

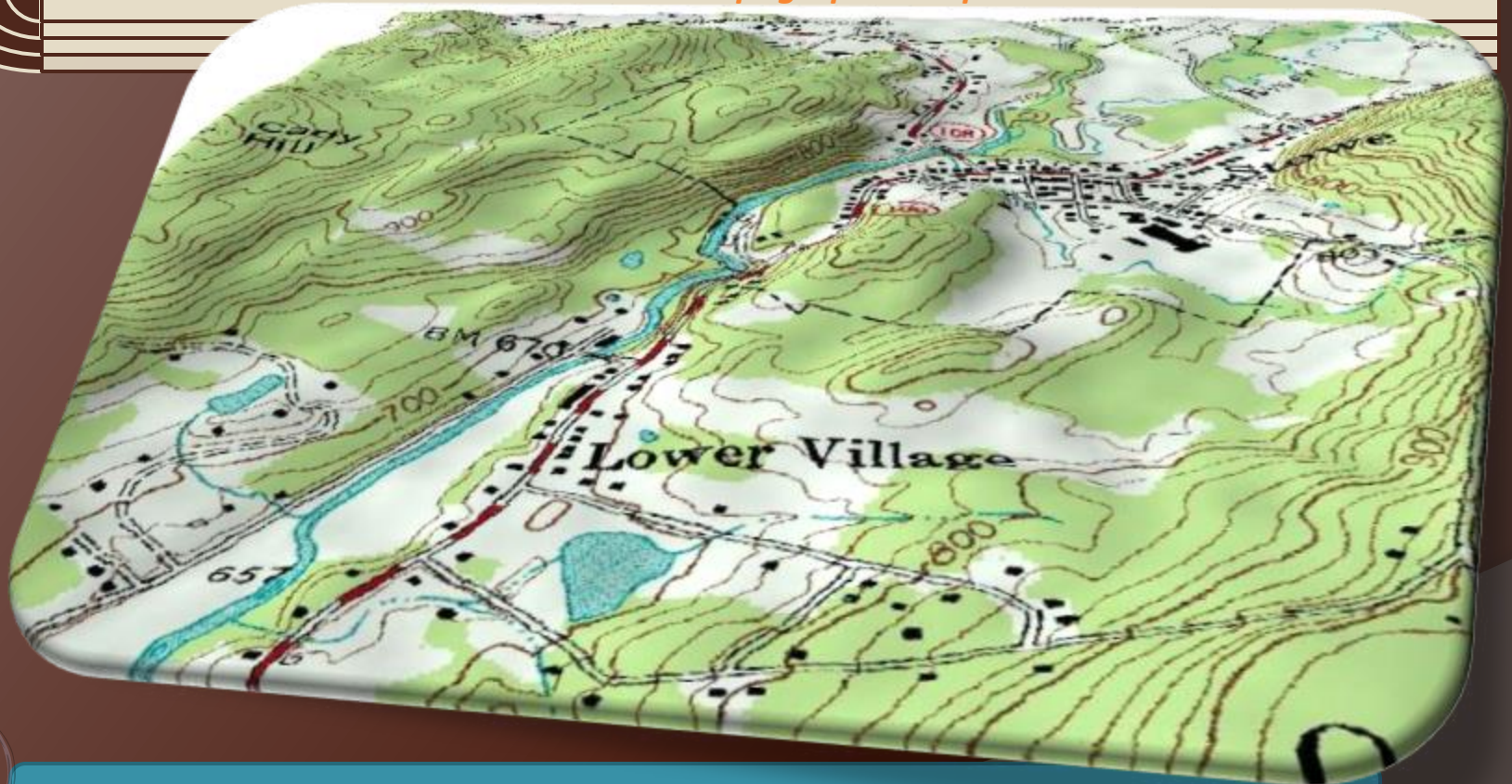
# Ch. 1.3: Topographic Maps

**STUDENTS WILL BE ABLE TO...**

*Explain what are topographic maps*

*Read a topographic map*

*Create a topographic map*



**"Geologists don't dislike classical music, they just prefer rock."**

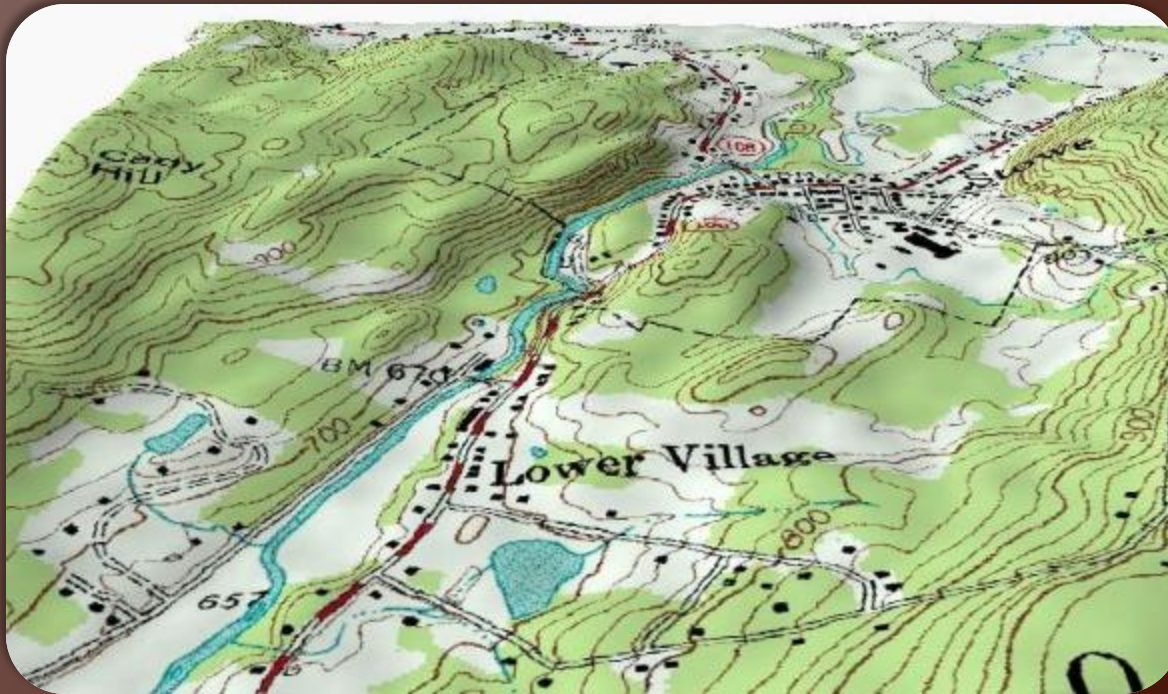


# Topographic Maps

Maps that show the change in elevation of land.



Elevation is the height of land above the level of the sea.

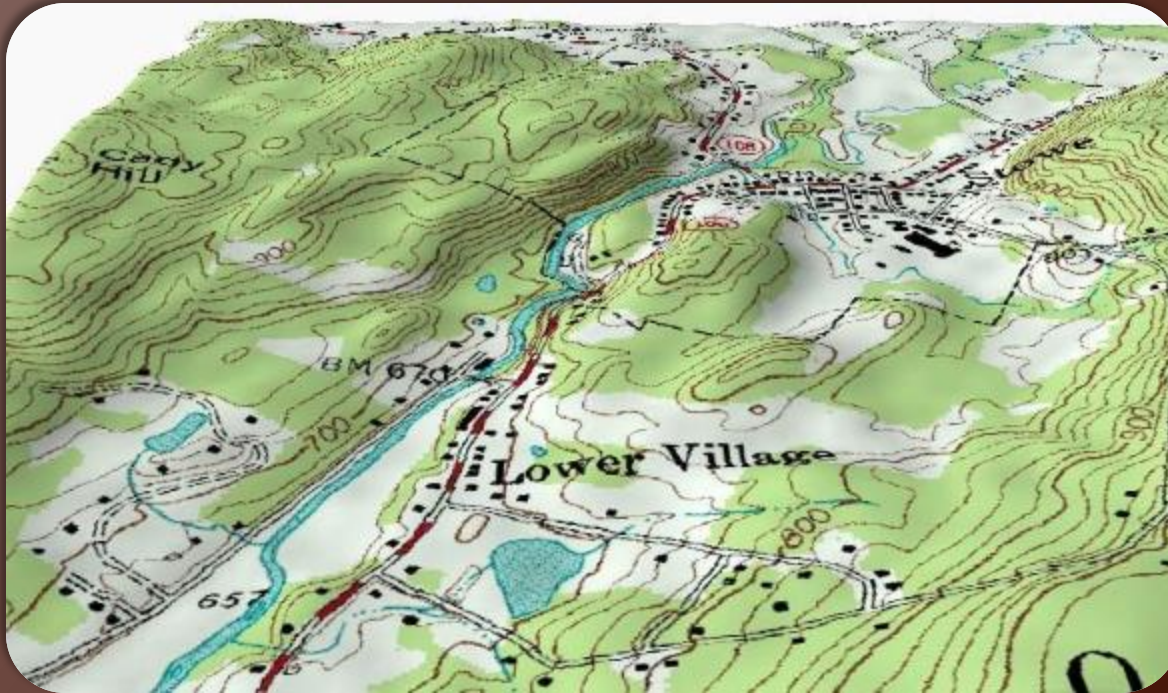


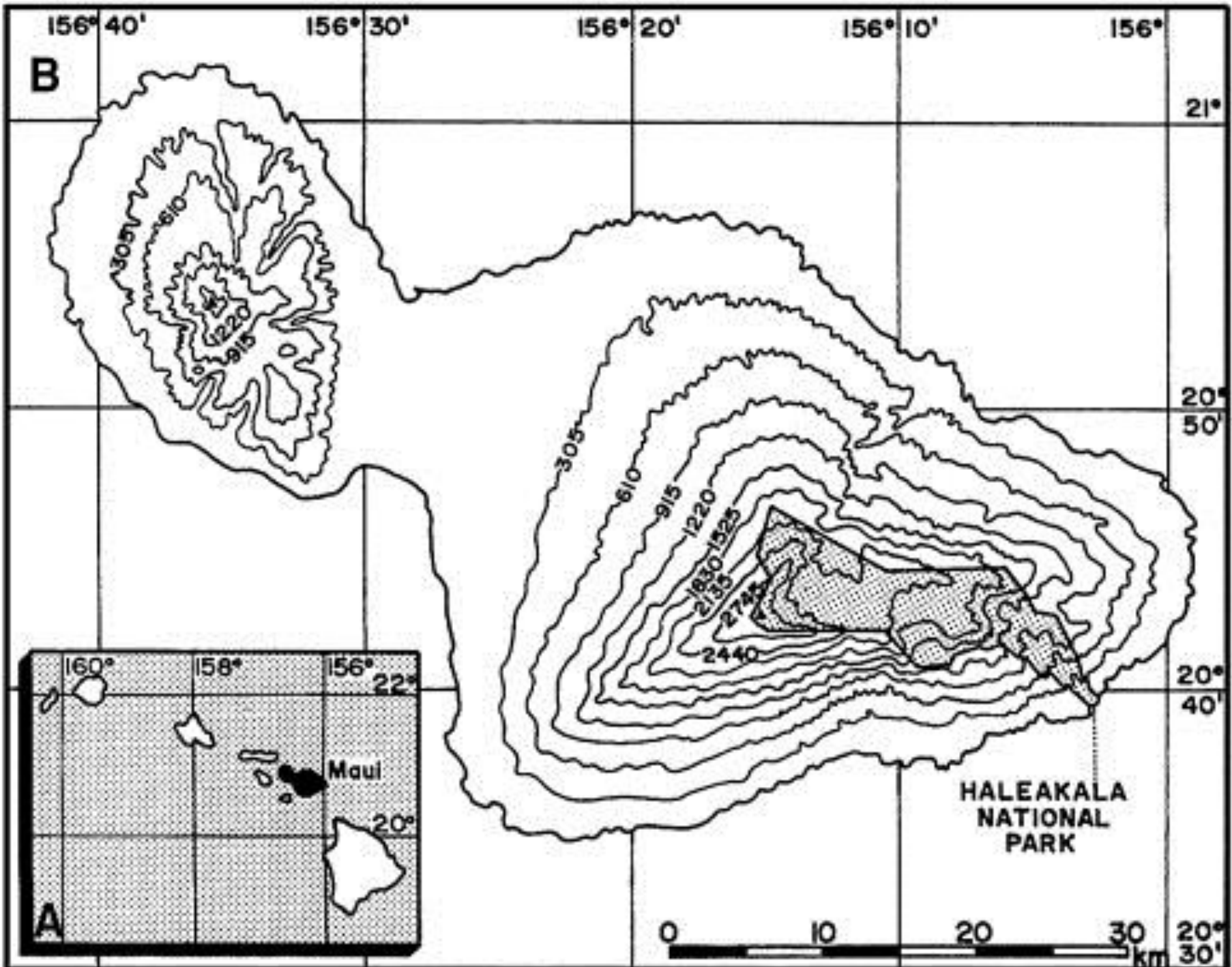
# Topographic Maps

Elevation is shown  
by contour lines.



Elevation starts at  
(0) sea level.





**B**

**A**

HALEAKALA  
NATIONAL  
PARK

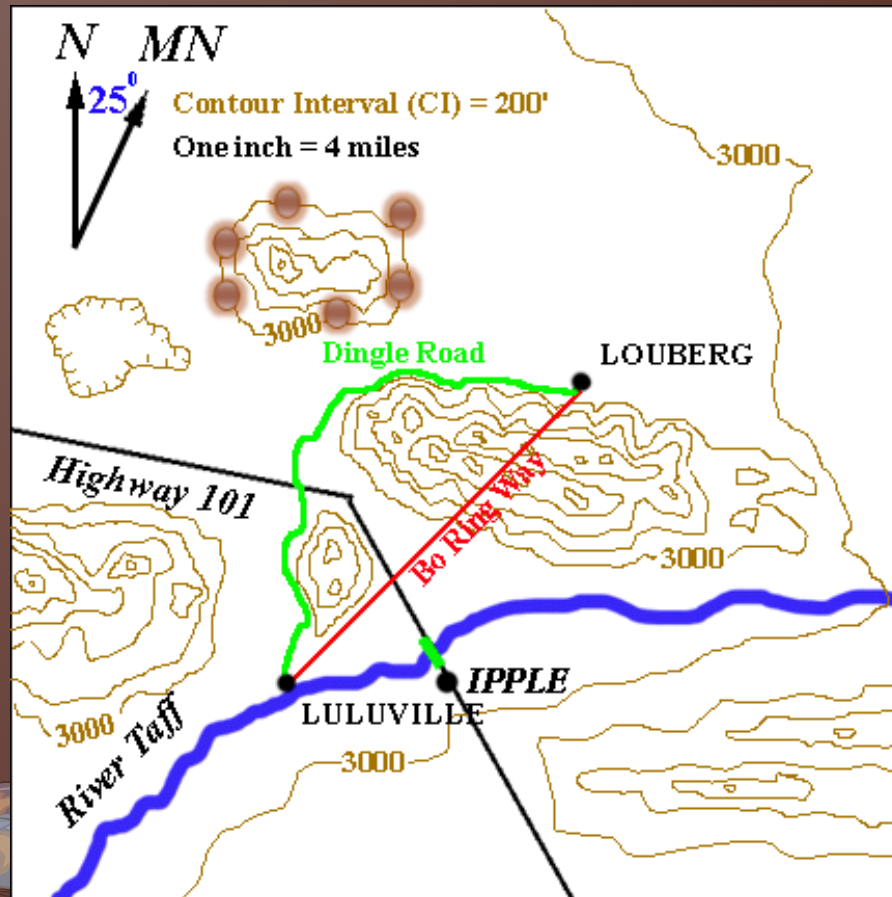
0 10 20 30 km

# Contour Lines

Lines on a map that connect points of equal elevation

Every point on a contour line has the same elevation.

Contour lines NEVER touch.



Imagine it this way.... Rising water and Spray Paint !

Every time the water rose, we painted the level of the water.

