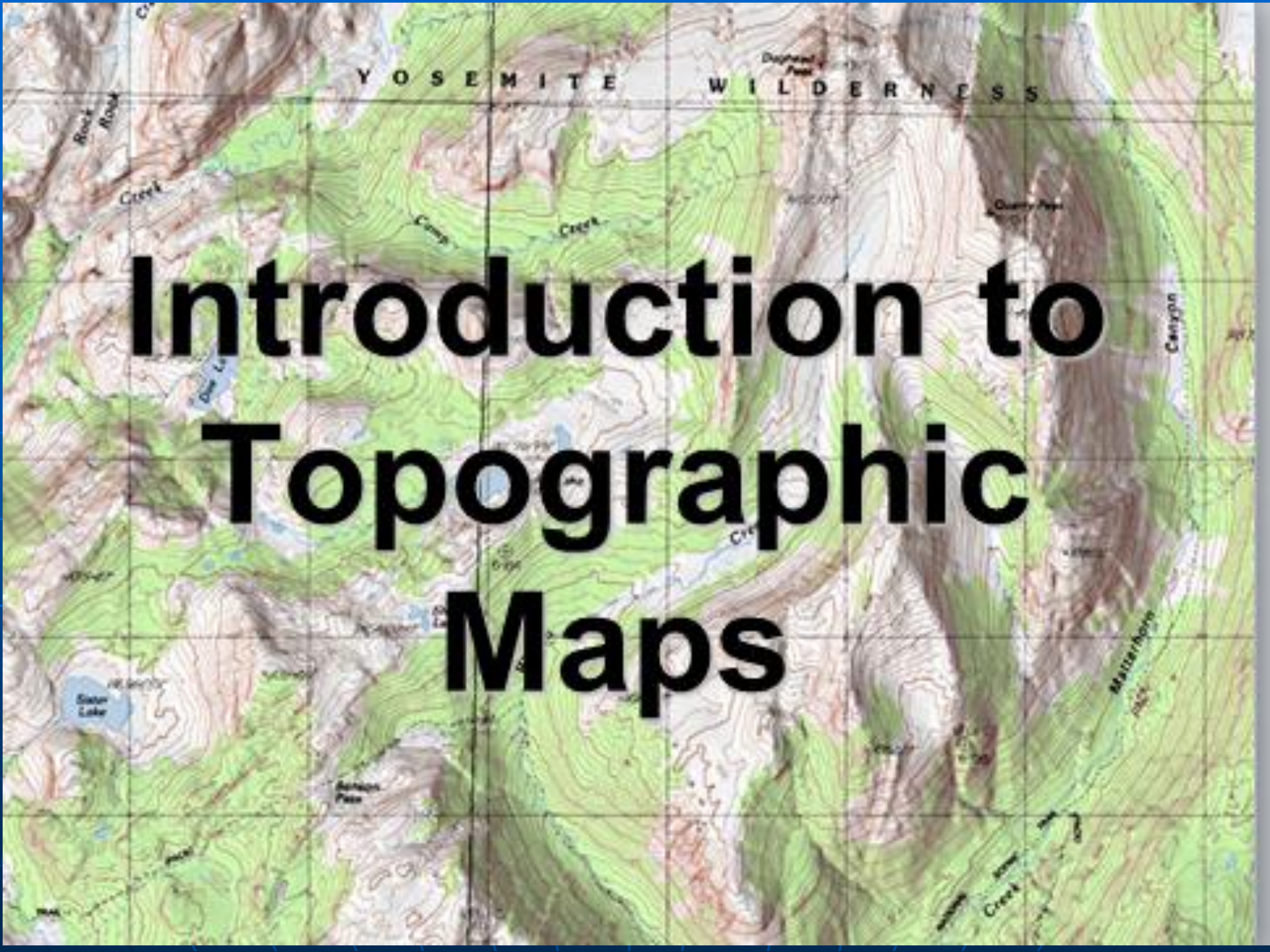
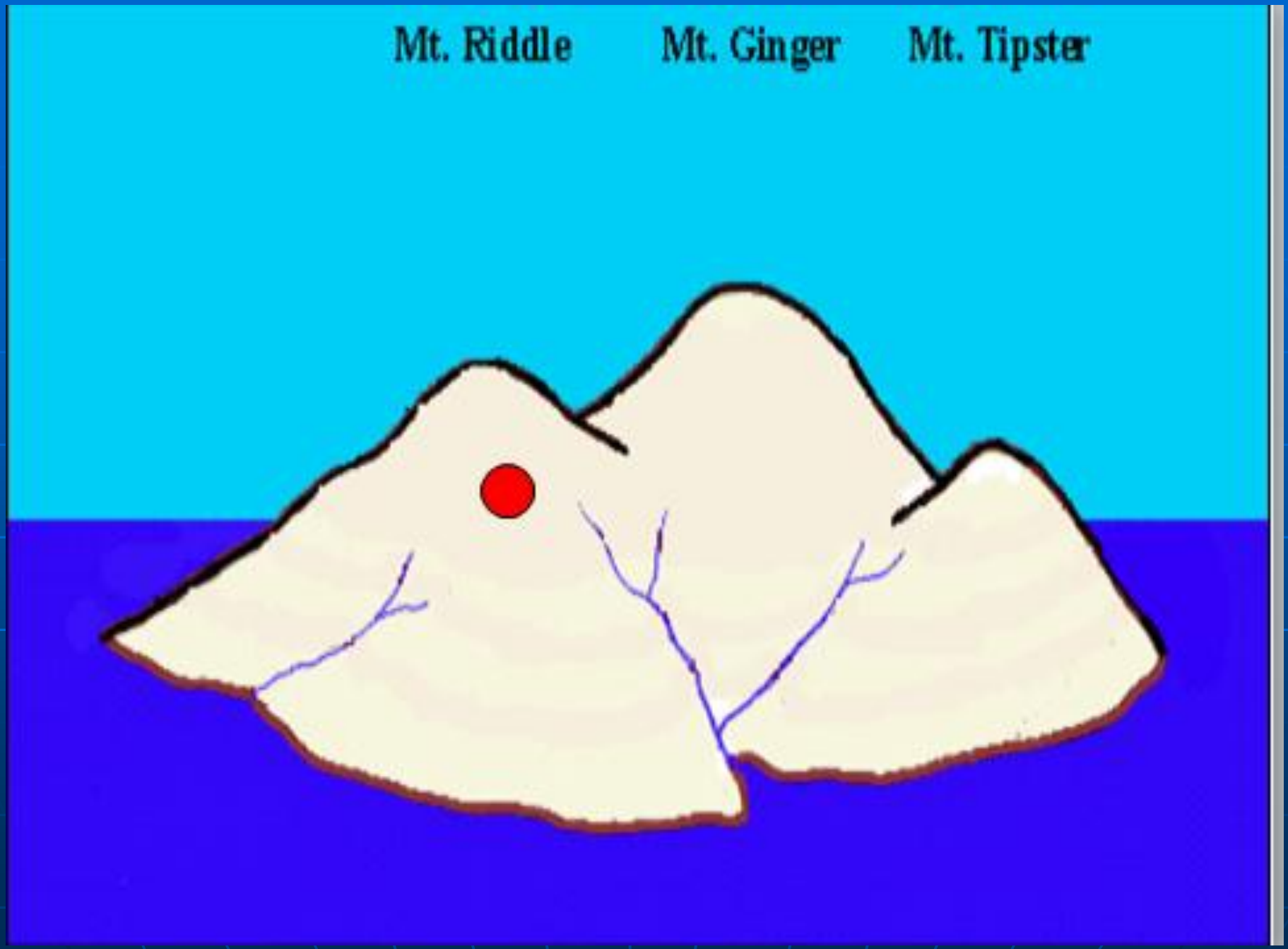
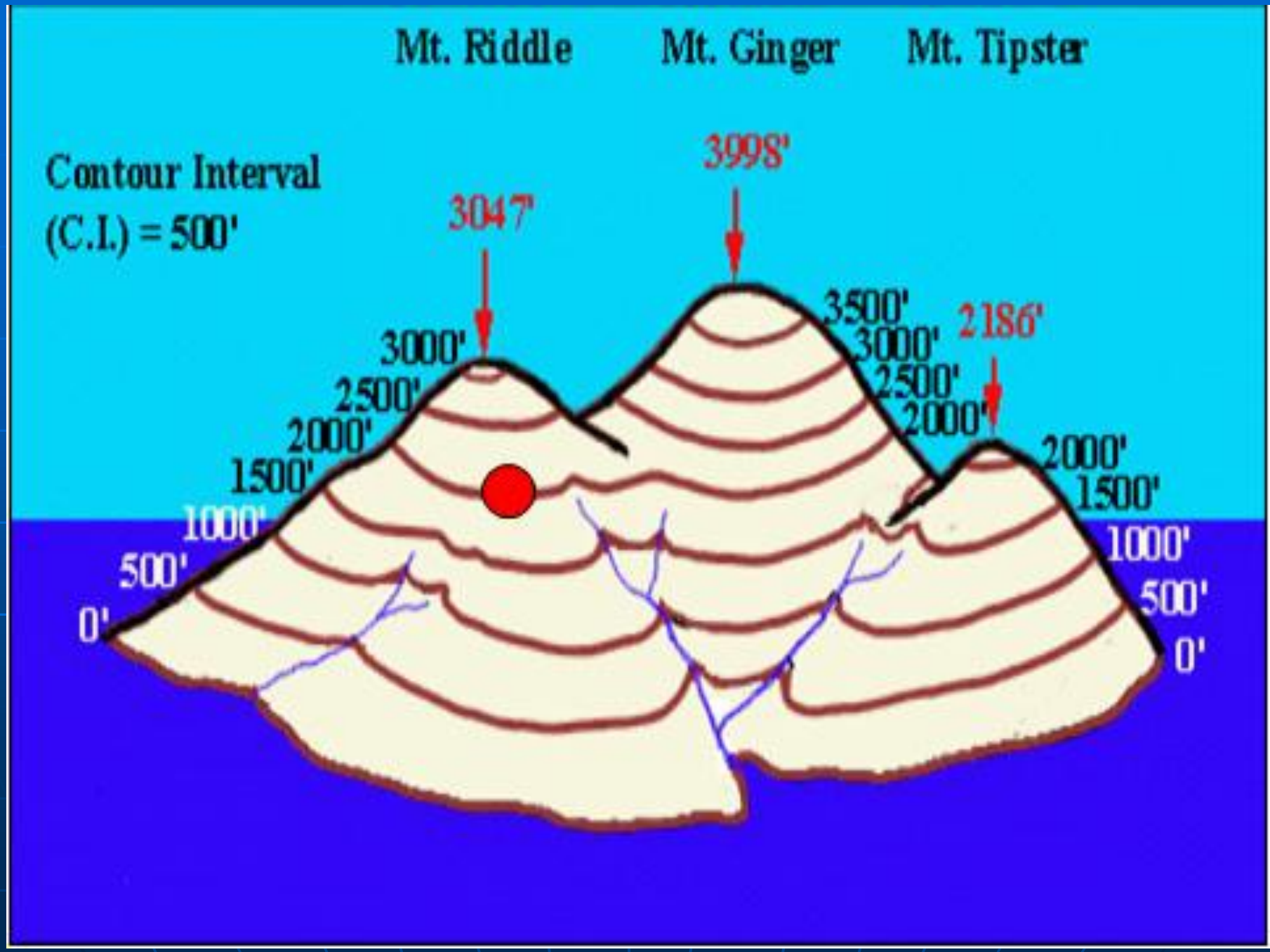


