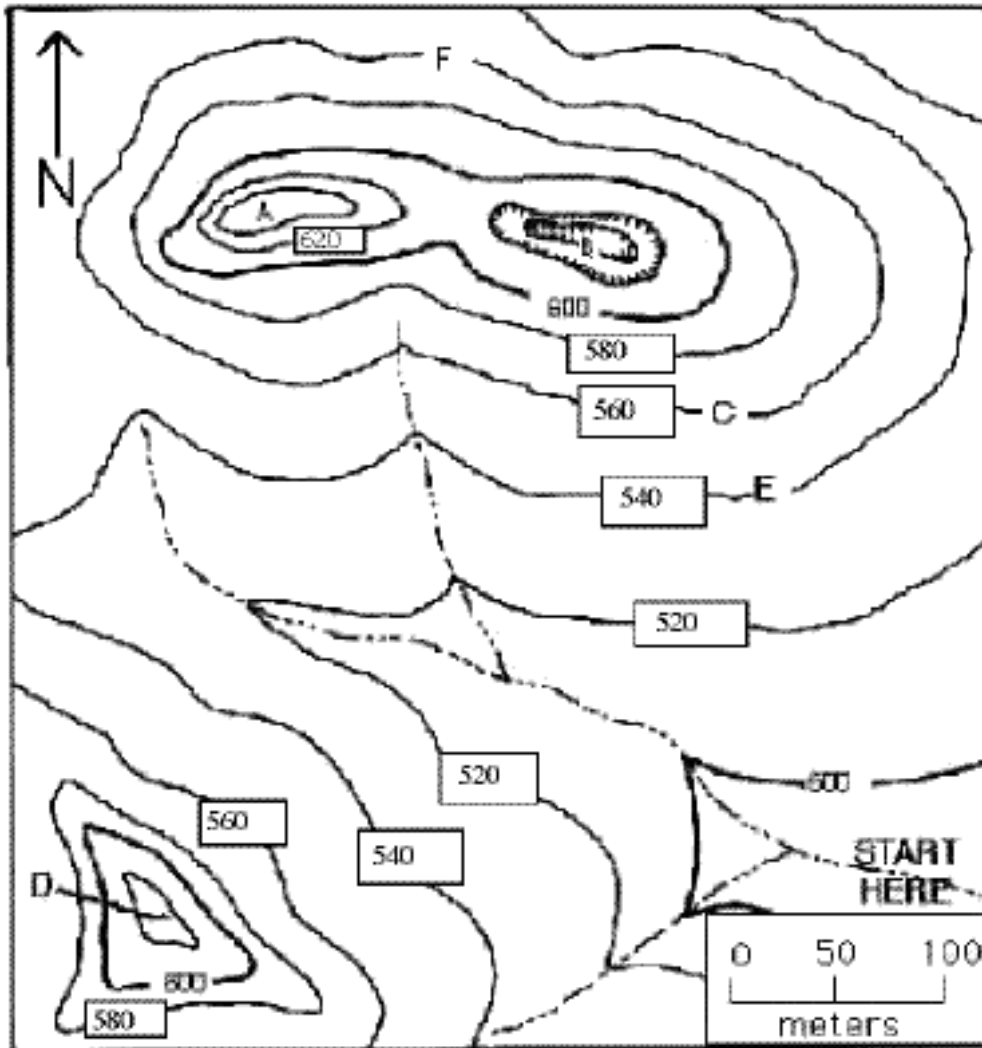
What is the change in elevation from the church to the hill in the northeast? _____
How tall is the sea cliff on the eastern side of the map? _____

Find the church (rectangle with a cross). Trace around the 100-foot contour line on the map to the right of the church. Now look at the picture. Where the 100-foot contour line makes an up-side down 'v', it crosses a river! Does the bottom of the 'v' point uphill or downhill? _____

After you visit the church, your friends want to go for a walk. One person says they want to climb up a steep slope. They head north (towards the top of the map). Are they headed in the right direction? _____
What direction should they take? _____

Teacher Key
Pretend Hike

The contour lines are indicated below:



The distance between each contour is **20** meters.

You would walk **west** from START HERE TO D.

At D, you are in between 620 m and 640 m.

As you travel north, you go **down** until you cross a stream and then you go **up**.

You walk to this hill at point **A**

To get to that closed depression you walk in a() **east** direction and drop **between 80 and 100 meters** in elevation to point **B** in the pit. [Note: Point A is between 640 m and 660 m.

Point B in the pit is on the 560 m contour.]

How many meters did you walk? **You walked about 10 times the length of the graphical scale. So you walked about 1000 meters.**

Answers to Question on US Geological Survey Map/Diagram

The contour line interval is **20 feet**.

The change in elevation from the church to the hill to the northeast is **between 260 and 280 feet (hill is a little more than 280 feet; church is a little less than 20 ft)**.

The sea cliff on the eastern side of the map is about **100 feet high**.

The bottom of the 'v' points **uphill**.

After you visit the church, your friends want to go for a walk. One person says they want to climb up a steep slope. They head north (towards the top of the map).

Are they headed in the right direction? **No**

What direction should they take? **West, to the contour**