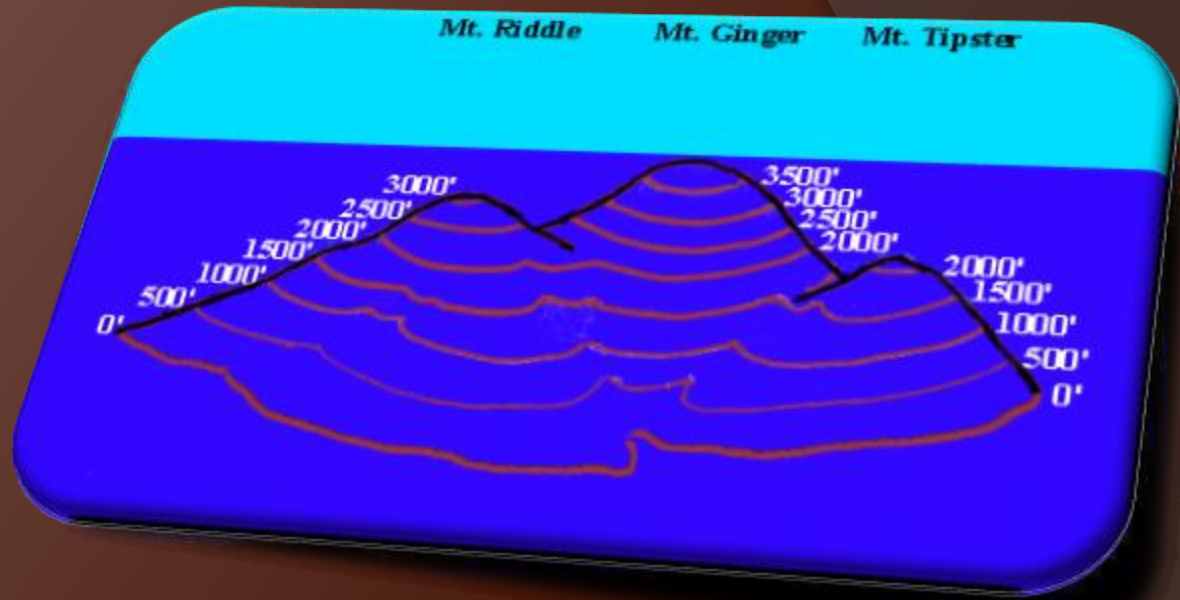
We also plotted the elevation of the water.

When the water receded, we were left with the paint rings.

We just created contour lines.

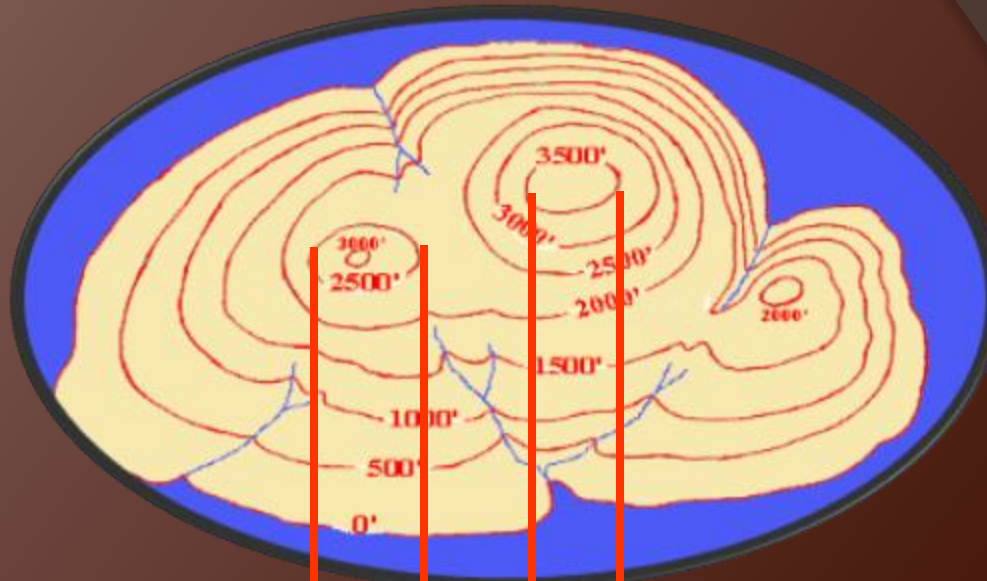
Everywhere on the line is equal in elevation.

Look down from above to visualize a topographic map.

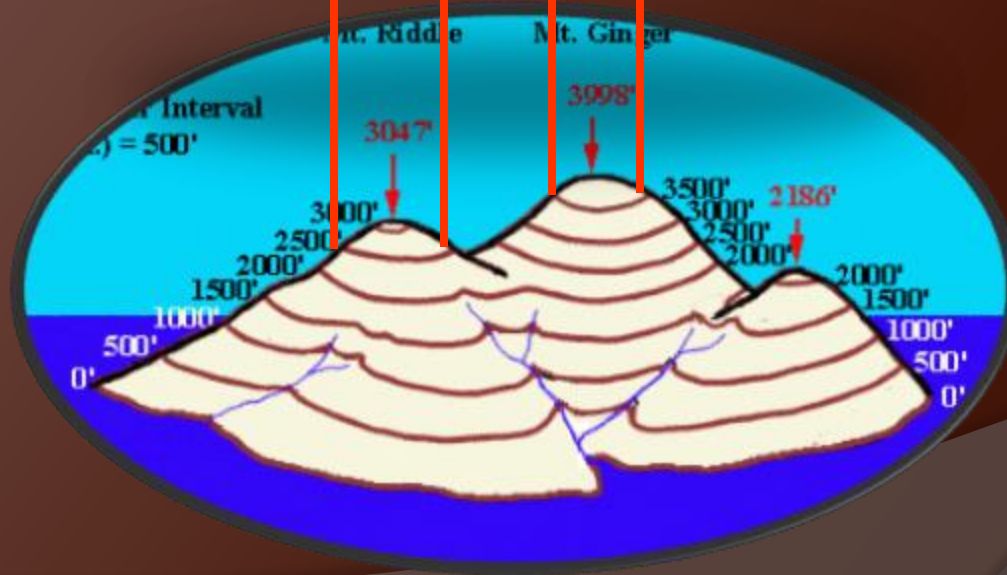


# Where the lines Come From

Topographic  
Map (as seen  
from above)



Actual  
Land

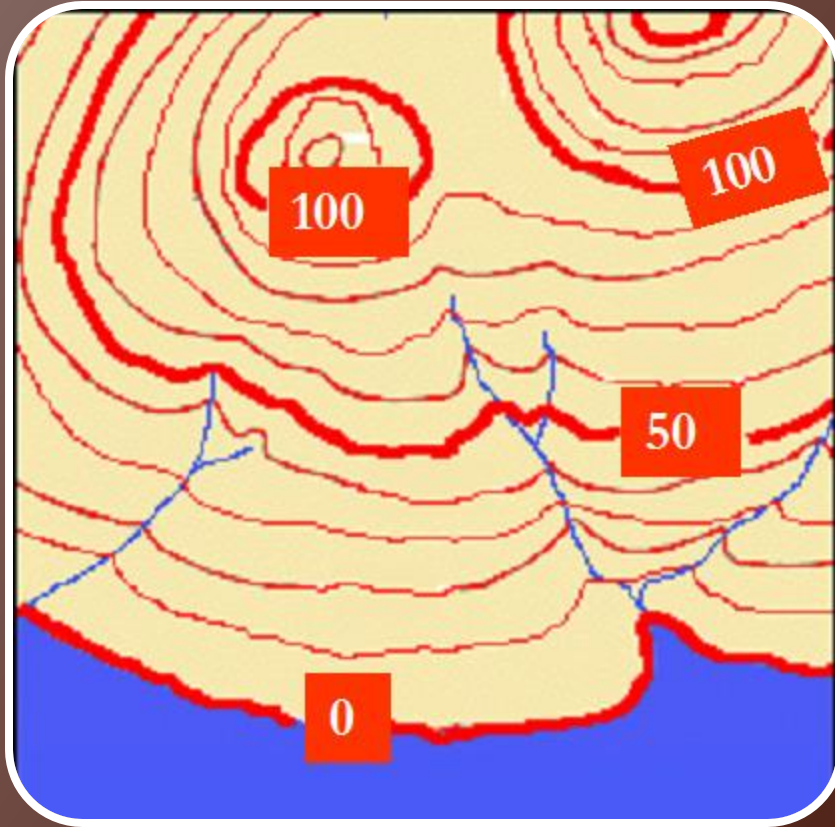


# Joke

- Q. What do you call a map guide to Alcatraz?
- A. A con-tour map.

# Index Contours

The darker, thicker contour lines are called: **INDEX CONTOURS**



Typically every 5<sup>th</sup> line on a Topo map is an index contour.

# Joke

- Q:What do penguins wear on their heads?
- A:Ice caps.

# Topographic Profile

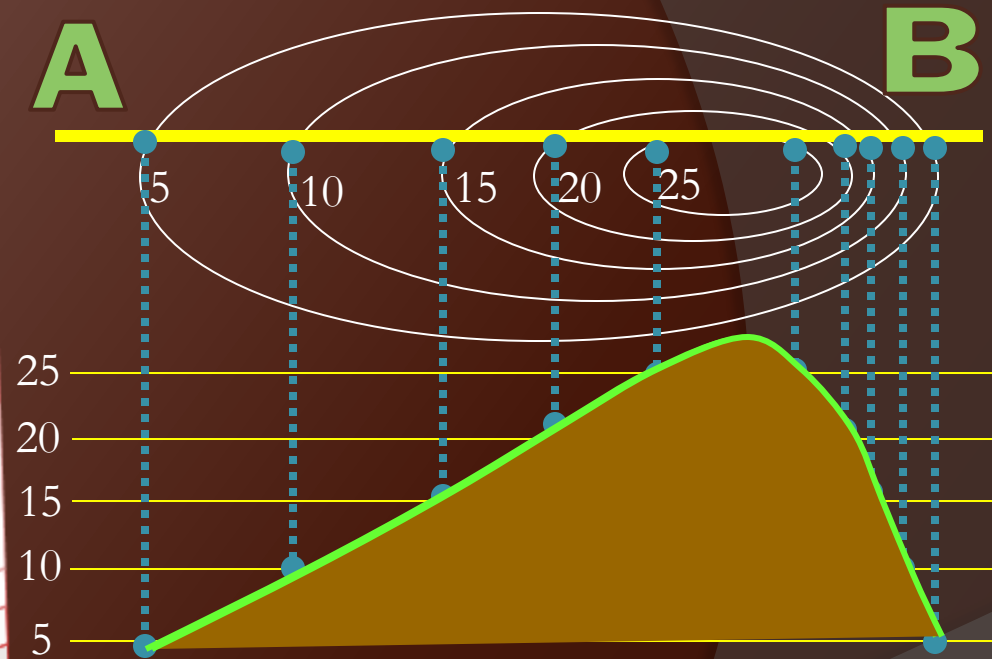
- Helps us to see the actual shape of land.
- Follow these simple steps to draw a profile:

Draw a bisecting line across the map from A → B.

Make a line graph for each contour value in the section.

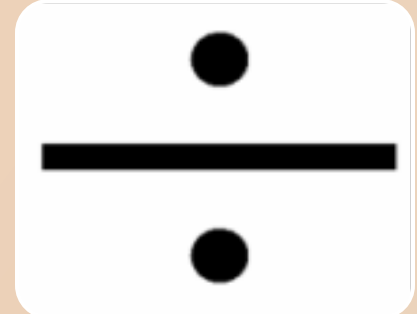
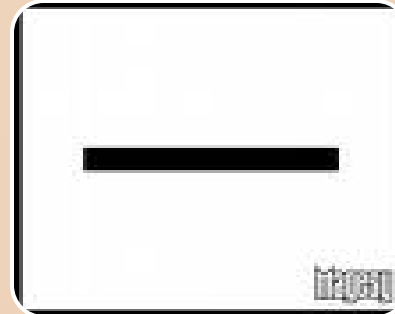
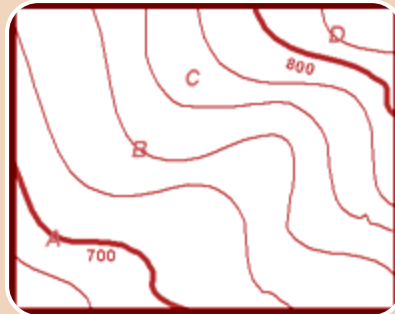
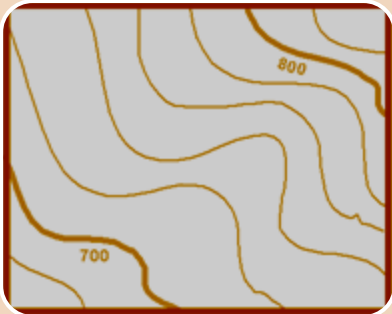
Draw a dotted line down to the appropriate value on the graph where your bisecting line intersects a contour line.

Connect the dots and share in the area under the curve.



# Contour Intervals

- The word interval means **THE DIFFERENCE BETWEEN.**
- When you go from contour line to another the elevation changes.
- The difference in elevation from one line to another is called the **CONTOUR INTERVAL.**



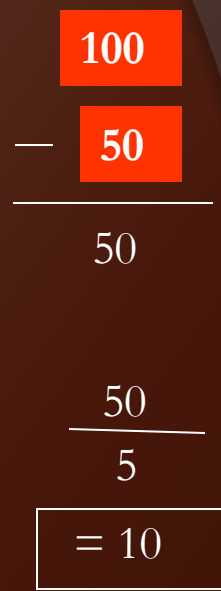
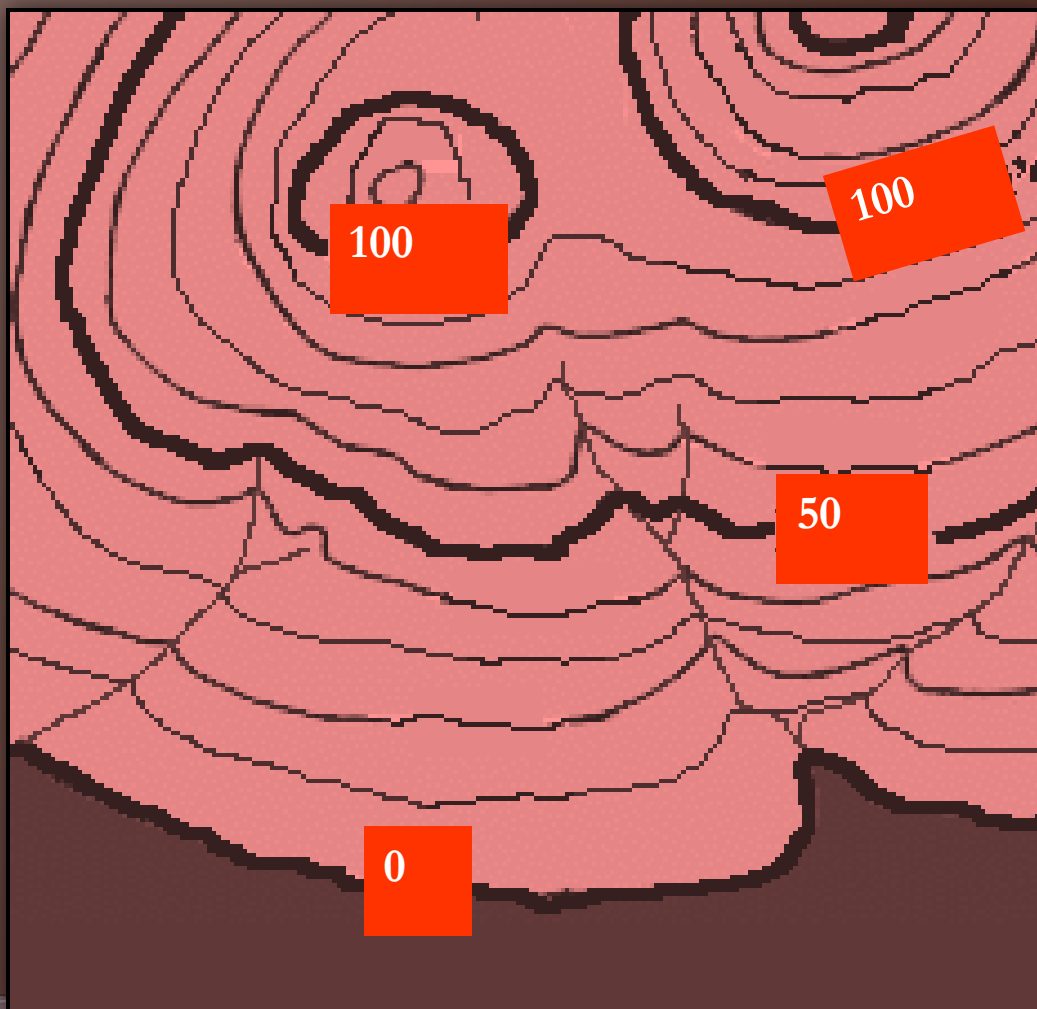
Find an index contour.