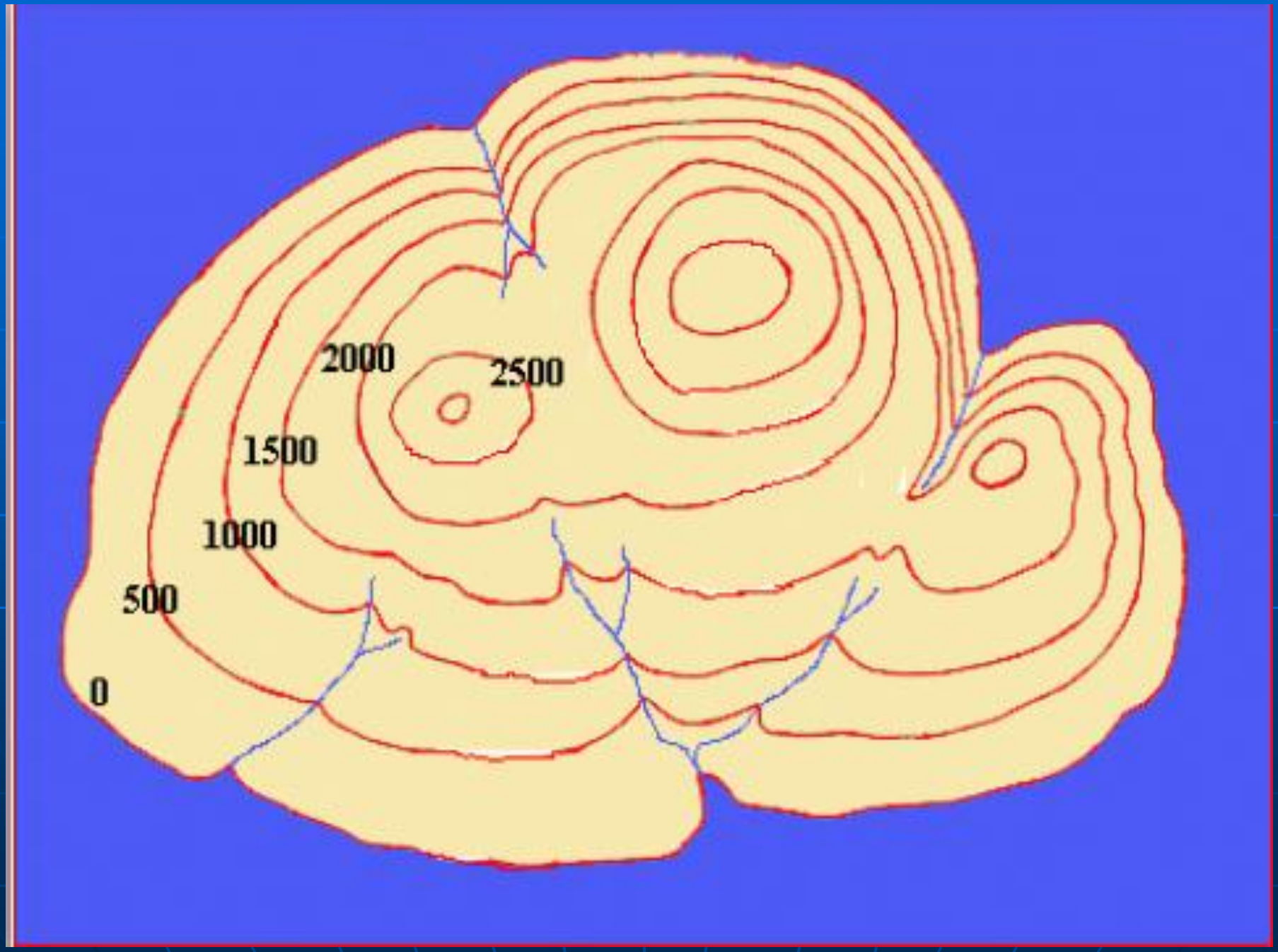
Introduction to Topographic Maps

Topographic Maps

- Two dimensional model of the Earth's surface (represents 3-D world)
- Topographic maps are also known as **contour maps**.
- Show elevation above sea level using **contour lines.**

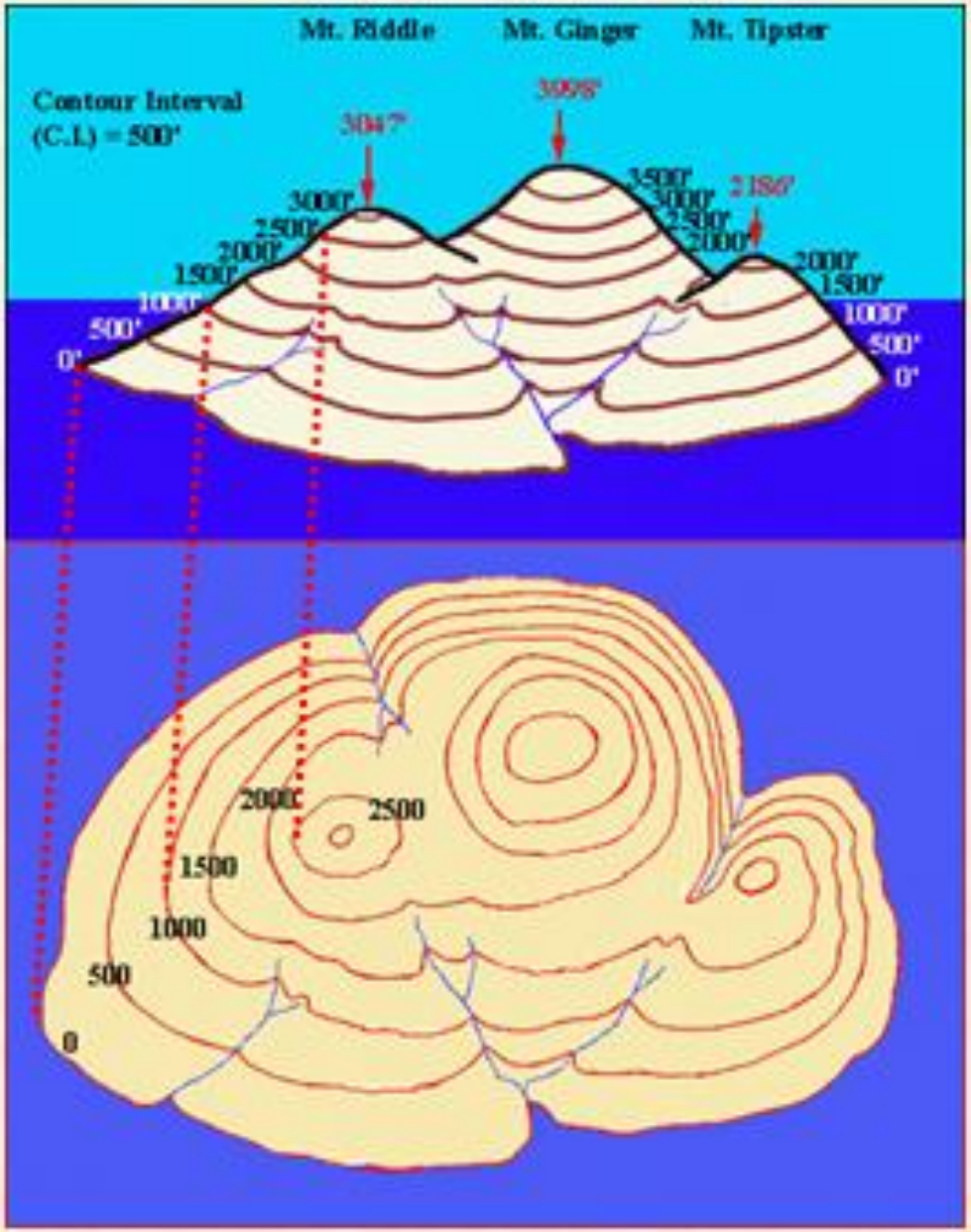

Mt. Riddle
Mt. Ginger
Mt. Tipster


Mt. Riddle
Mt. Ginger
Mt. Tipster
Contour Interval
(C.I.) = 500'
3047'
3998'
2186'
3000'
2500'
2000'
1500'
1000'
500'
0'
3500'
3000'
2500'
2000'
2000'
1500'
1000'
500'
0'


2000
2500
1500
1000
500
0

"Real World"

Contour Map



Topography of your hand

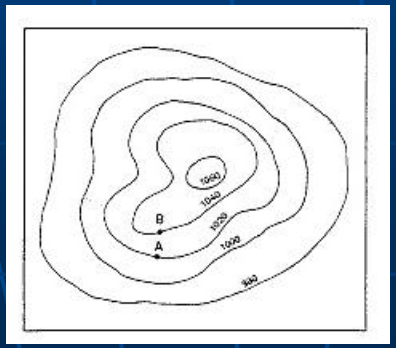
- Imagine you drew contour lines of your hand as you made a fist.

Topography of your hand

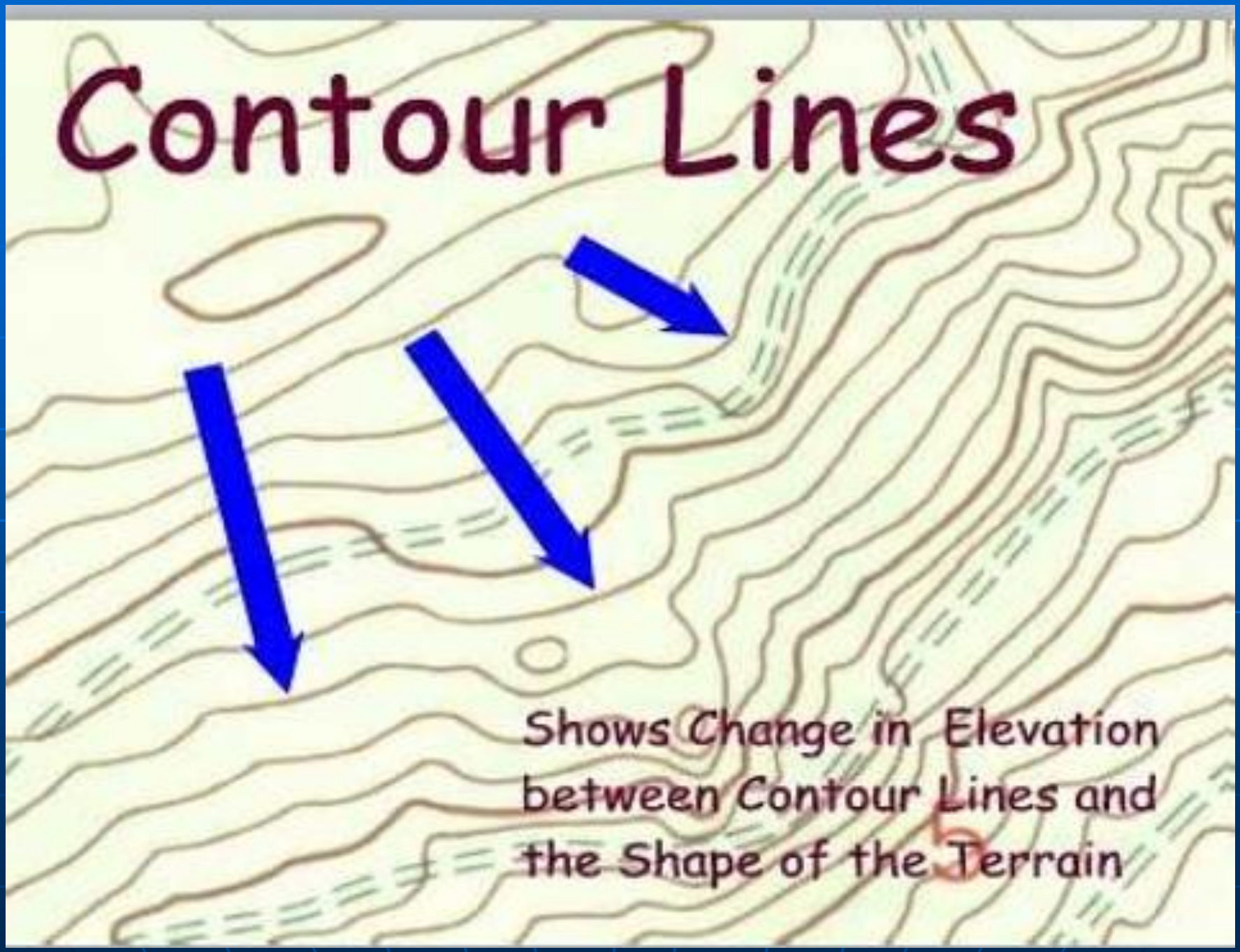
- Then you spread your hand out flat. This is what a topography map of your hand would look like.

What are contour lines?

- Contour lines are lines that connect points that are of the same elevation.
- They show the exact elevation, the shape of the land, and the steepness of the land's slope.
- Contour lines never touch or cross.