Find an index contour that is right **BELOW** the one you just found.

Subtract the two index contours.

Divide that number by 5 (or the number of contour lines to the next index contour).

# Contour Intervals



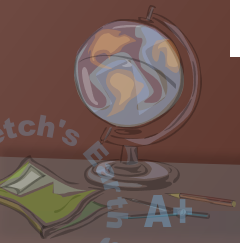
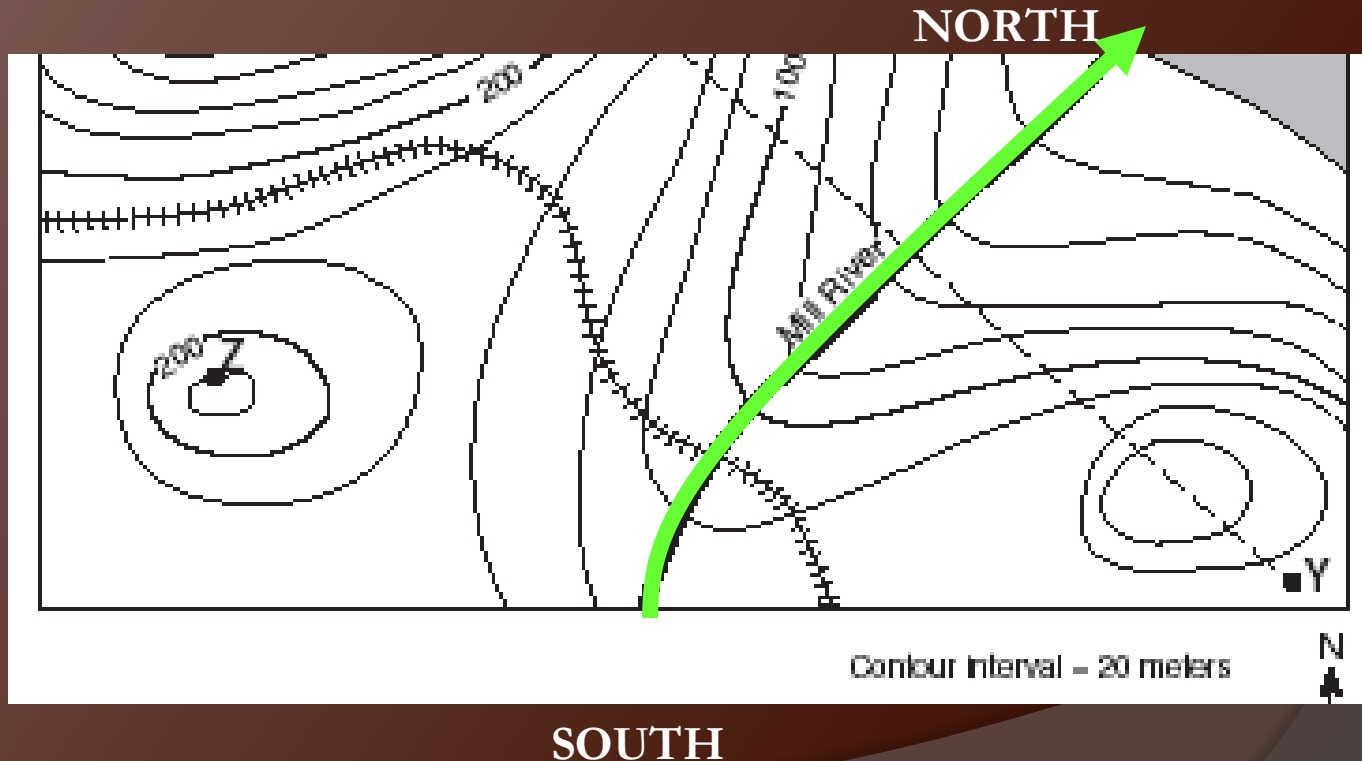
# Joke

- Q:What did the sea say to the shore?
- A:Nothing, it just waved!

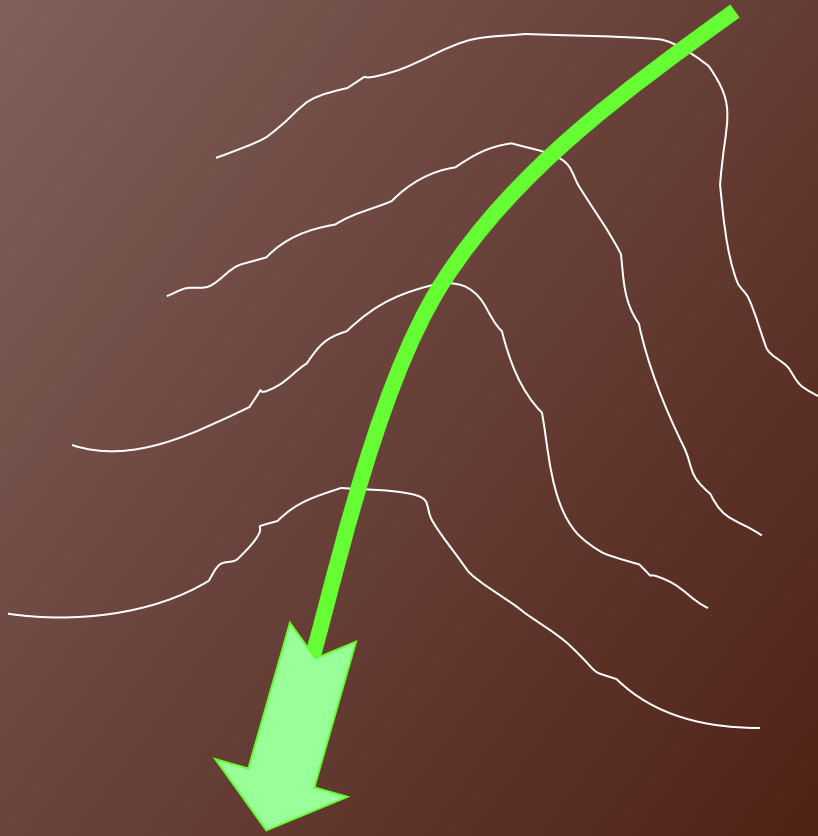
# Rivers and Streams

- Shown by V-shaped contour lines.
- V's point in the direction water is COMING FROM.

Water always moves from up high...to down low (higher contours to lower contours).



North

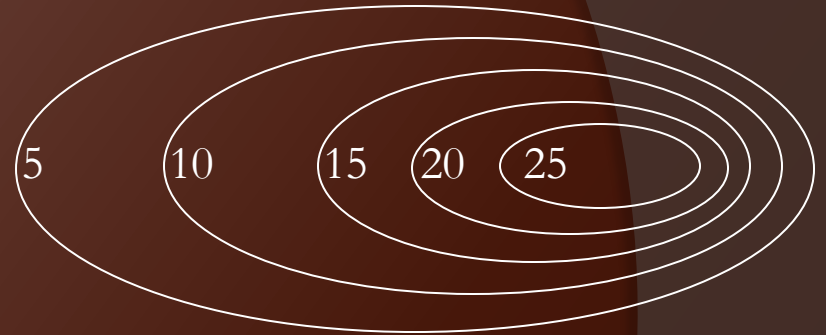
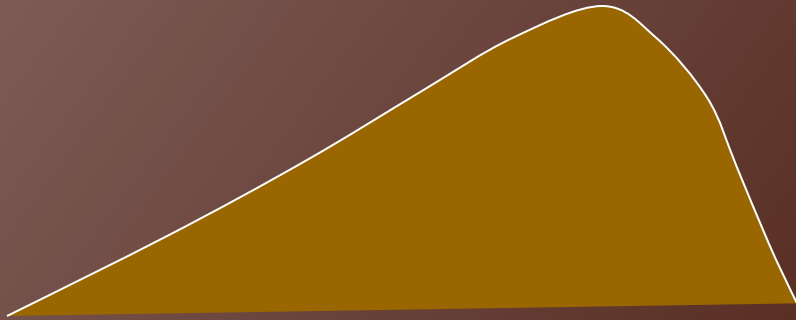


South



# Shape of the Land

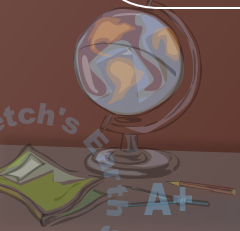
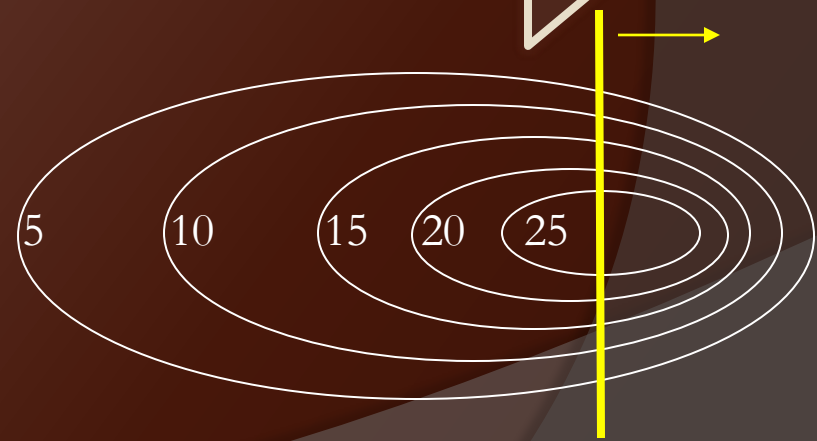
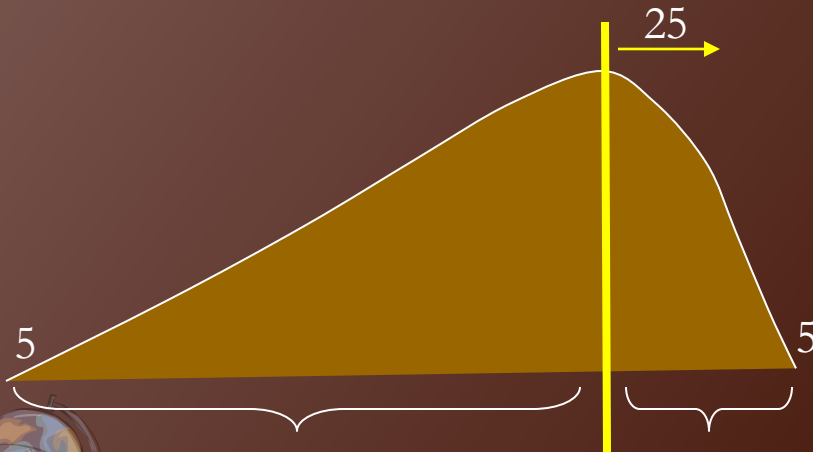
What do we notice about the shape of the land and the arrangement of contours?



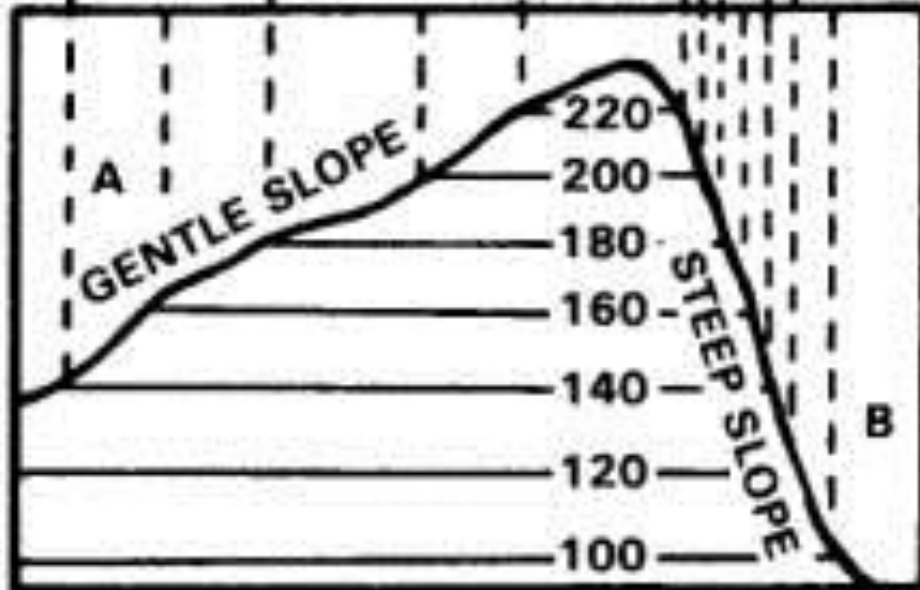
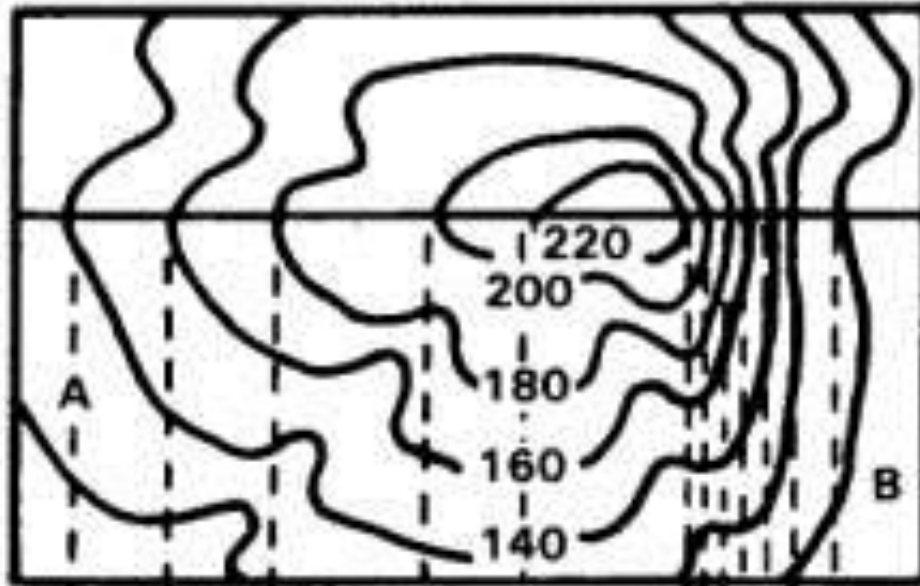
# Steep and Gentle Slopes

**GENTLE SLOPES:**  
Contour lines  
are far apart.

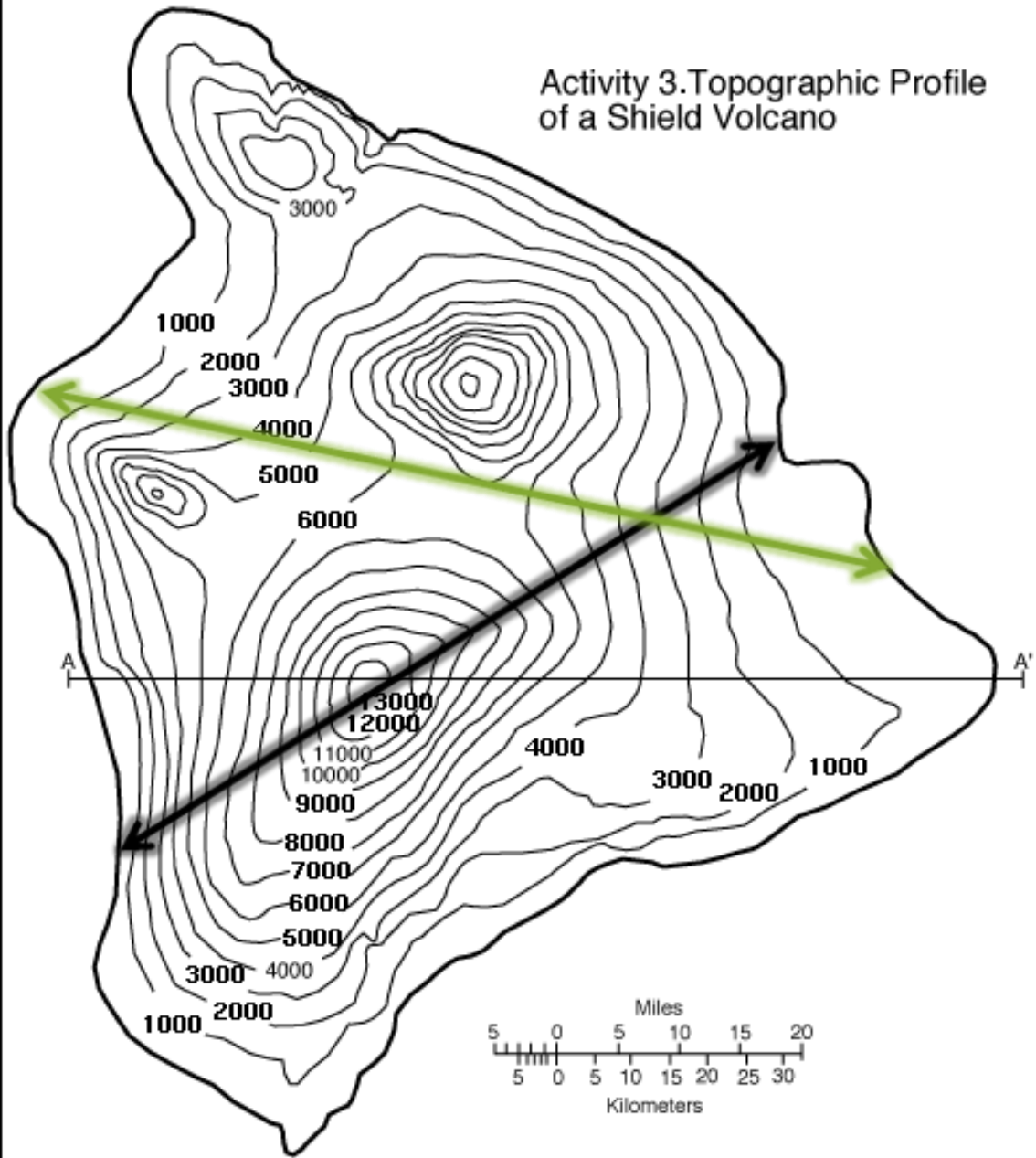
**STEEP SLOPES:**  
Contour lines are  
close together.



HILL AS SHOWN ON MAP



### Activity 3. Topographic Profile of a Shield Volcano

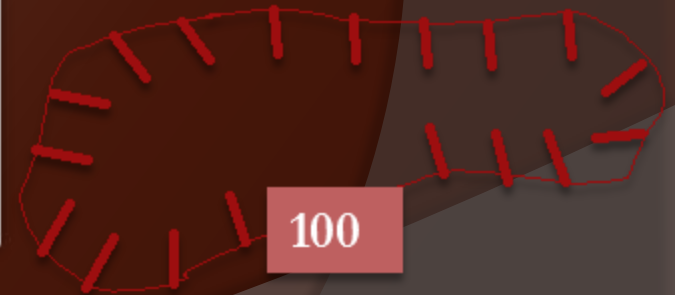
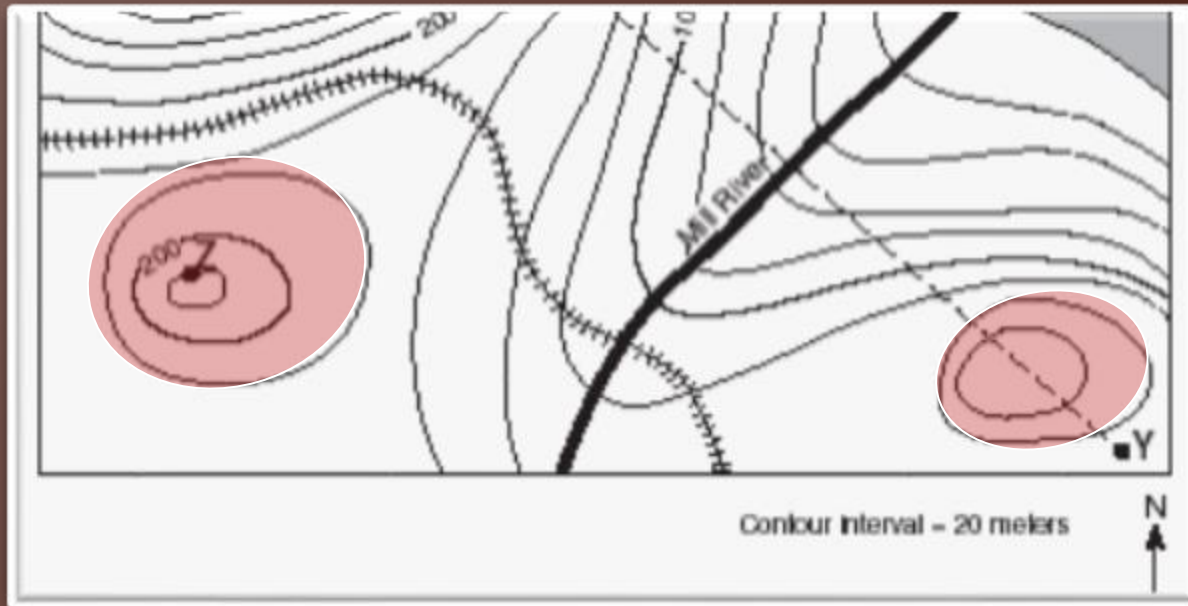


West A East A' Feet 15,000 0  
Mauna Loa Volcano, Island of Hawaii

# Hills and Depressions

## Shown by closed-circles

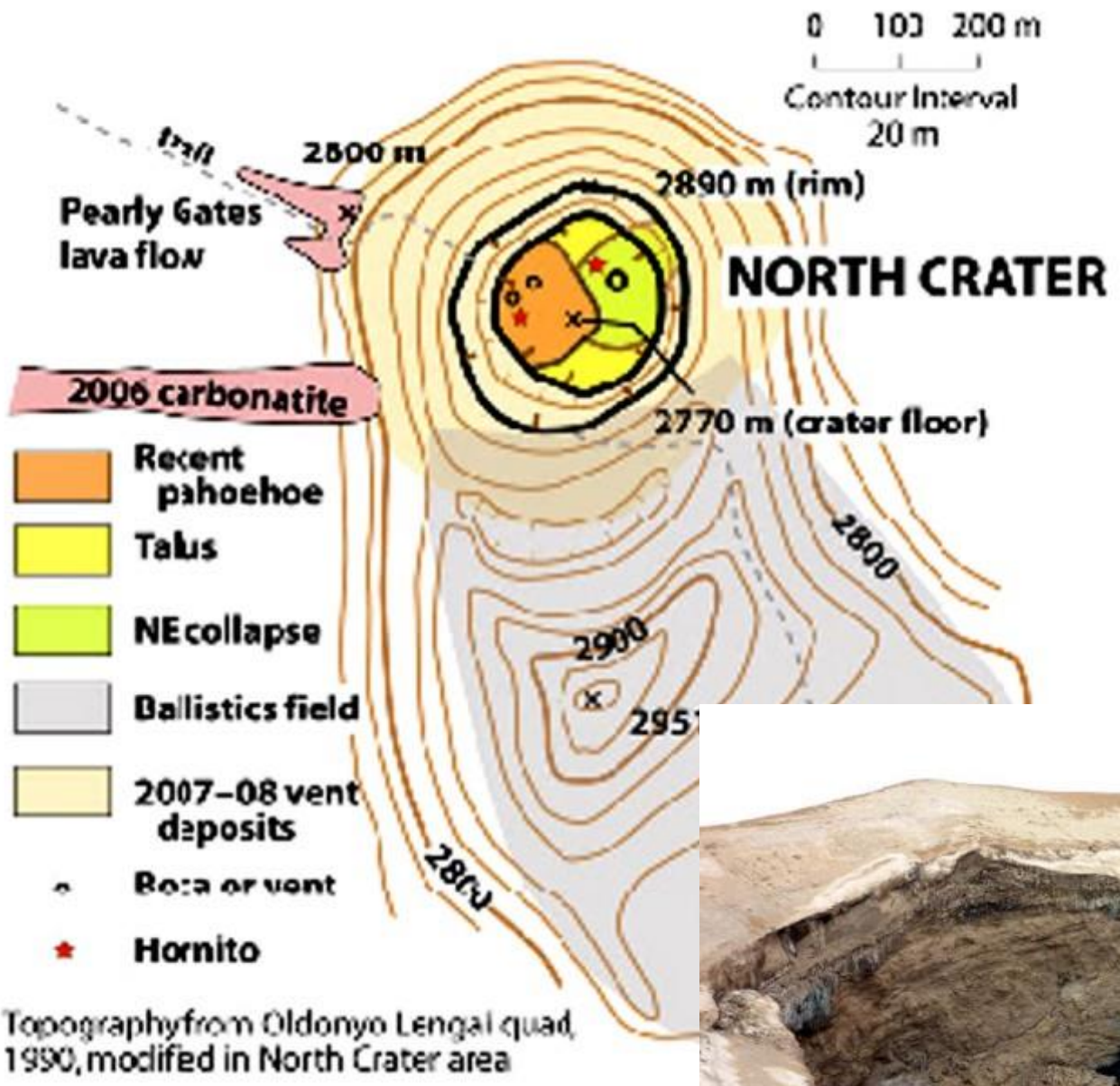
- A hill: land that raises up-hill.



100

When you see “hachure marks” you’re looking at a depression.  
Example: A VOLCANO !!!





# Hill or Depression

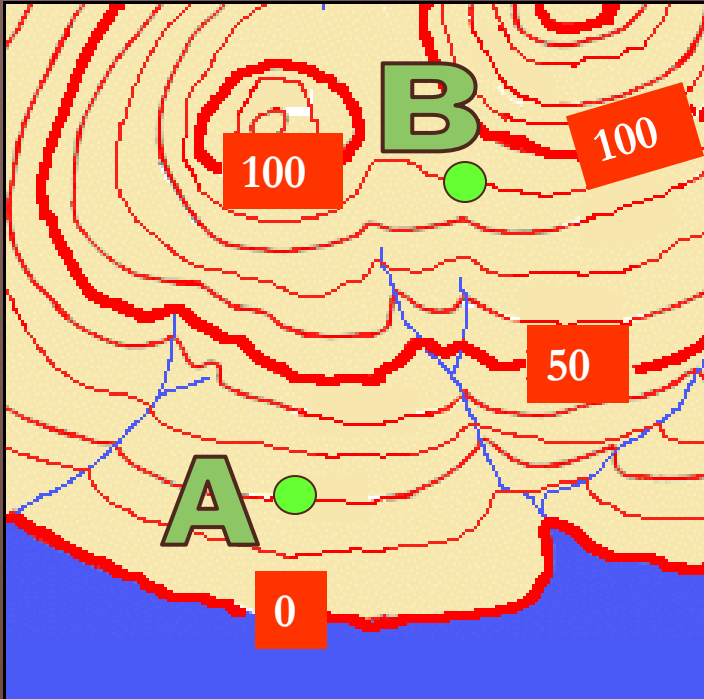


**Hill**



# Topographic Maps

Reading in-between the lines ...



- What is the elevation at point A?

= 20'

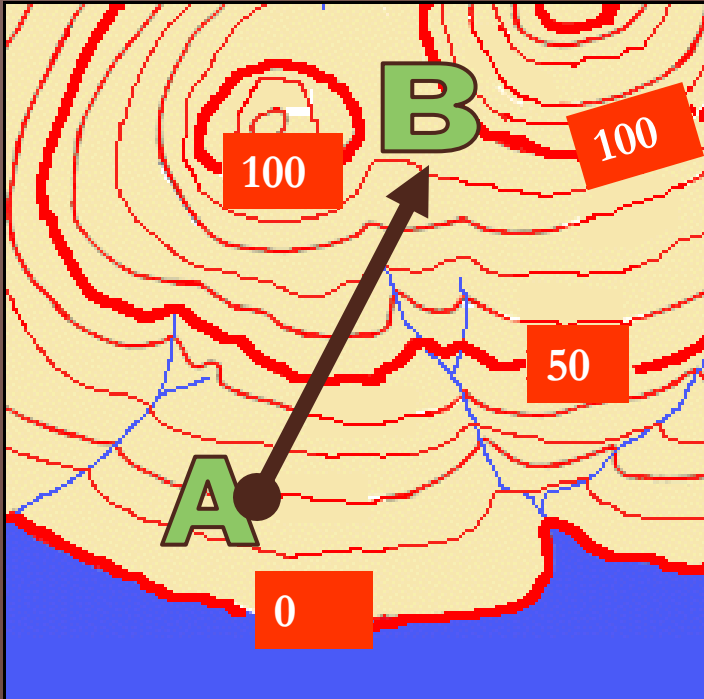
- What is the elevation at point B?

= 90'



# Topographic Maps

Reading in-between the lines ...