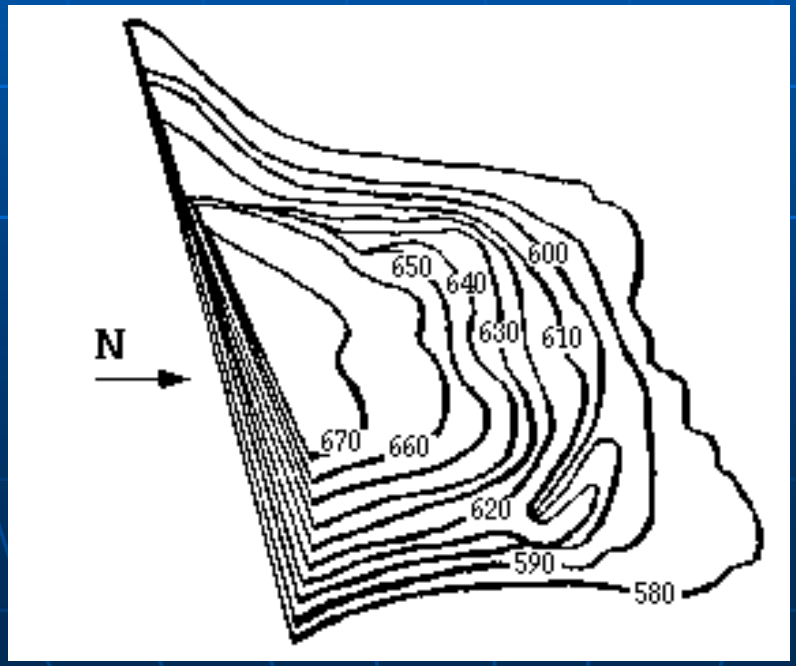
Contour Lines



Shows Change in Elevation between Contour Lines and the Shape of the Terrain

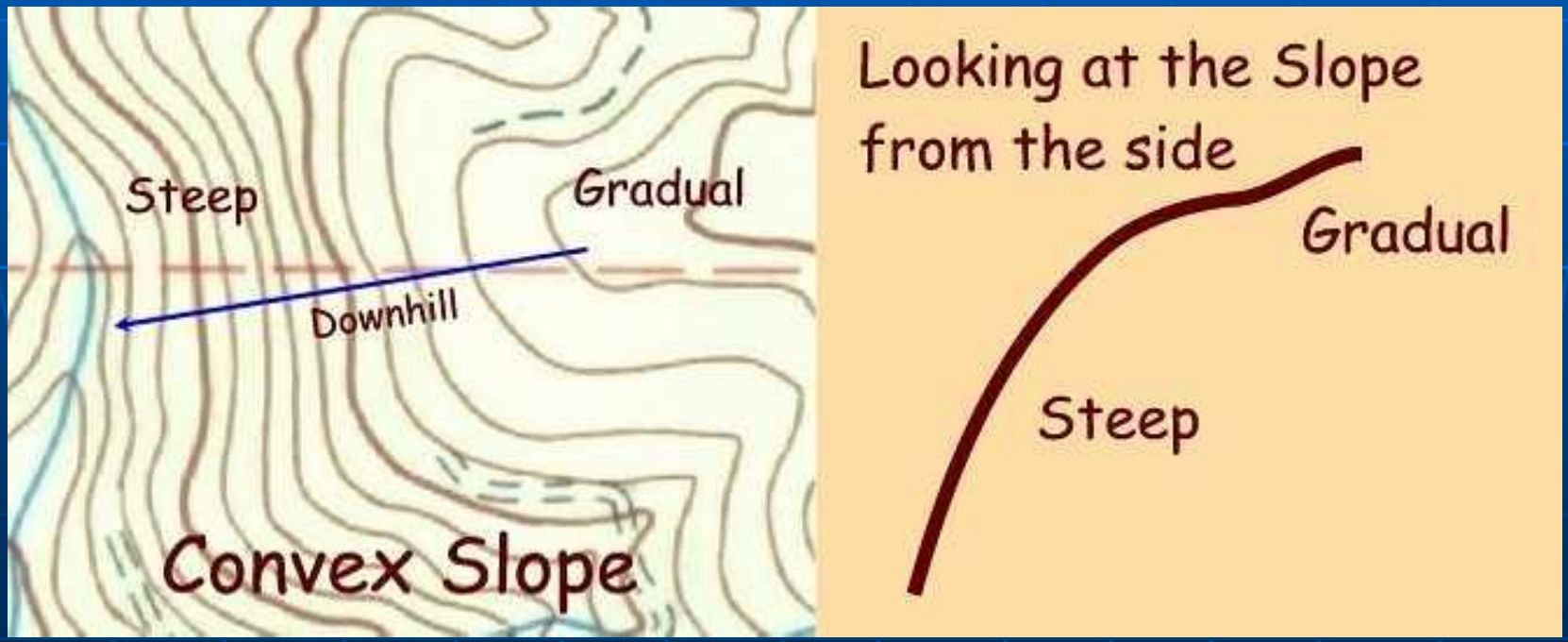
Contour lines - close together

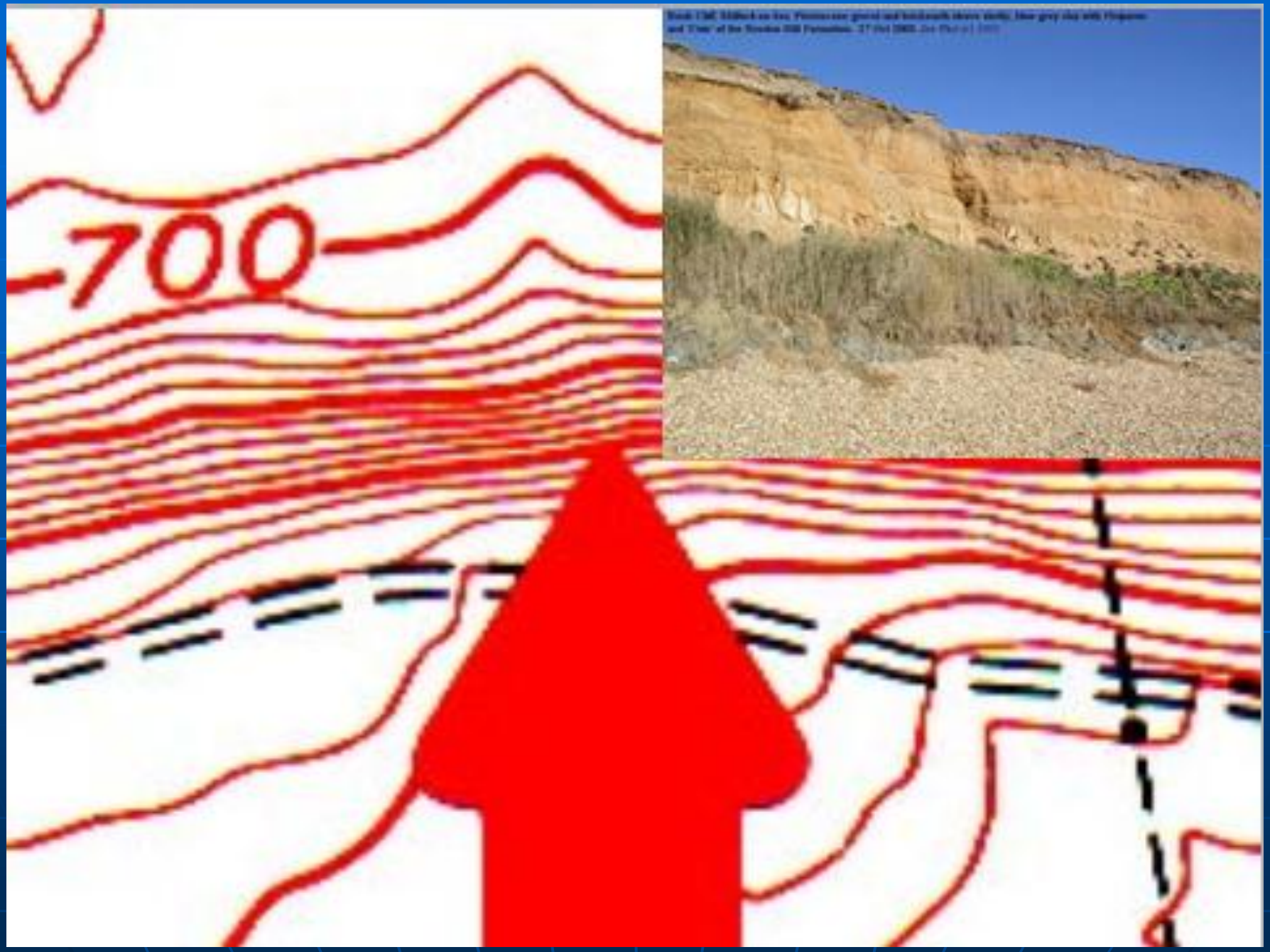
- If the contour lines are close together, then that indicates that area has a steep slope.



Closely Spaced Contours

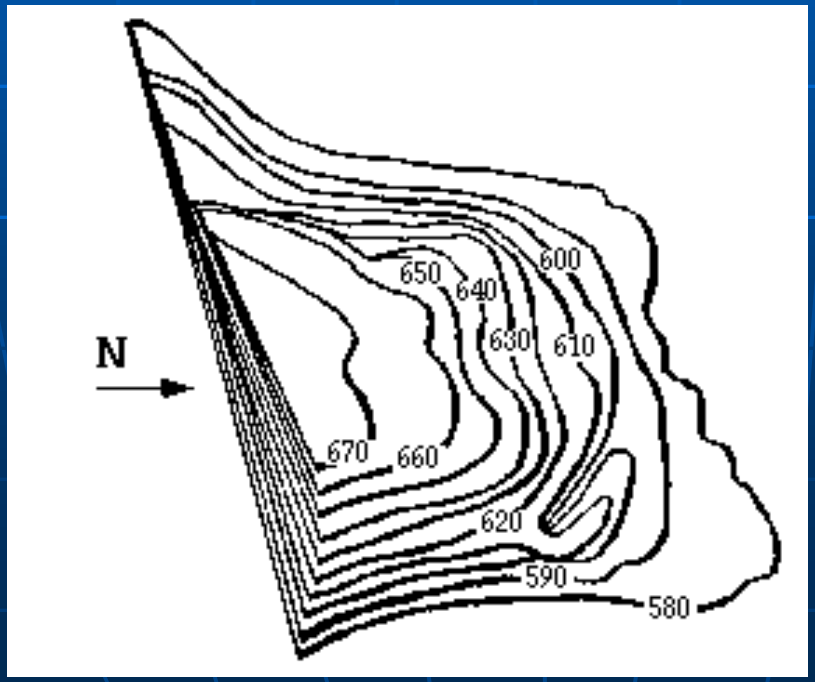
- Steeper Slope (Gradient) – contour lines are closer together.




-700

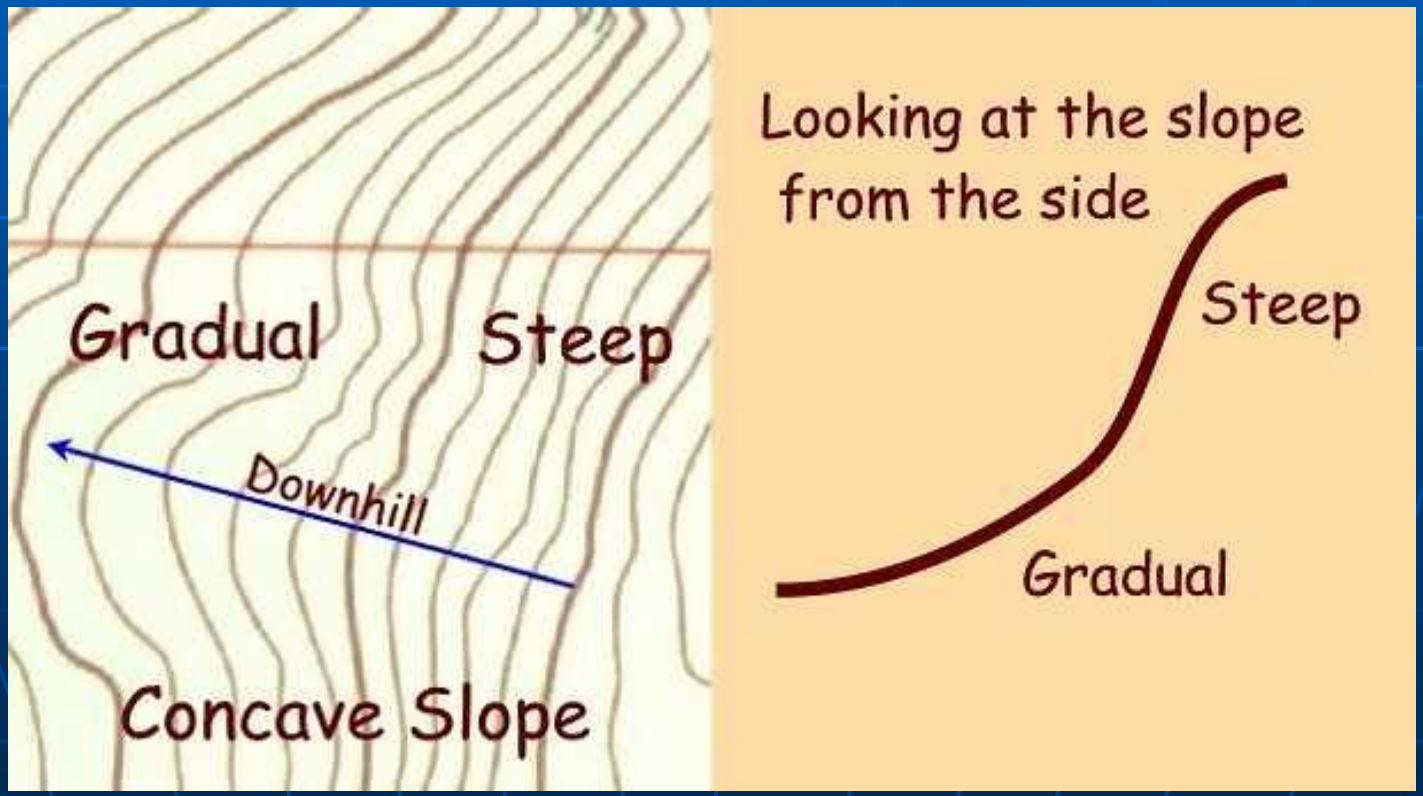
Contour lines - far apart?