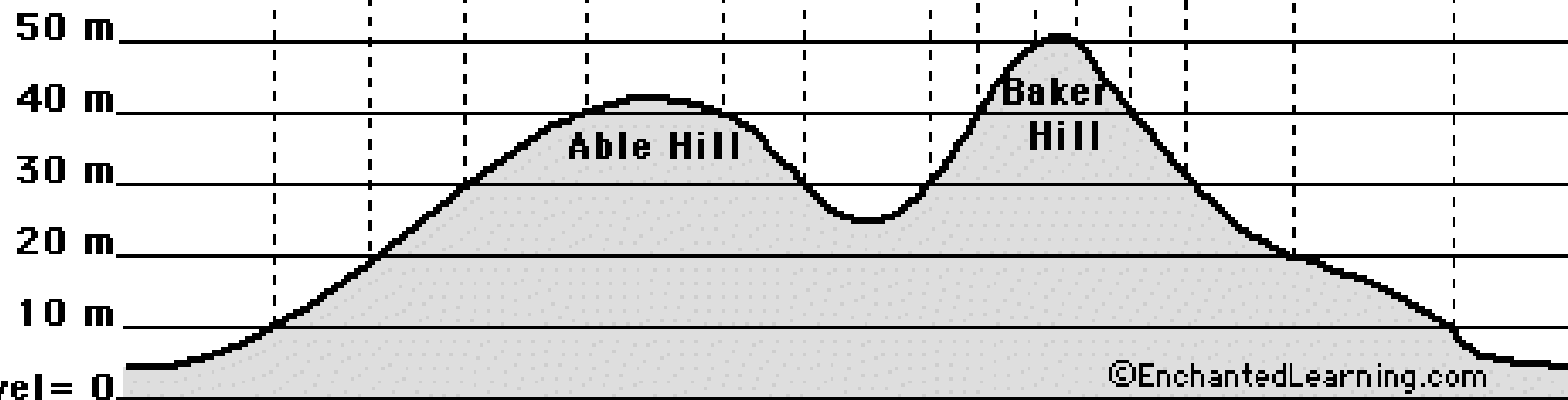
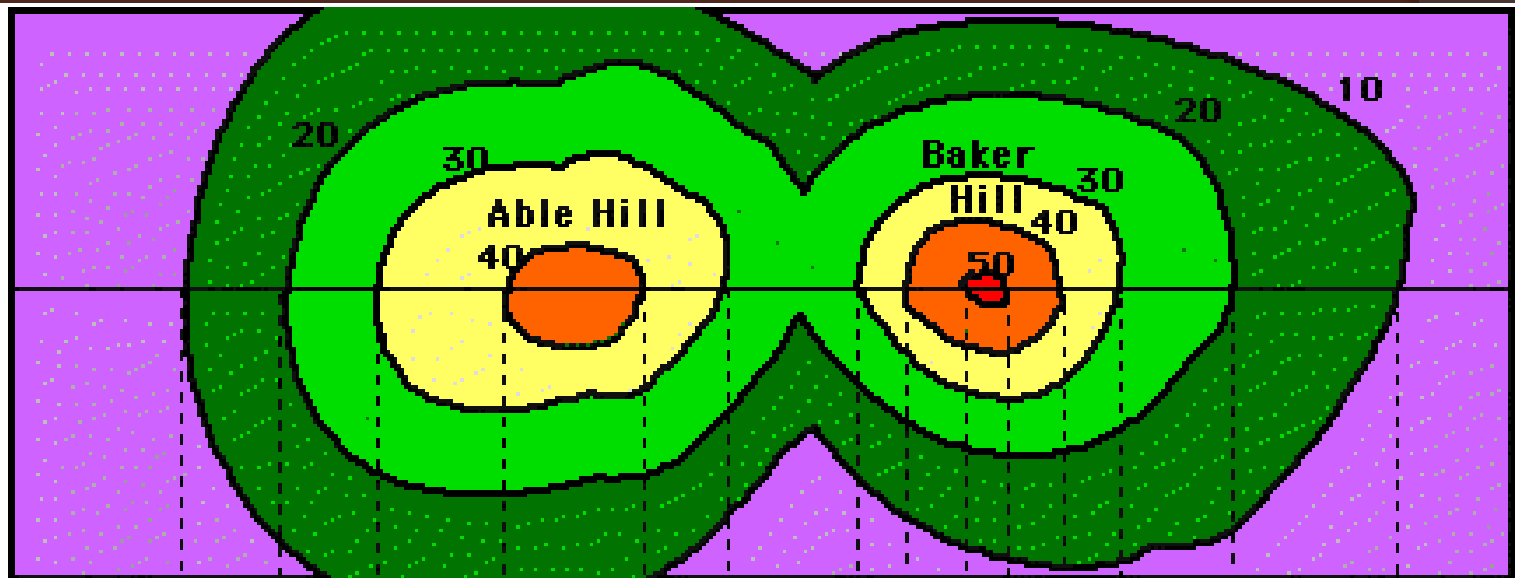


- What would the terrain look like if you were to walk from point A to point B?

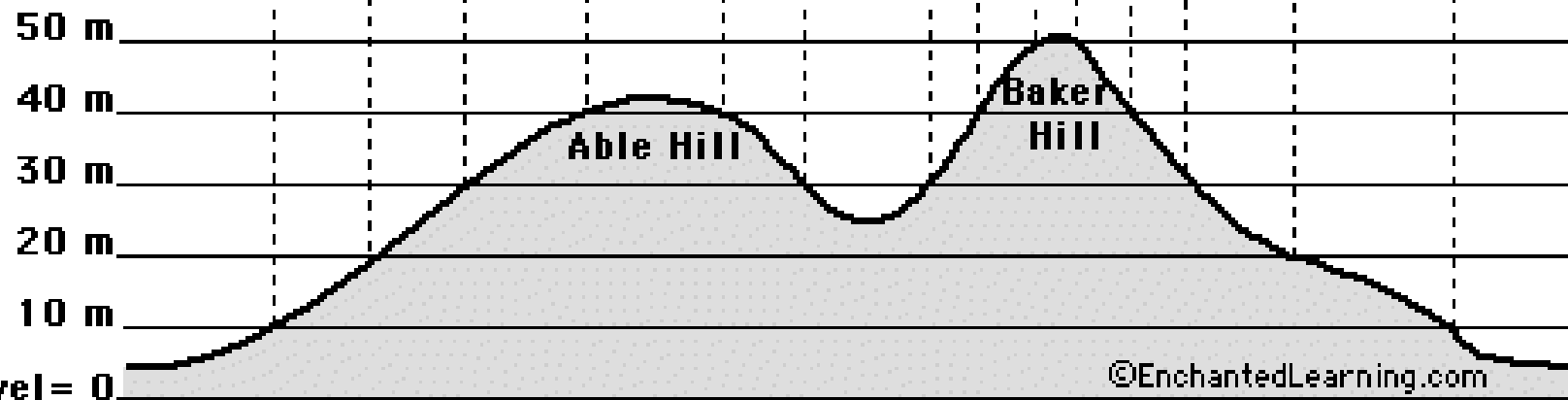
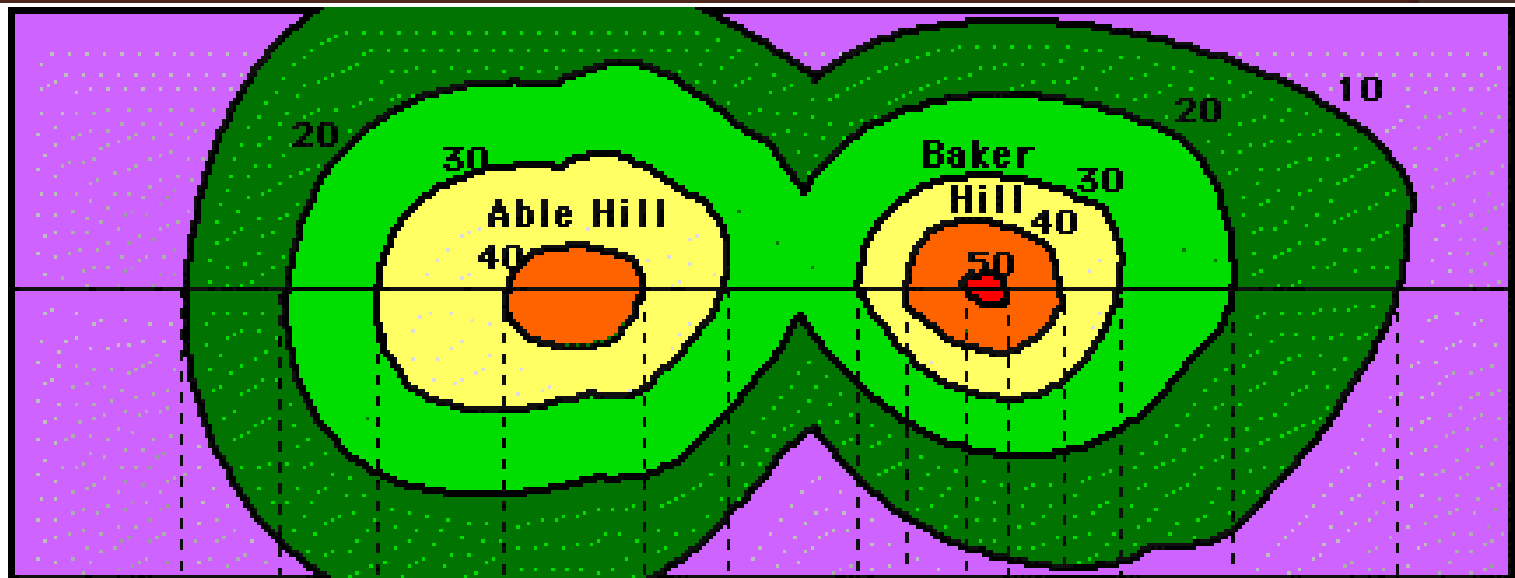
**Up hill.**



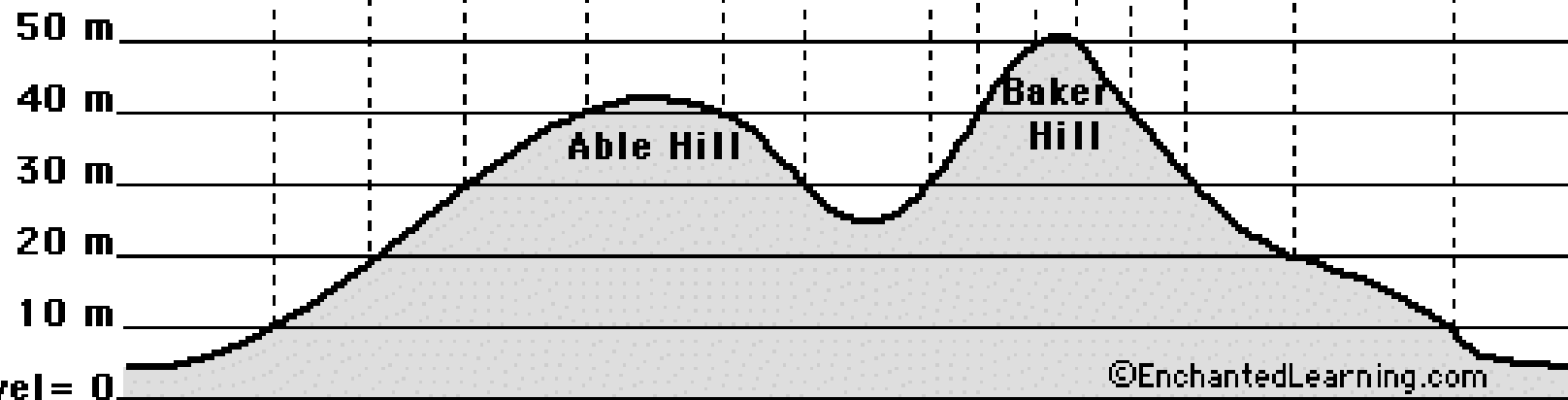
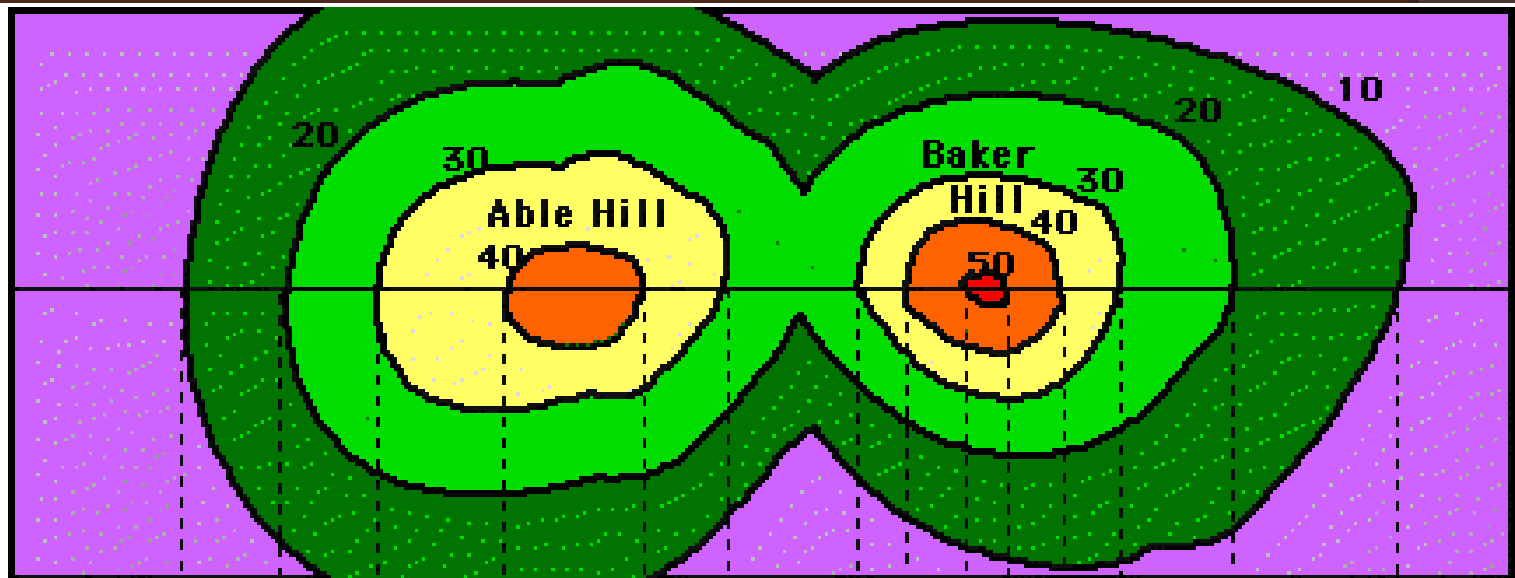
# Approximately how tall is Able Hill?



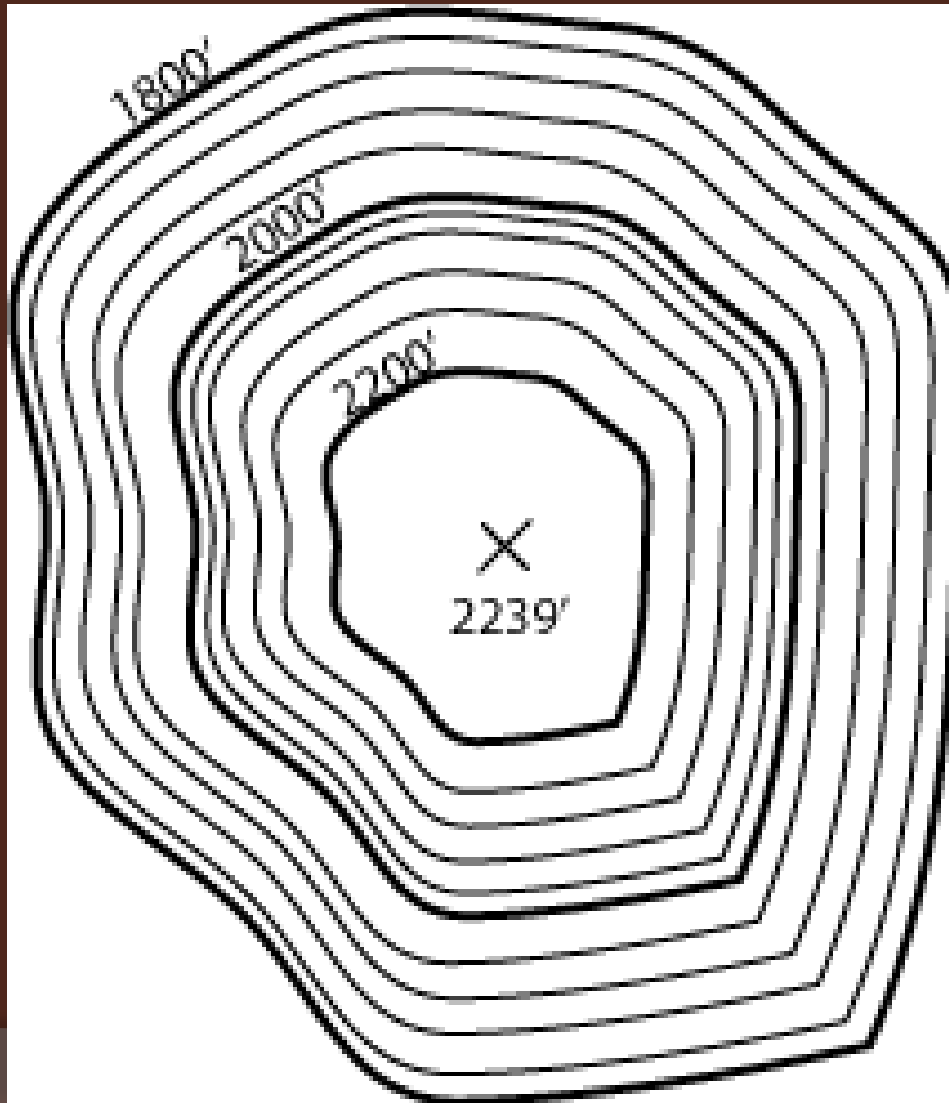
How many meters of elevation are there between contour lines on the topographic map?



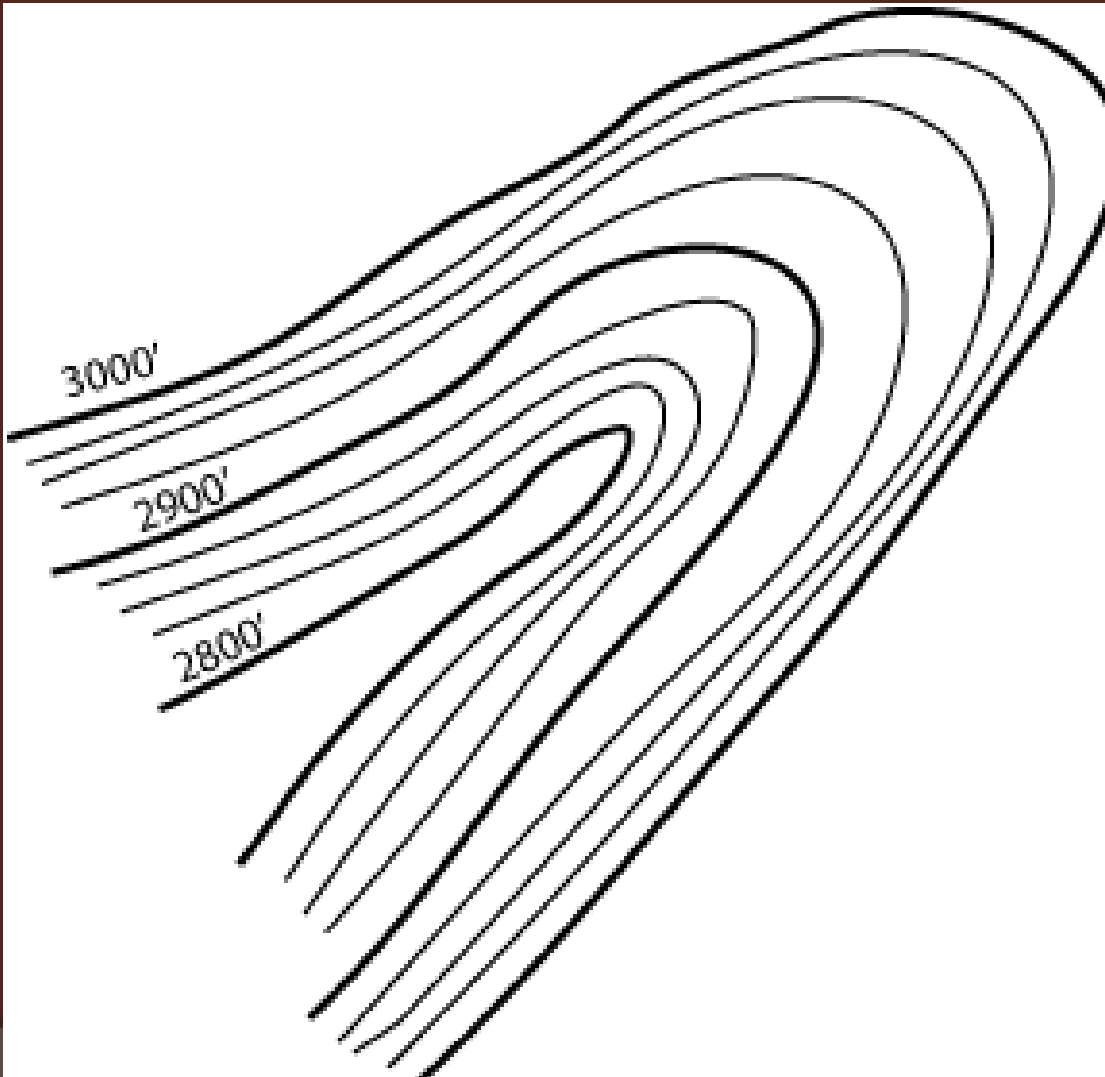
# Which mountain is steeper?



what are the bold contours  
called?

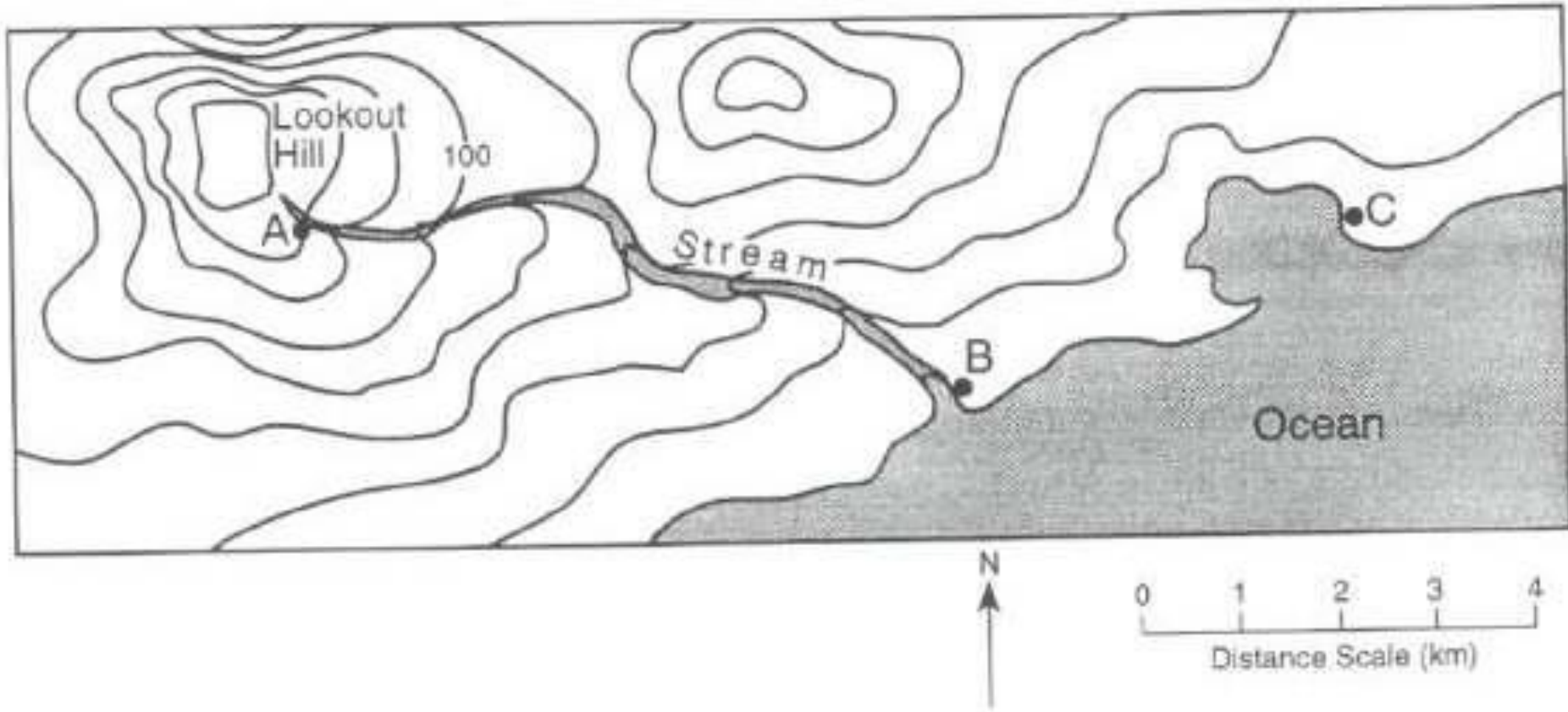


# What is the contour interval?



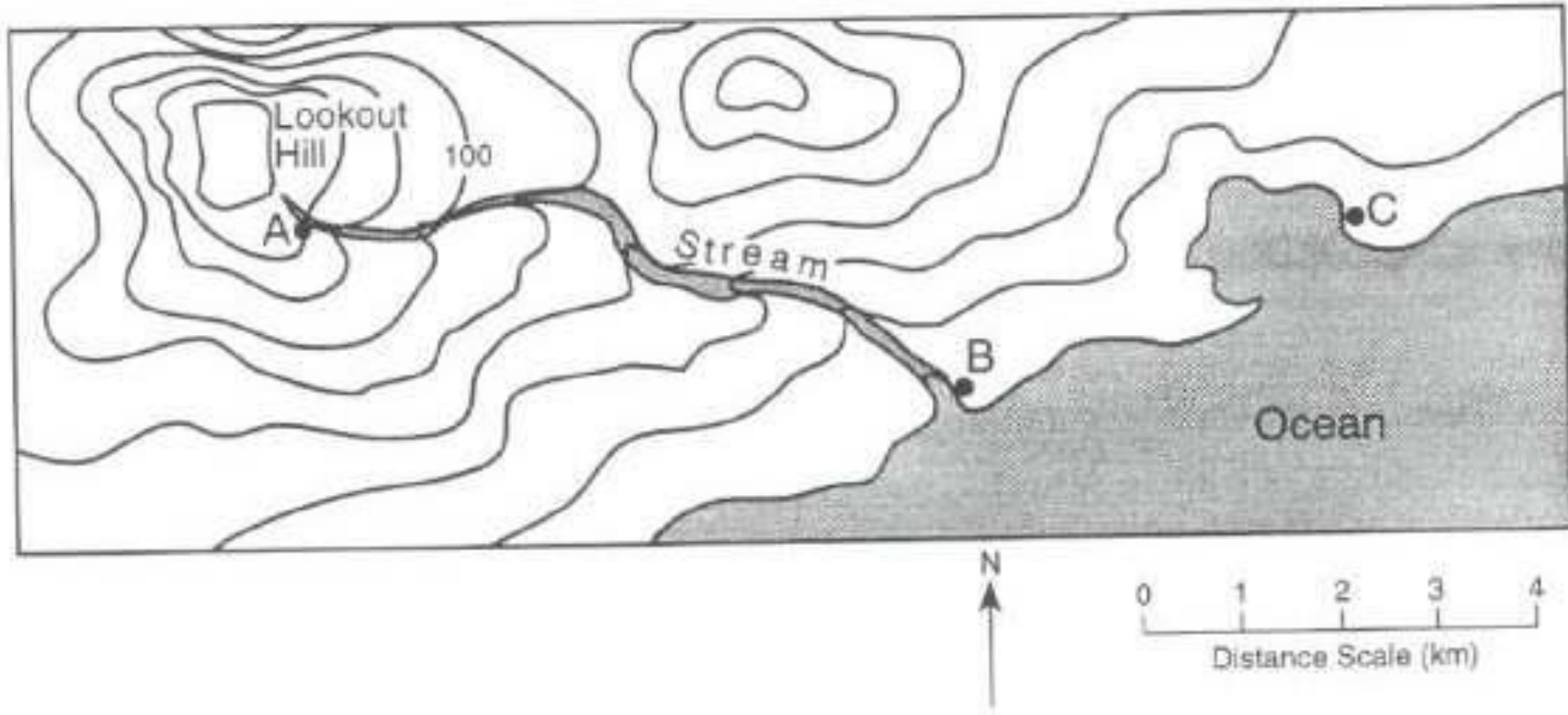
# Joke

- ⦿ Q. What projection do birds use to track their migration?
- ⦿ A. A robins-son (Robinson) projection.