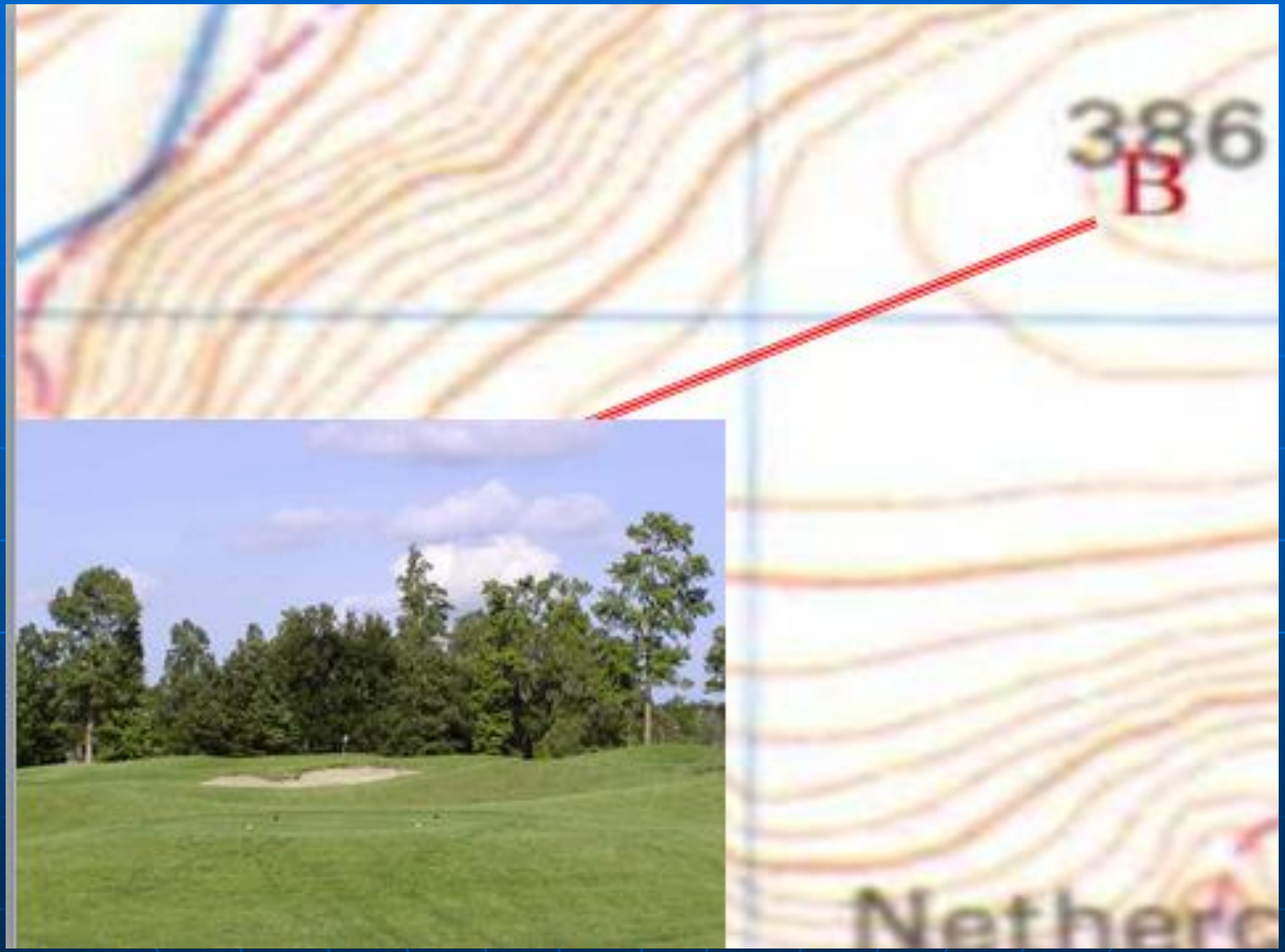
- If the contour lines are far apart, then that indicates the land has a gentle slope (low slope).



Wide Spaced Contours

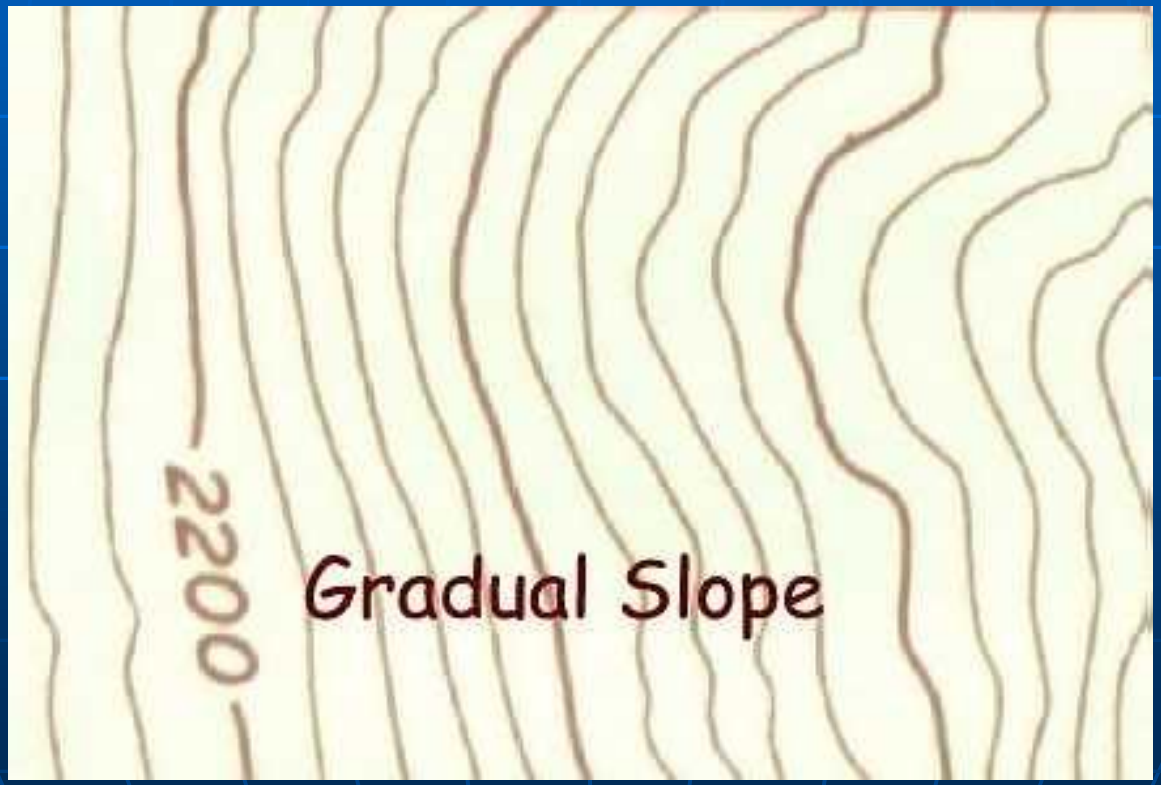
- Gradual/Gentle Slope (Gradient) – contour lines are farther apart.




386
B

Rules for Contours

1. Contour lines never cross



Rules for Contours

2. Contours form closed loops (even if not shown of the map.

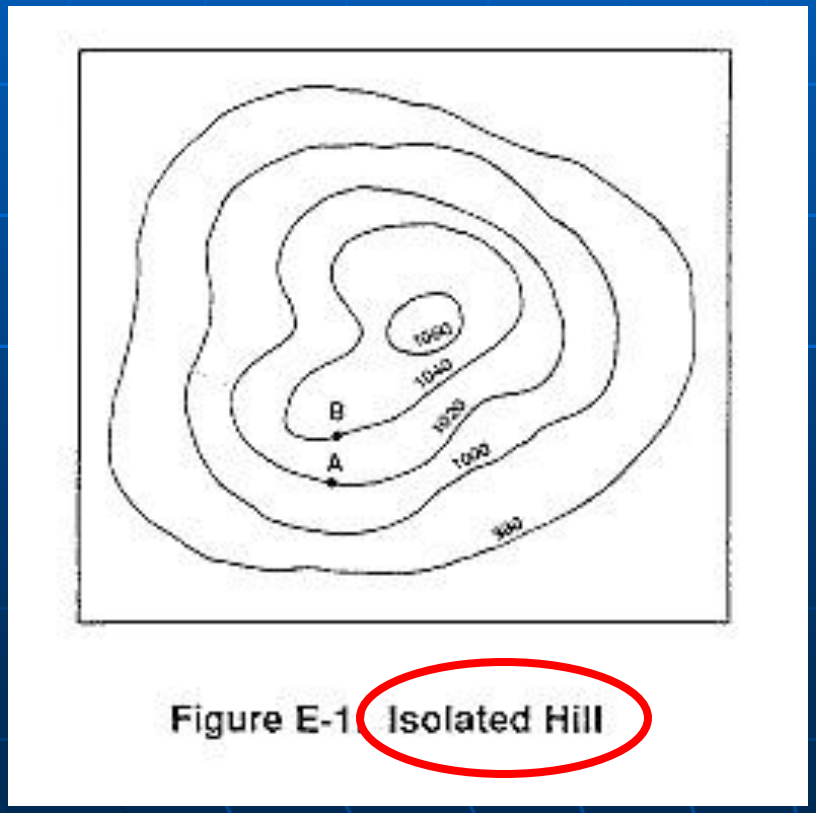
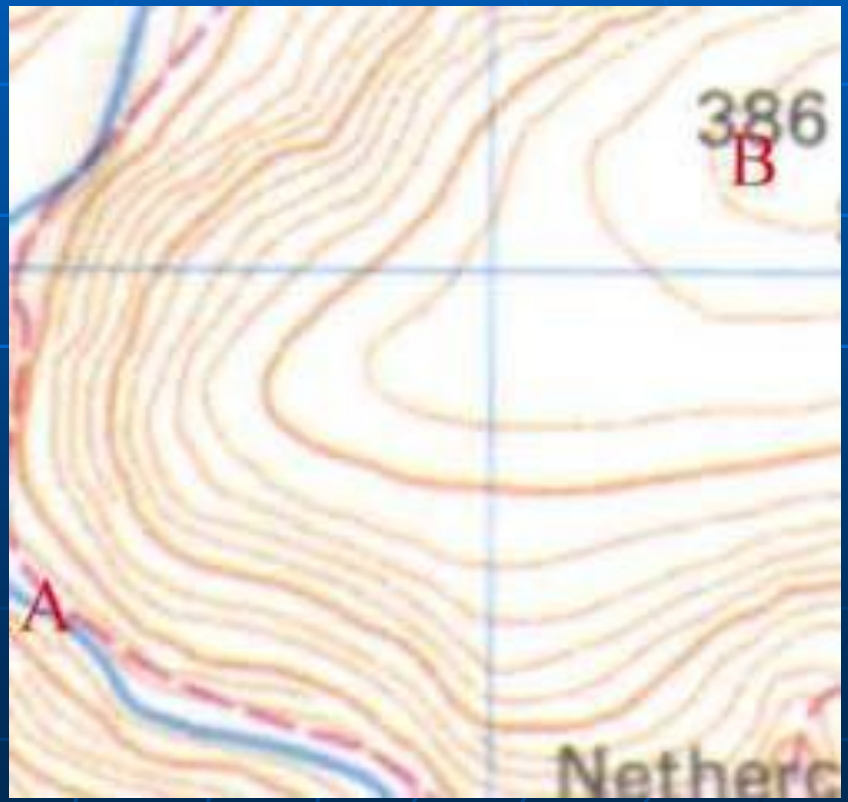