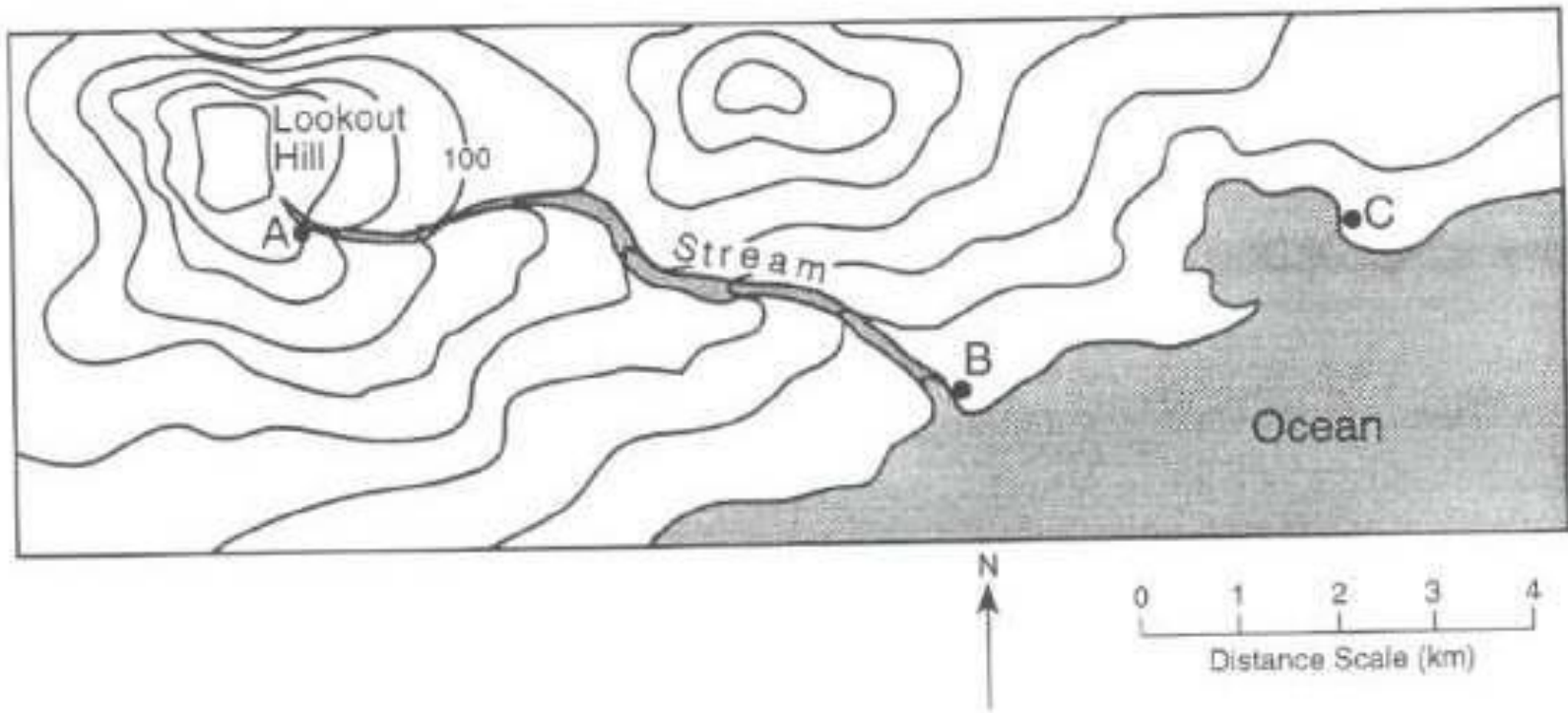
1) The elevation at Point A is

- a) 60 m
- b) 140 m
- c) 100 m
- d) 300 m



2. In which direction is the stream flowing?

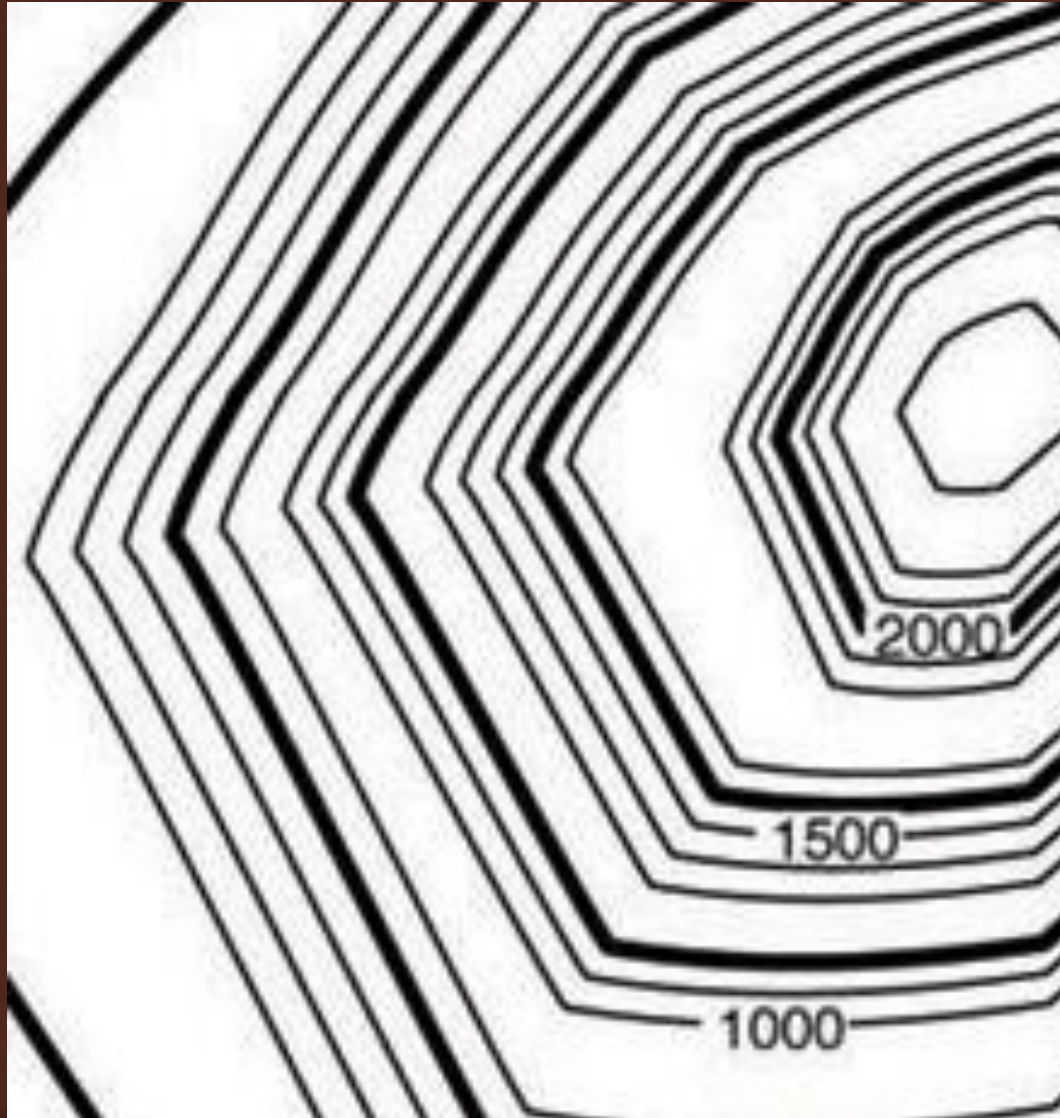
- a) northwest
- b) Southwest
- c) Northeast
- d) Southeast



3. Which side of Lookout Hill has the steepest slope?

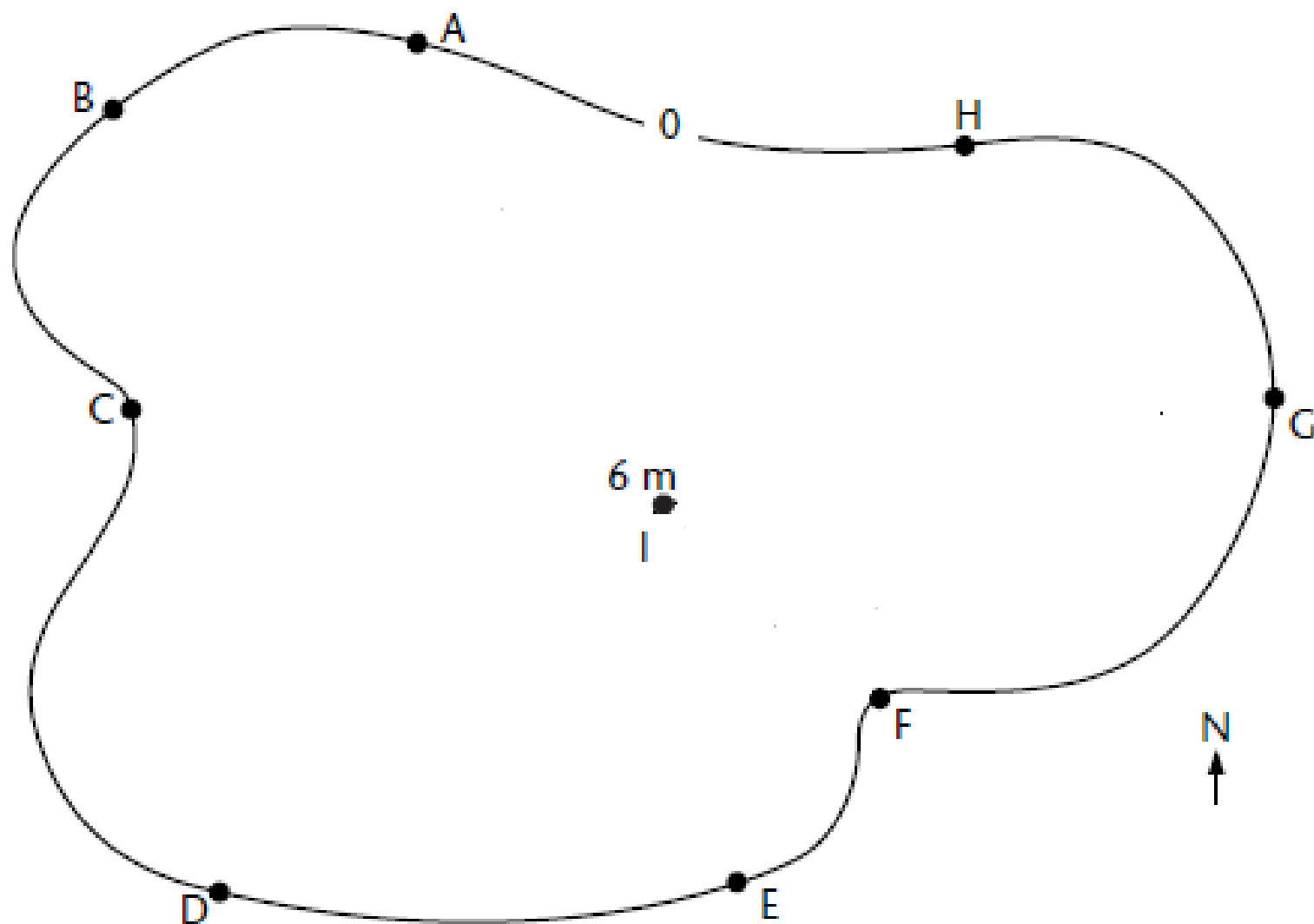
- a) North
- b) East
- c) South
- d) West

# What is the contour Interval?

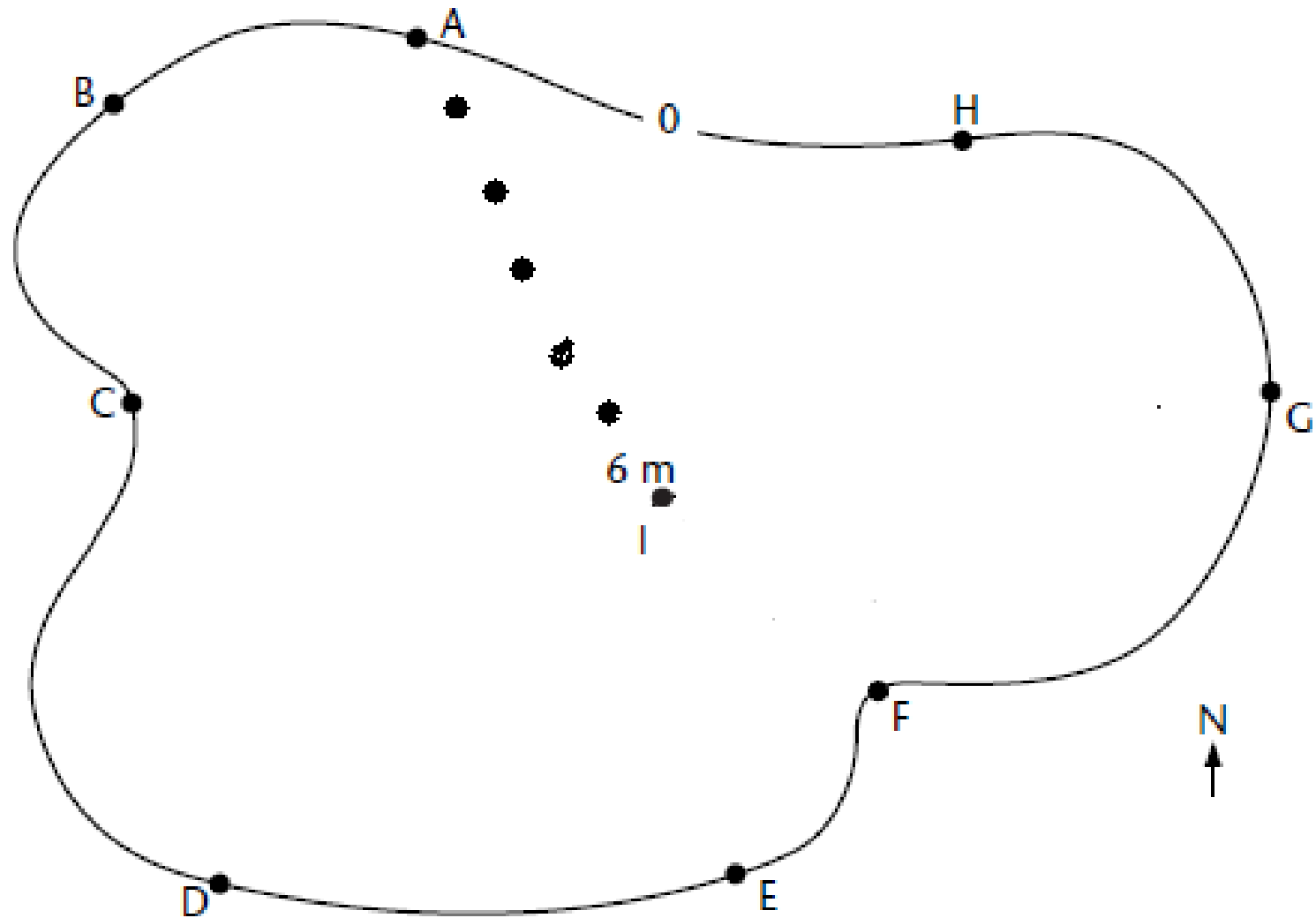


# CREATING A TOPOGRAPHIC MAP

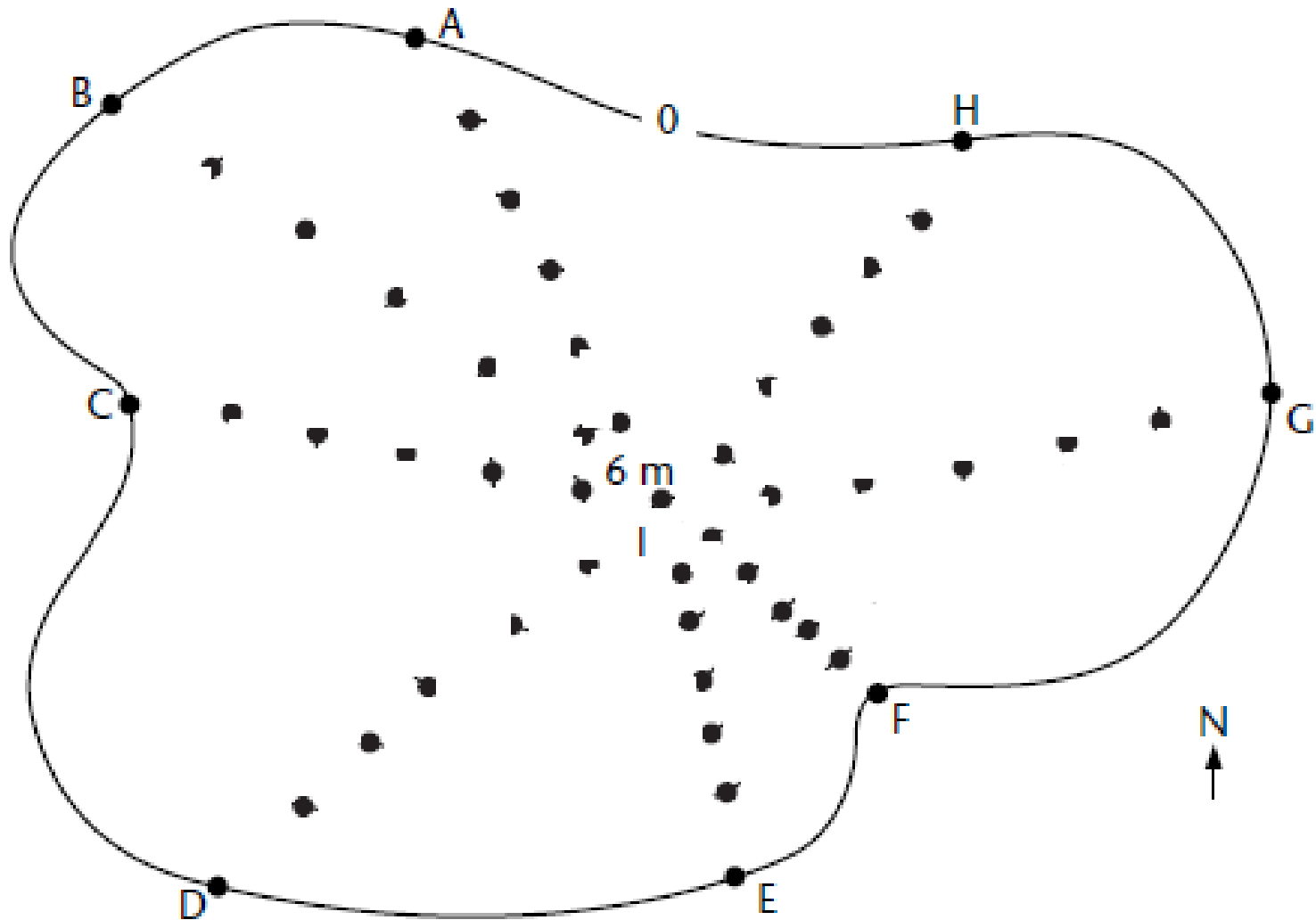
- A. Divide the distance from point A to point I, the highest point of elevation, into 6 equal distances. One section equals a 1-meter interval. Place a dot at each division.