Figure E-1 Isolated Hill



Rules for Contours

3. Contours bend upstream (uphill) when crossing a stream.

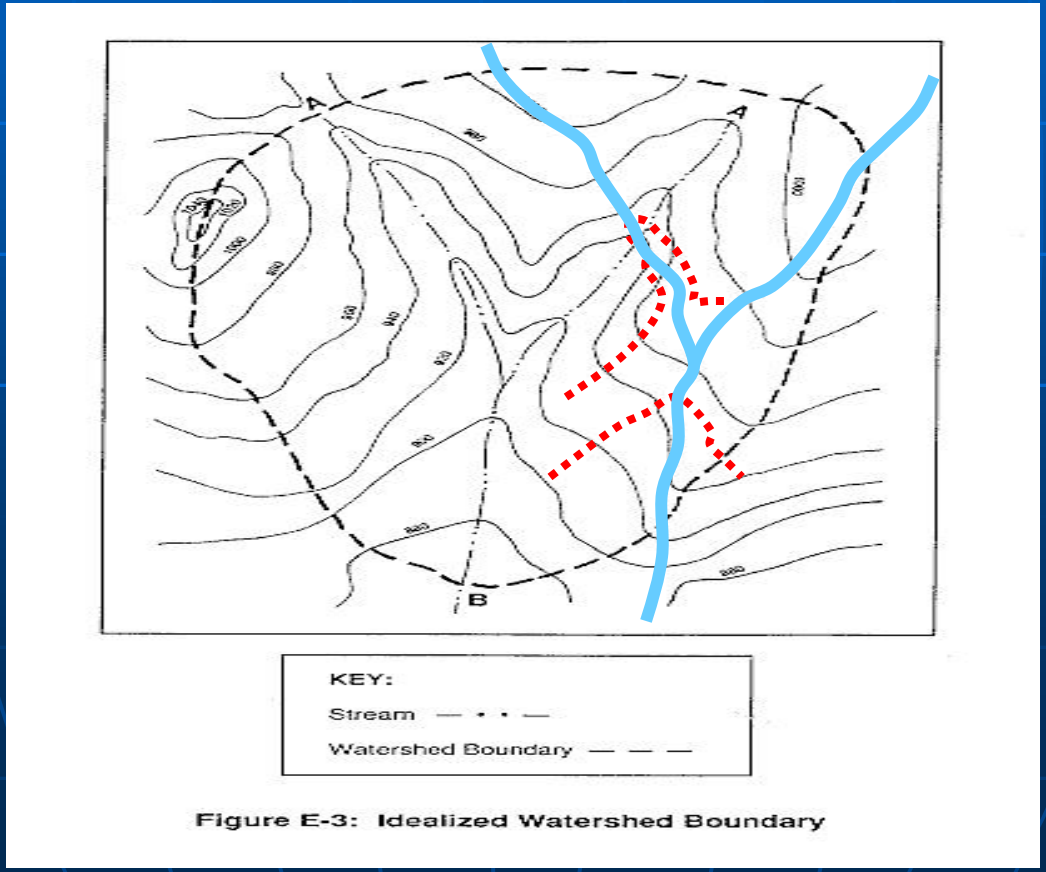


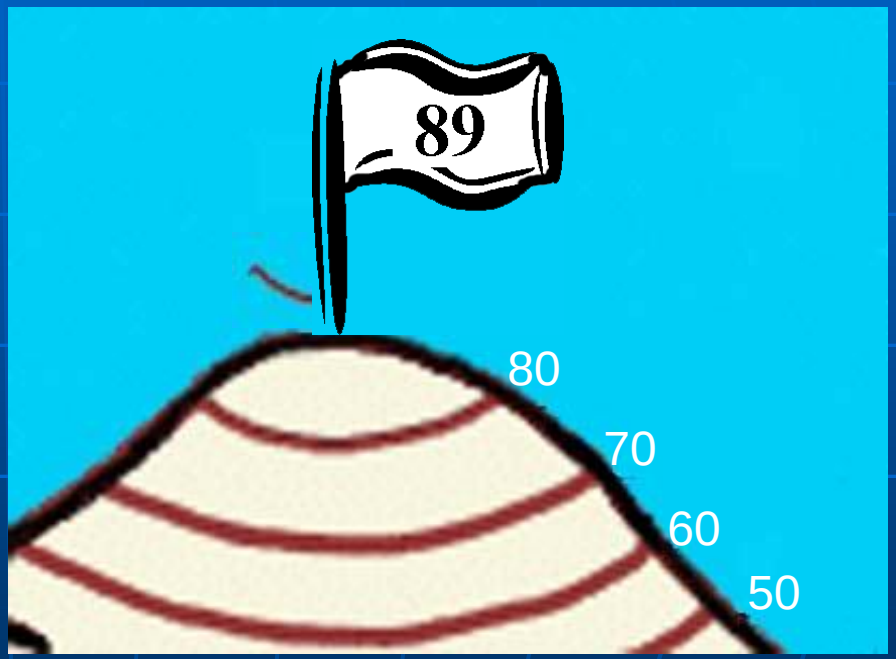
Figure E-3: Idealized Watershed Boundary

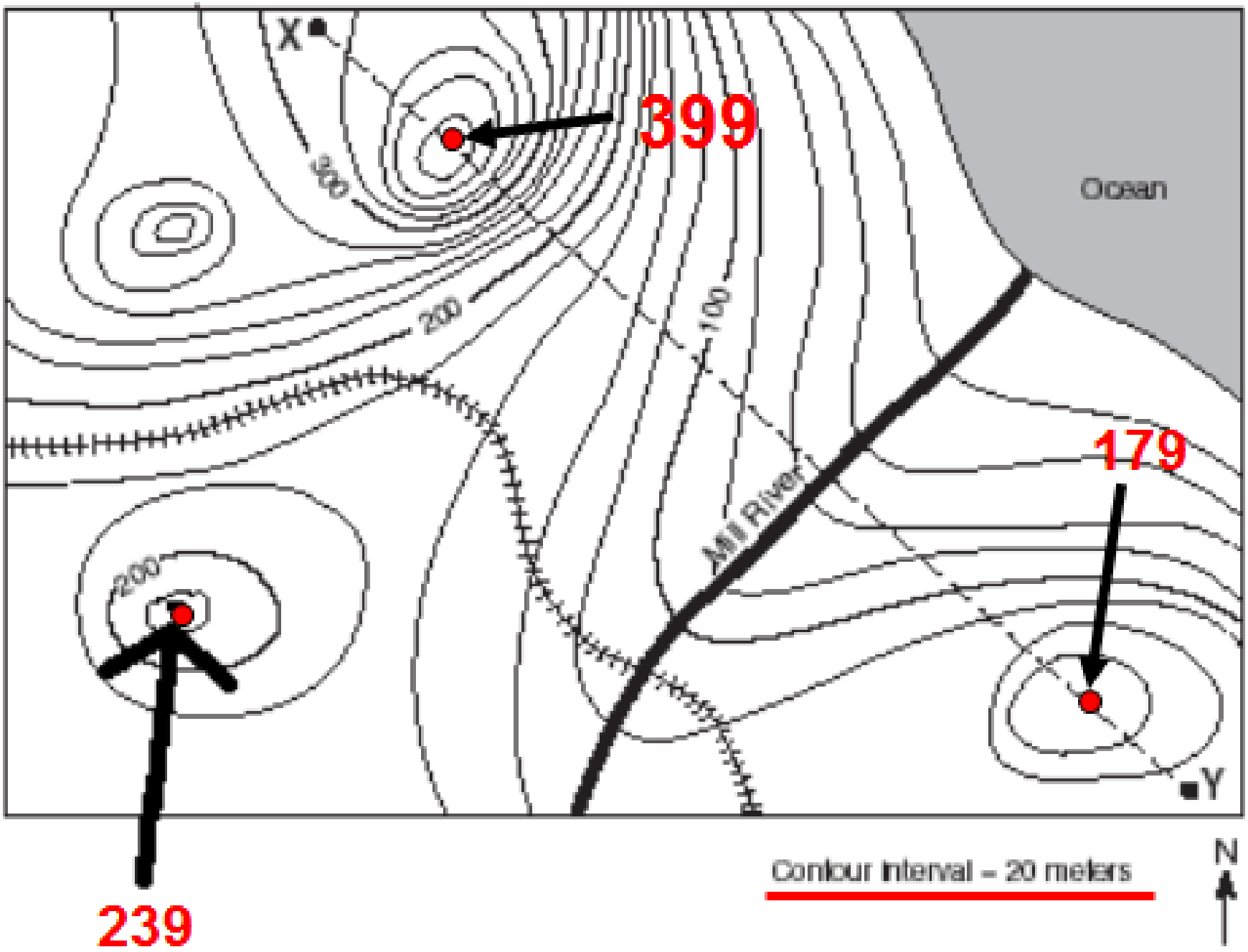

High Ground
"V" points uphill
Borrow Pit
Low Ground

Rules for Contours

4. The maximum possible elevation for a hill is "1" less than what the next contour "should" be.

   The highest possible elevation of the hill is **just below** the value of the next line **that is not shown**



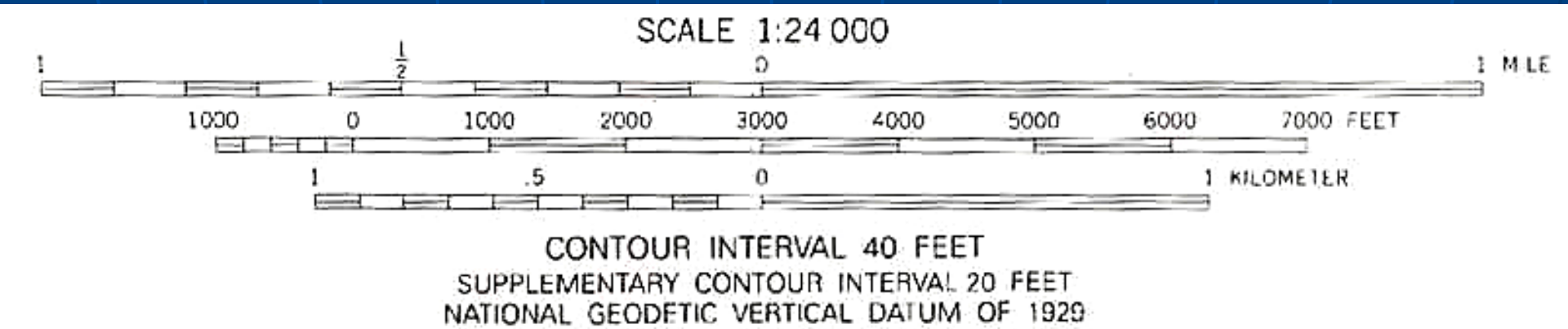

X
399
Ocean
500
200
100
Mill River
179
200
Y
239
Contour Interval = 20 meters
N

Depressions

- Contour lines which show a depression, crater, or sinkhole on a map.
- Shown by dashed lines (hachure marks) on the inside of a contour line
- **The elevation of the first depression contour is the same as the lowest regular contour near it.**

Map Scales

- Indicates the distance on the map compared to distance in the real world
- Graphical - by a line divided into equal parts and marked in units of length.

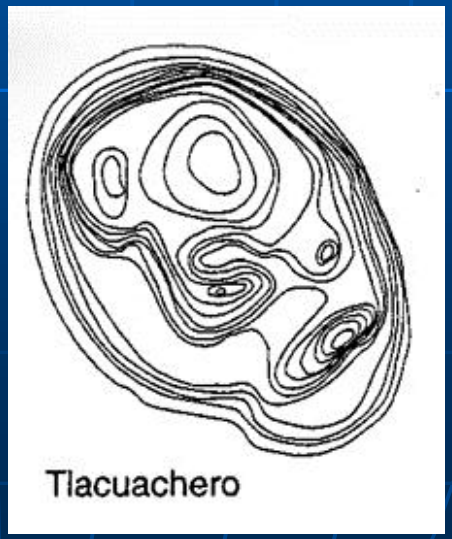


How to read a contour map

- First determine the contour interval (the distance between each contour line)
- Then determine the map scale (usually at the bottom of the map)
- Identify any hills or depressions
- Use the legend to identify man made features.

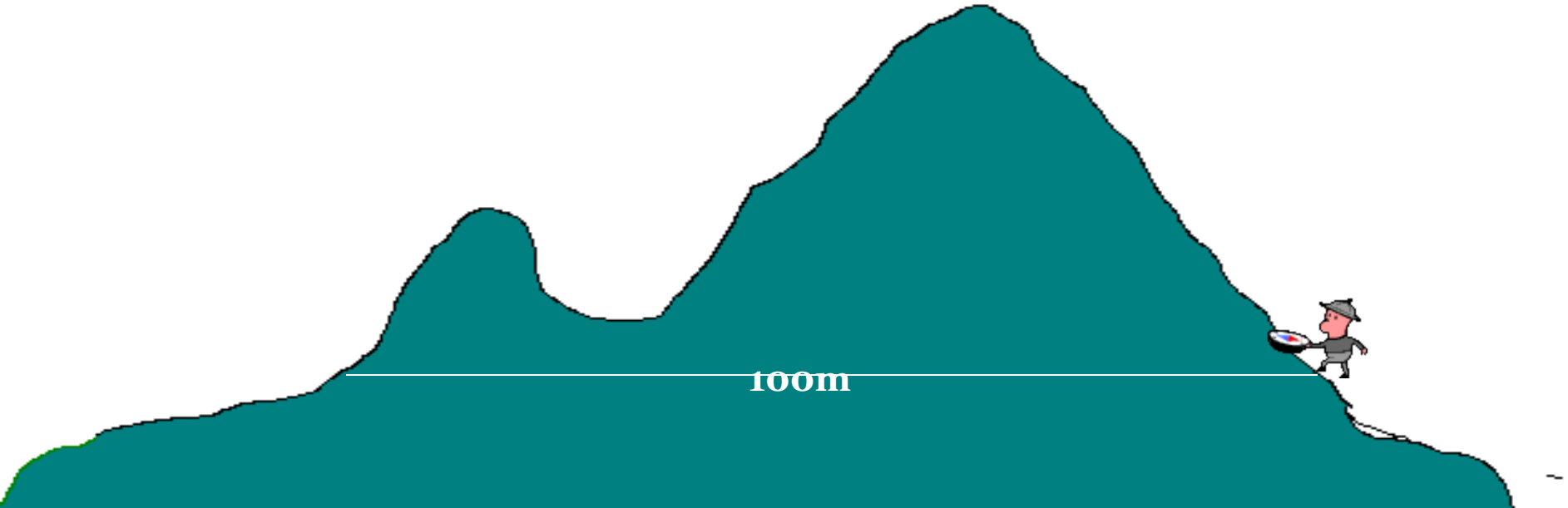
Reading a topographic map cont.