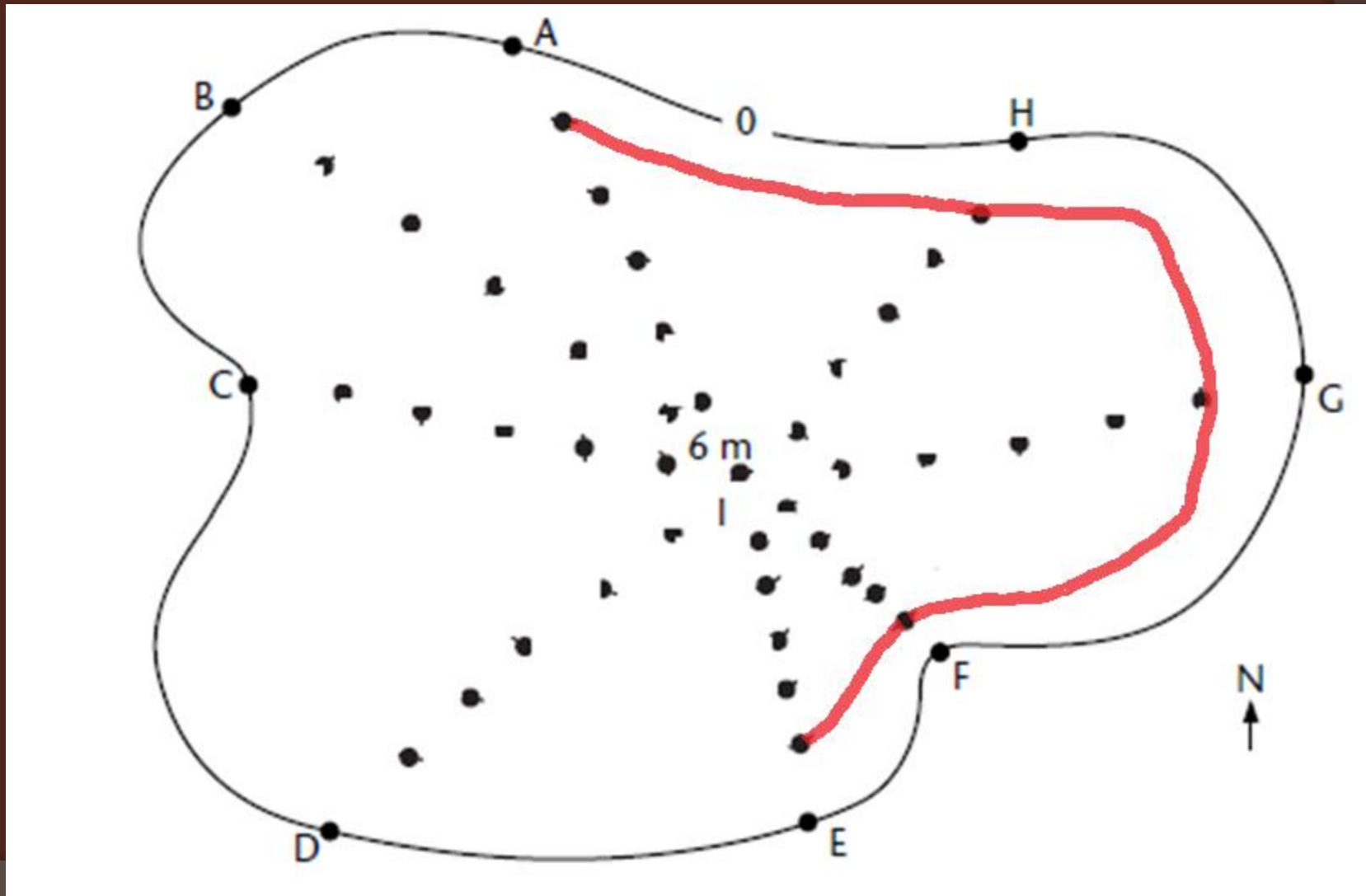
## B. Continue Step A for points B-H



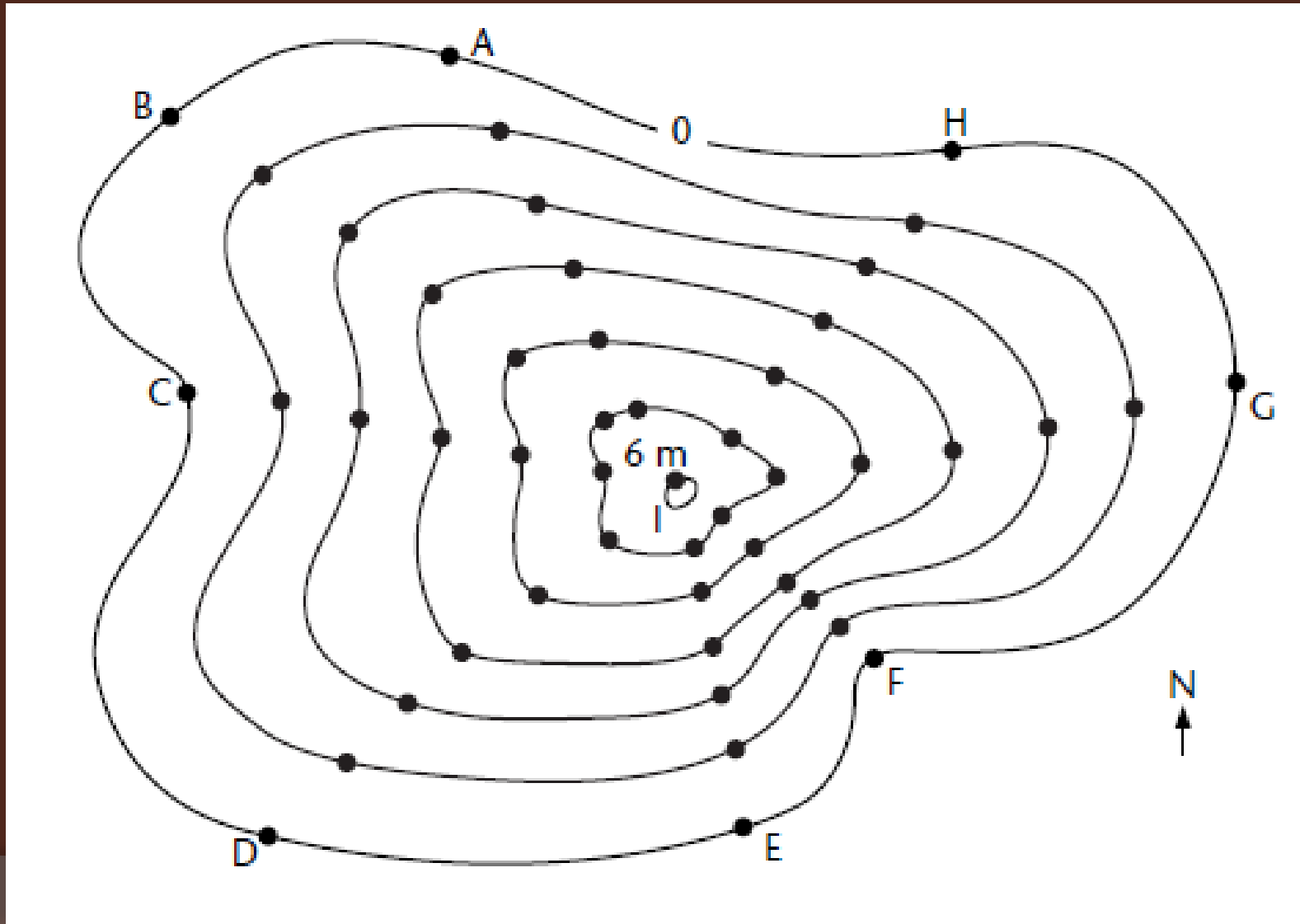
C. Connect the dots for each contour line, following the shape of the coastline.



C. Connect the dots for each contour line, following the shape of the coastline.

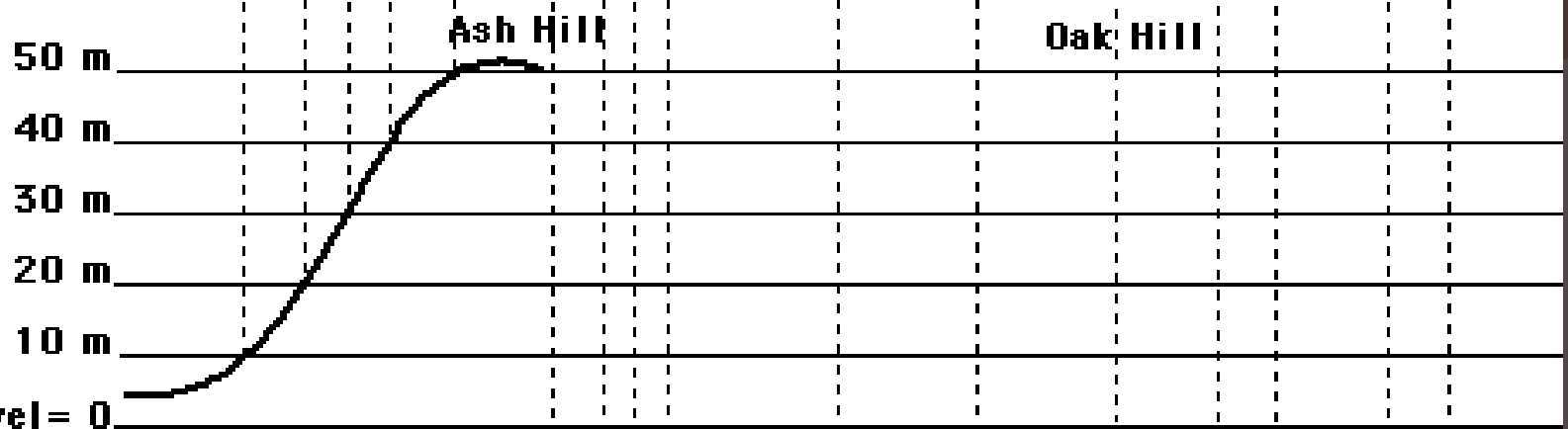
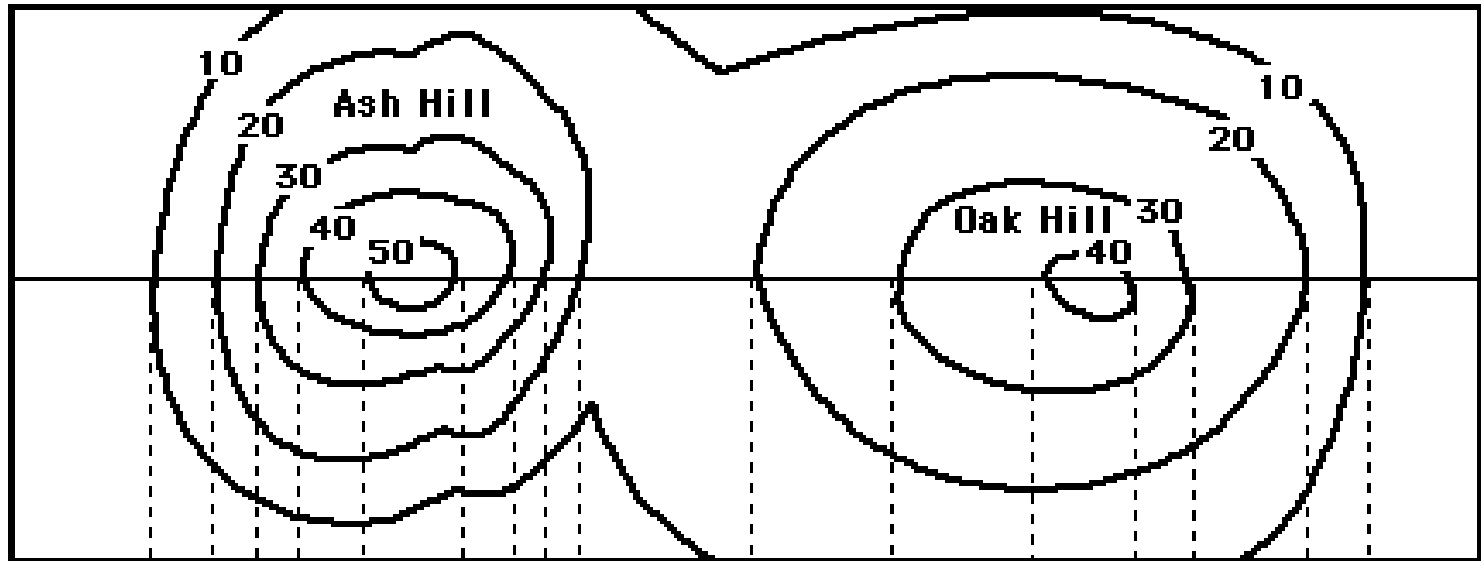


C. Connect the dots for each contour line, following the shape of the coastline.



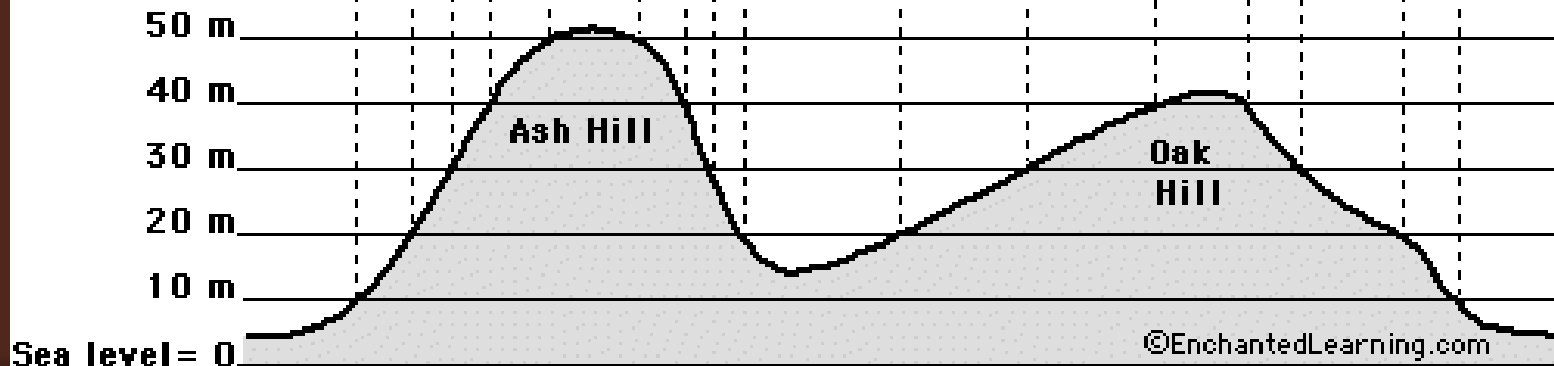
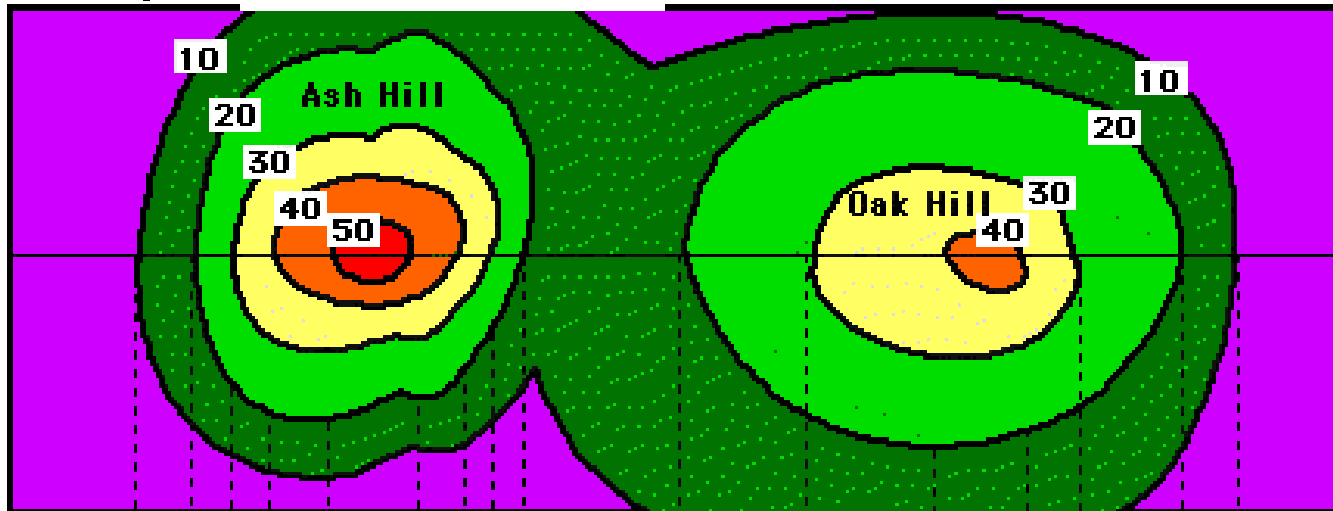
Finish the mountain diagram below the topographic map, completing Oak Hill and drawing Ash Hill with proper elevations.

**Topographic Map (with contour lines that show points that are on the same level)**



Finish the mountain diagram below the topographic map, completing Oak Hill and drawing Ash Hill with proper elevations.

**Topographic Map (with contour lines that show points that are on the same level)**



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The two hills seen from the side, with elevations marked and dotted lines pointing to the corresponding contour lines.