- Look for areas where the contour lines are close together – they indicate a steep area.
- Look for areas where the contour lines are spread apart – they indicate a gentle slope.

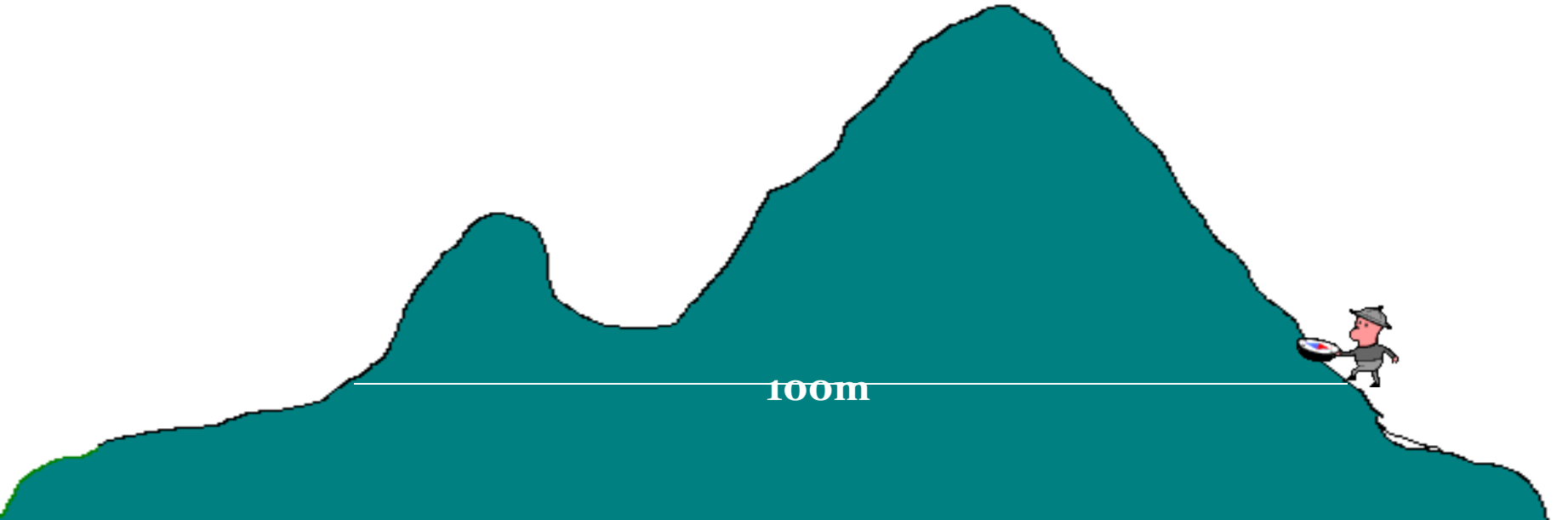


Let’s take a walk up a hill!

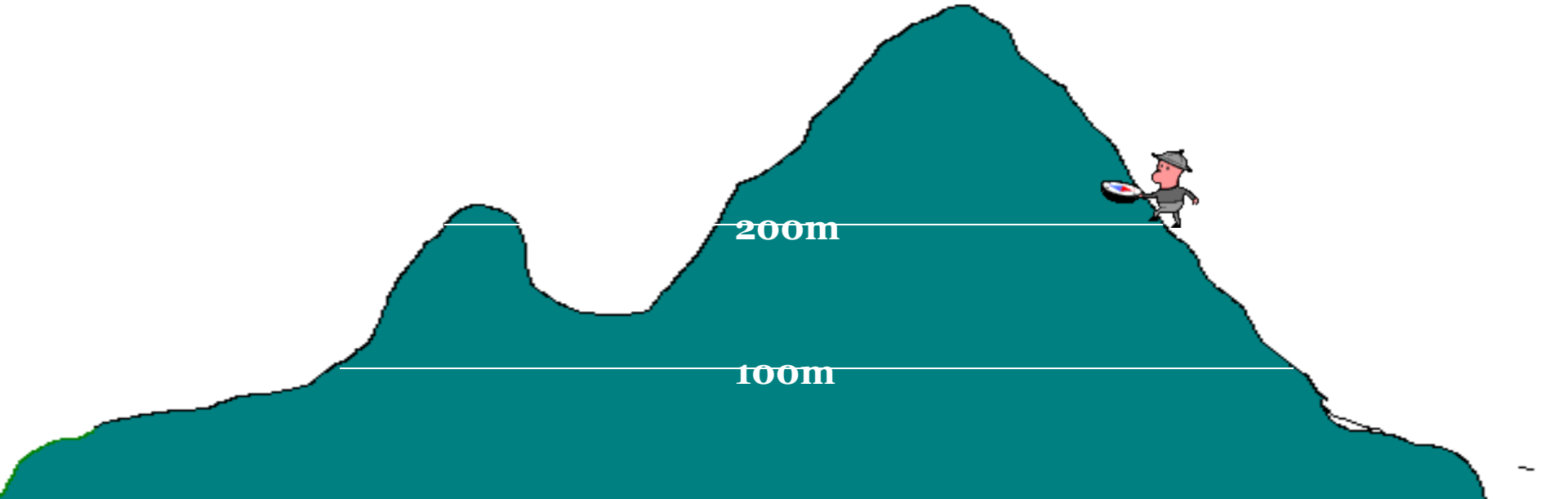
We’re now at an elevation of 100 meters.



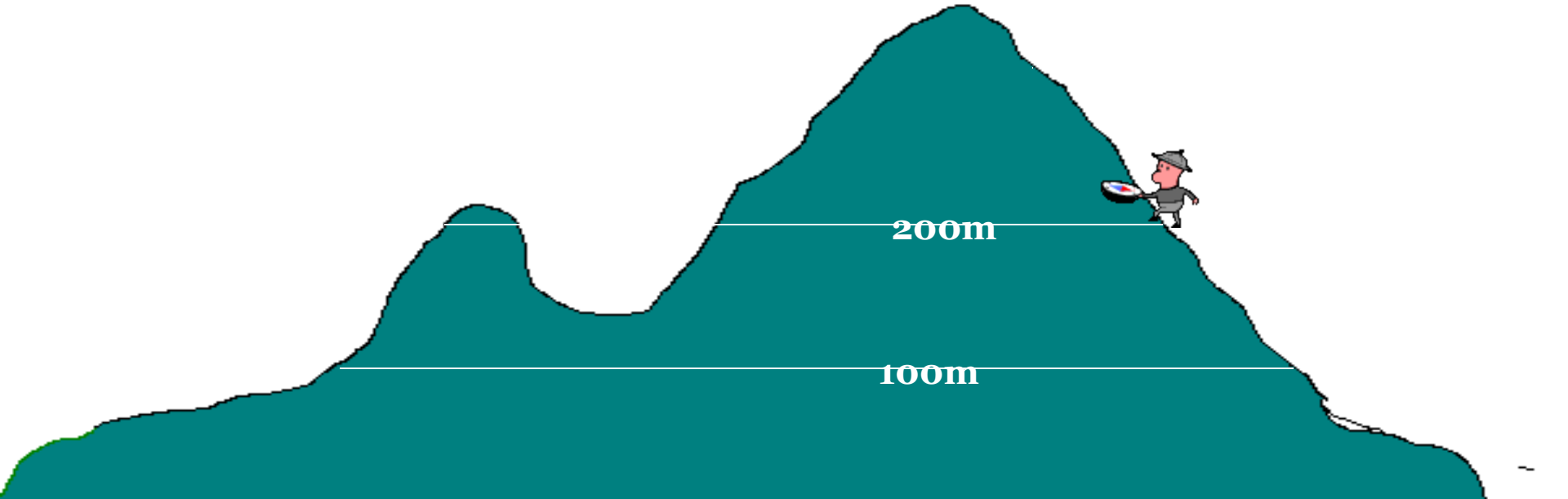
Let's keep going!



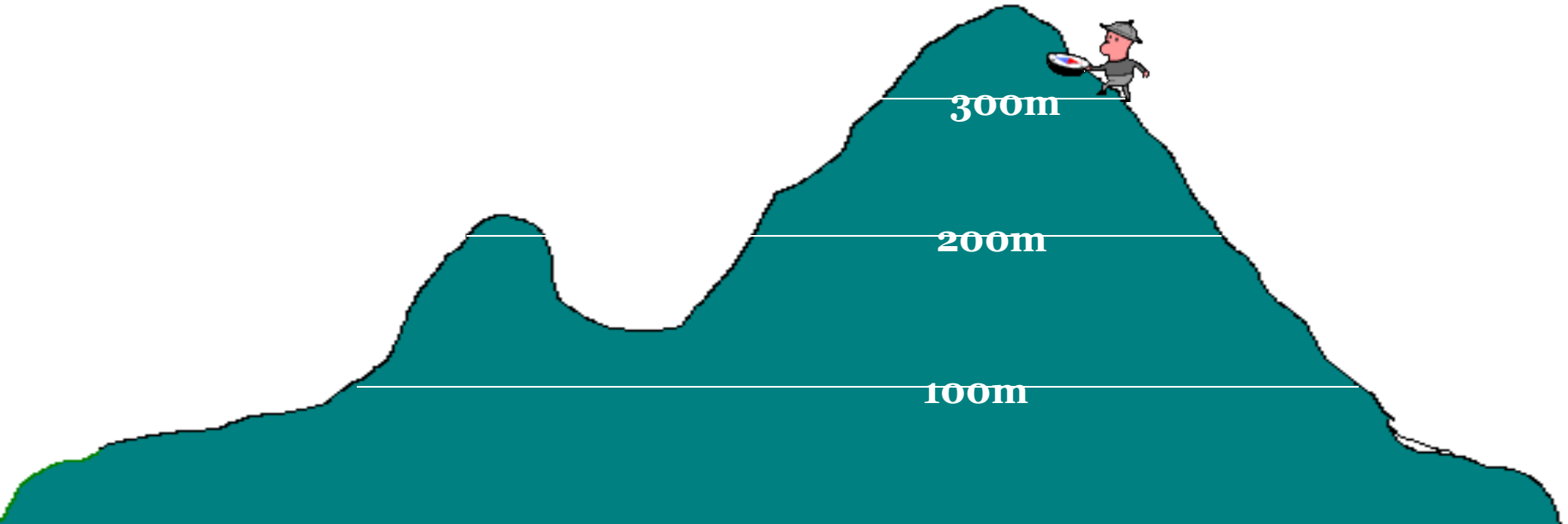
Now we're at 200m.



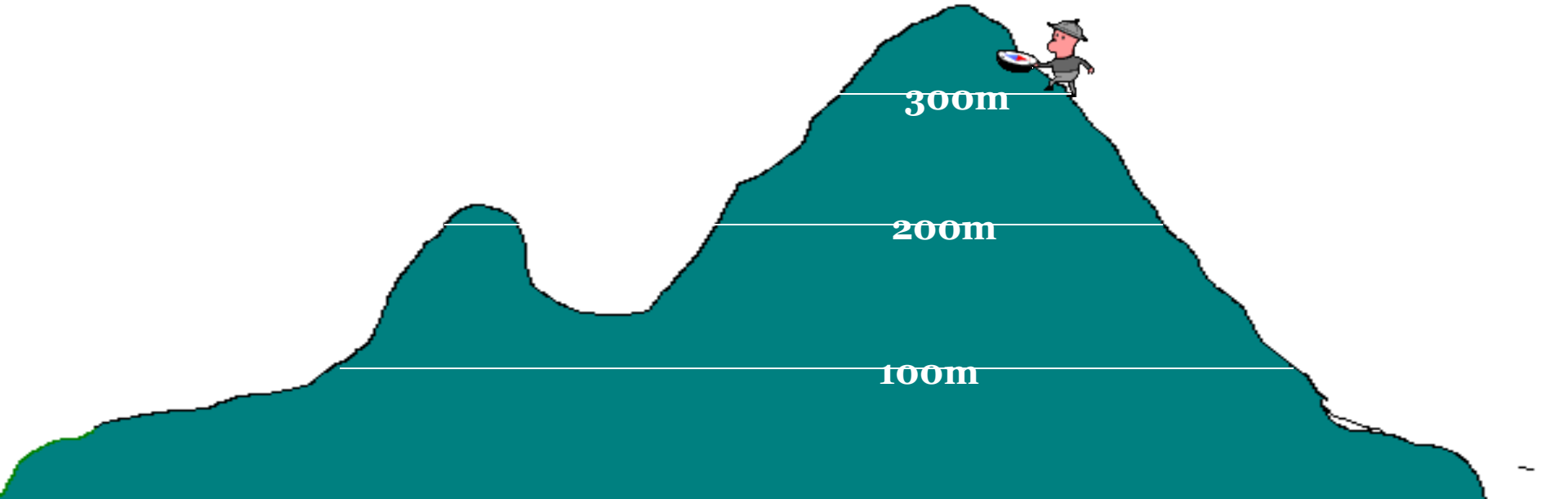
Shall we march on?



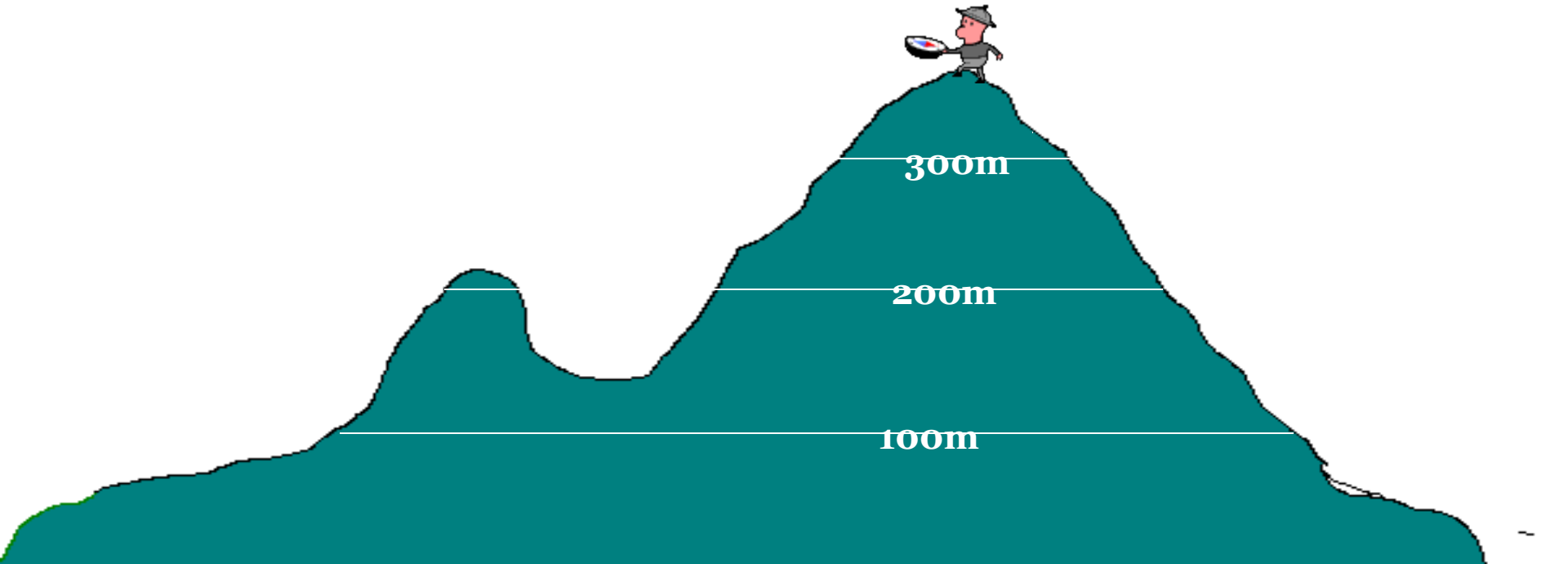
We've made it to 300m!



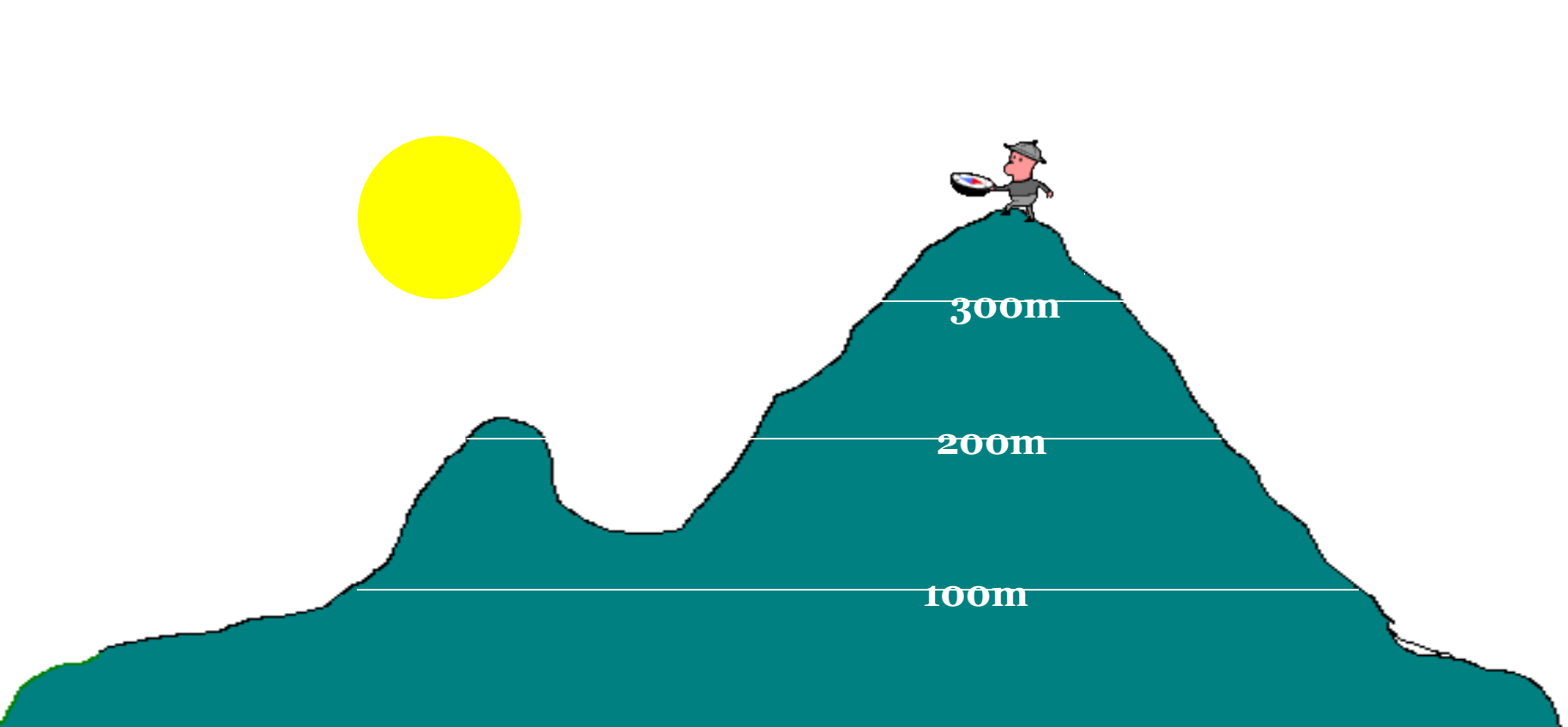
On to the peak!



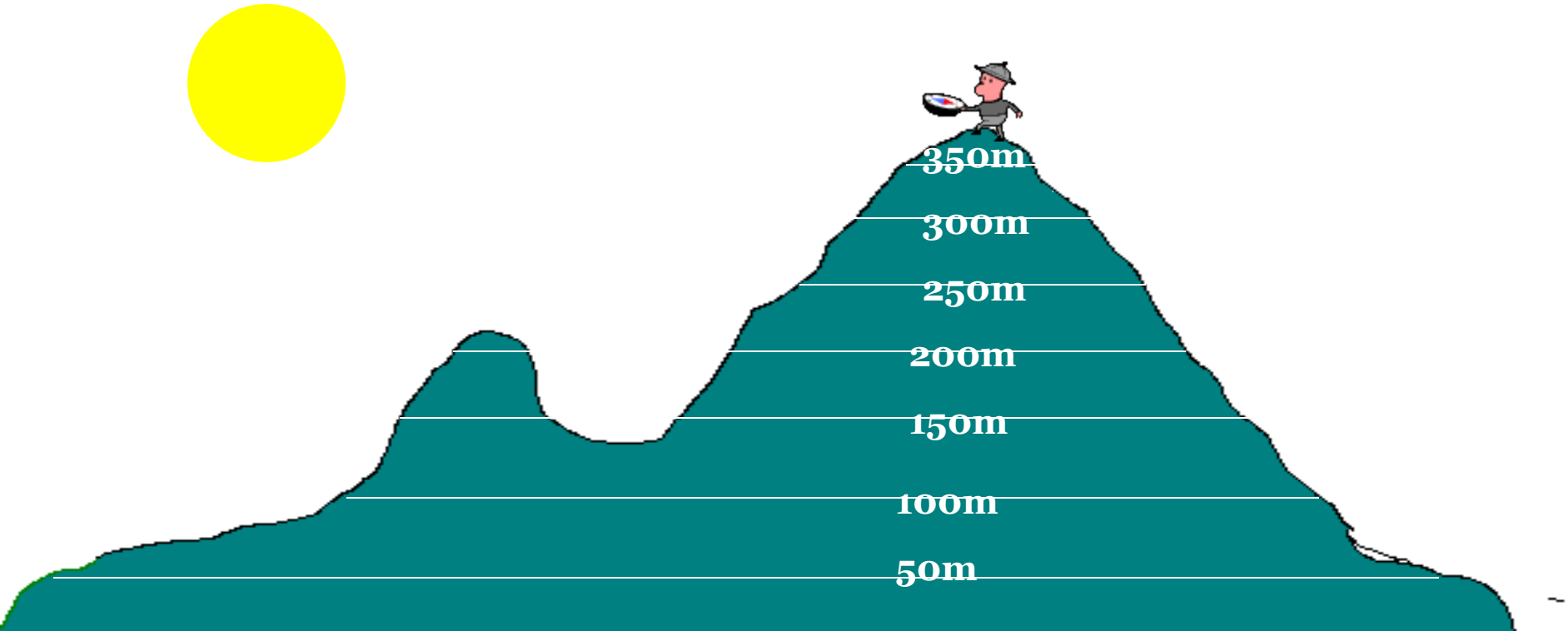
We're on the peak, but what's our elevation?



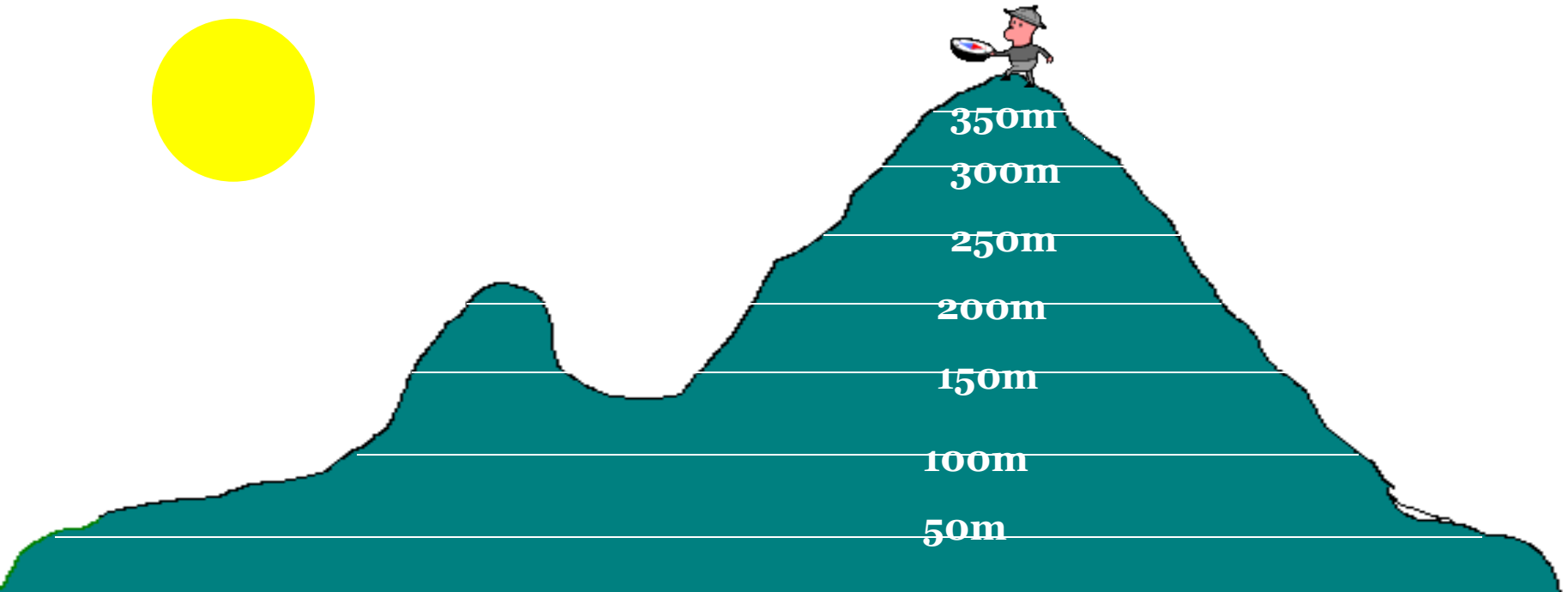
Add contour lines for every 50 meters.



We know that we are above 350m, but less than 400m.

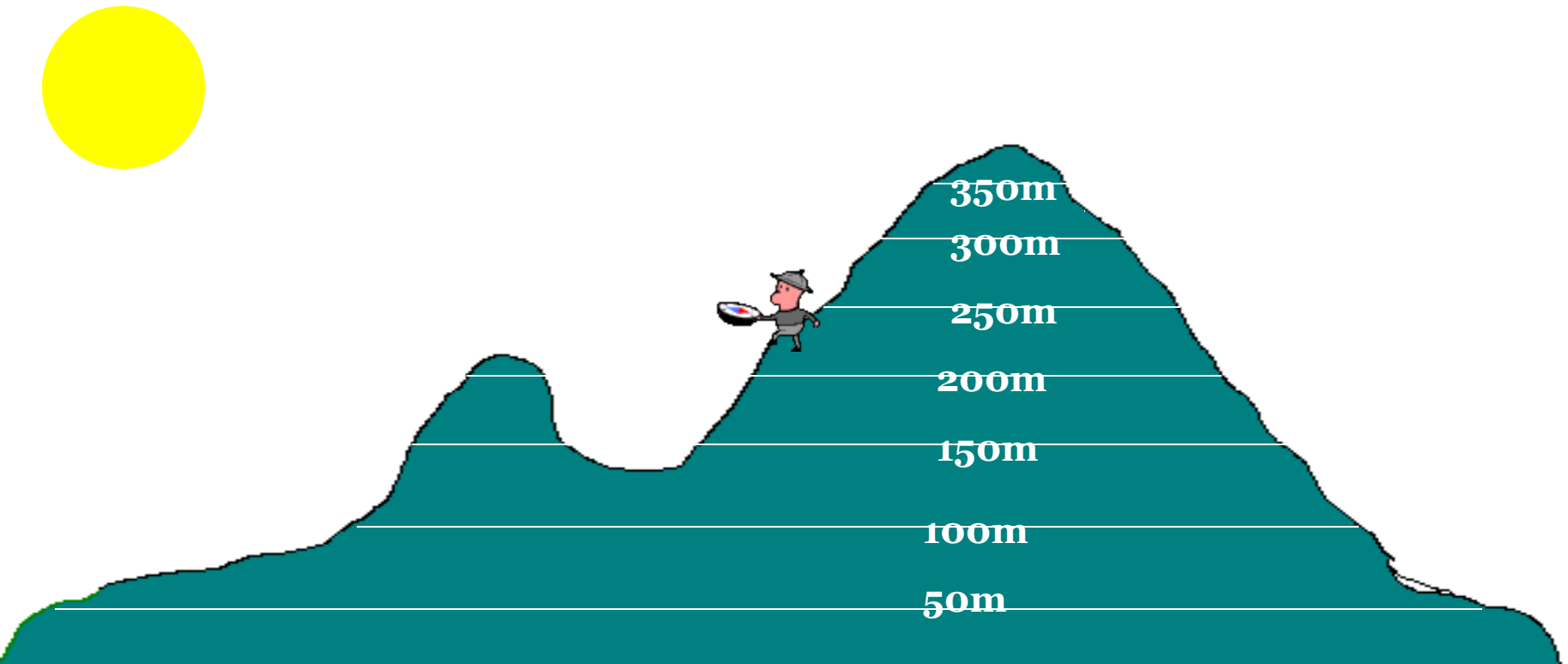


Let's head down the hill, it's getting late!

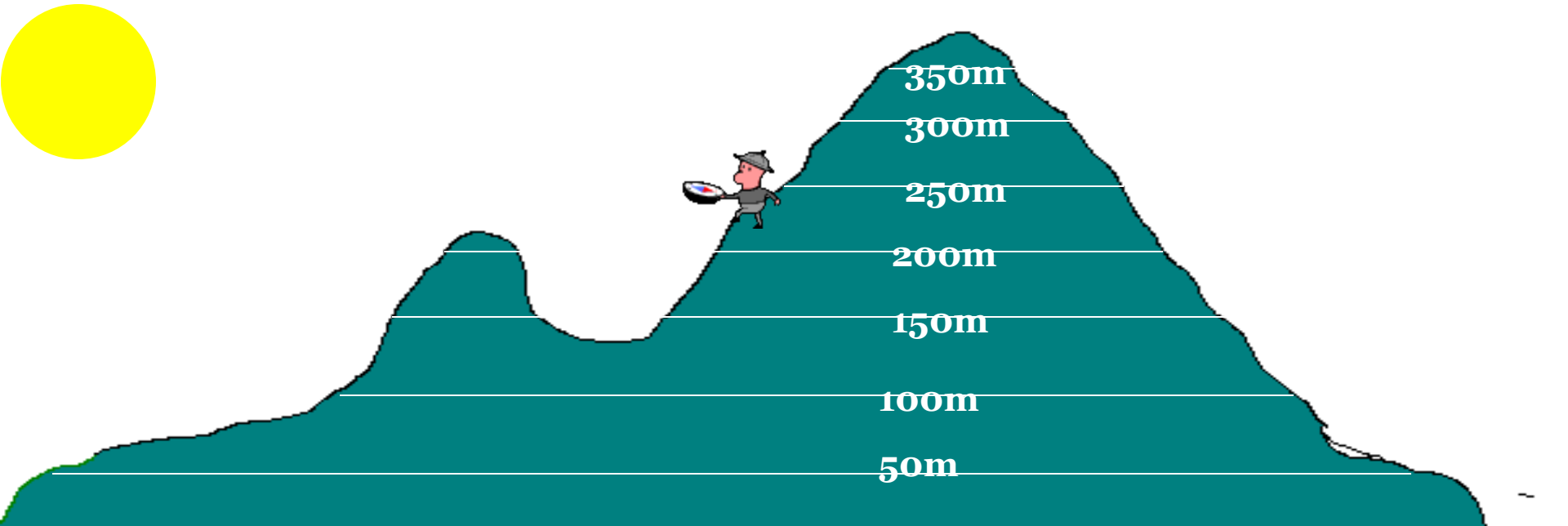


Now what's our elevation?

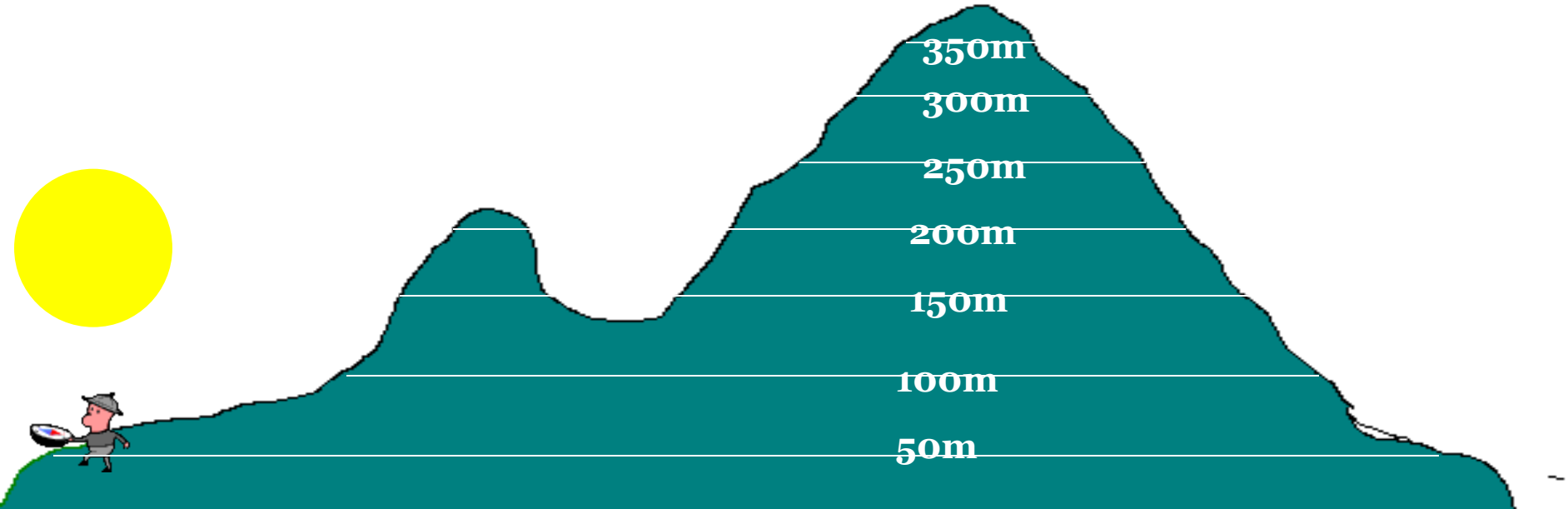
If you said somewhere between 200m and 250m you are right!



Let’s try this again!

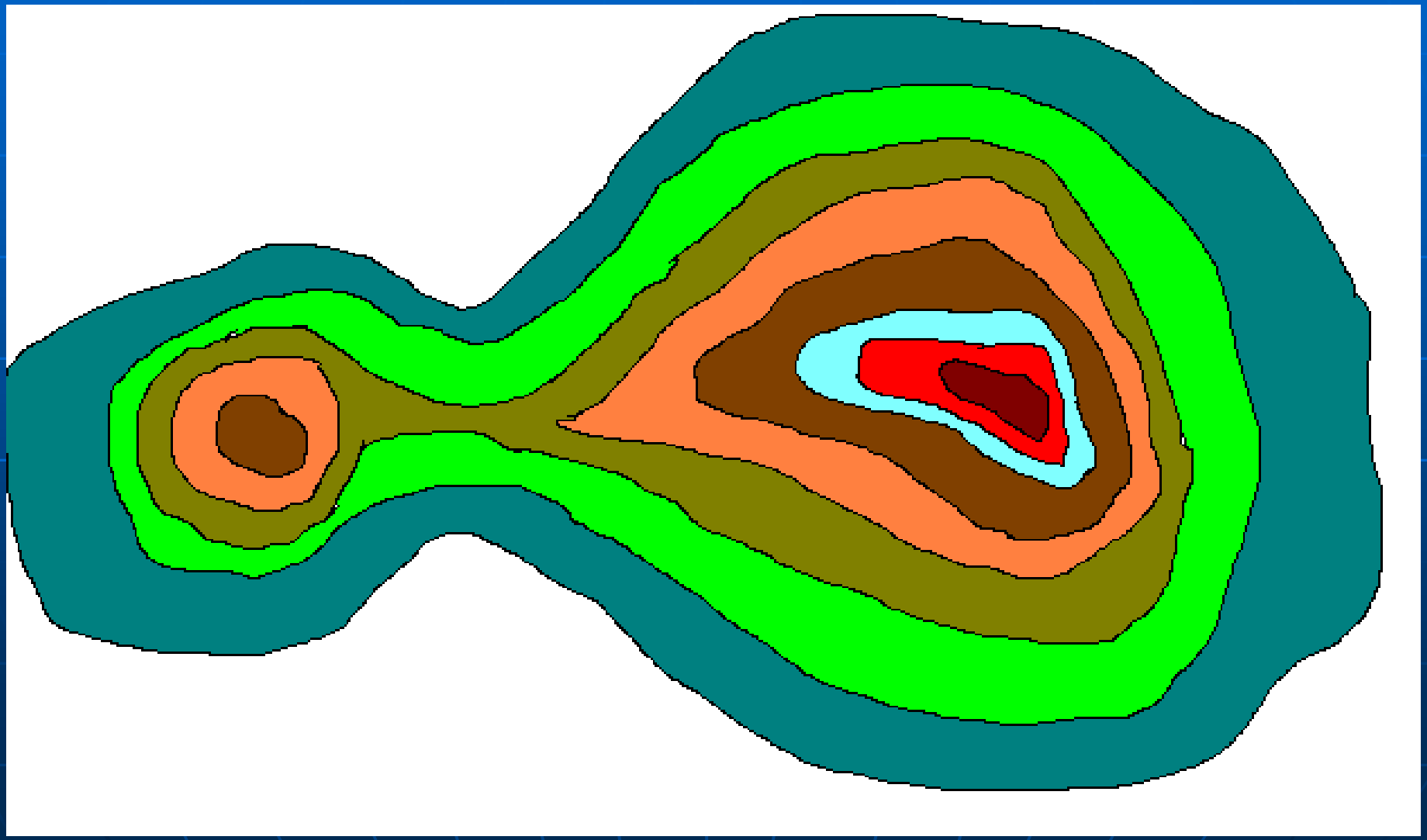


What's our elevation now? If you said 50m or just under, you're right!

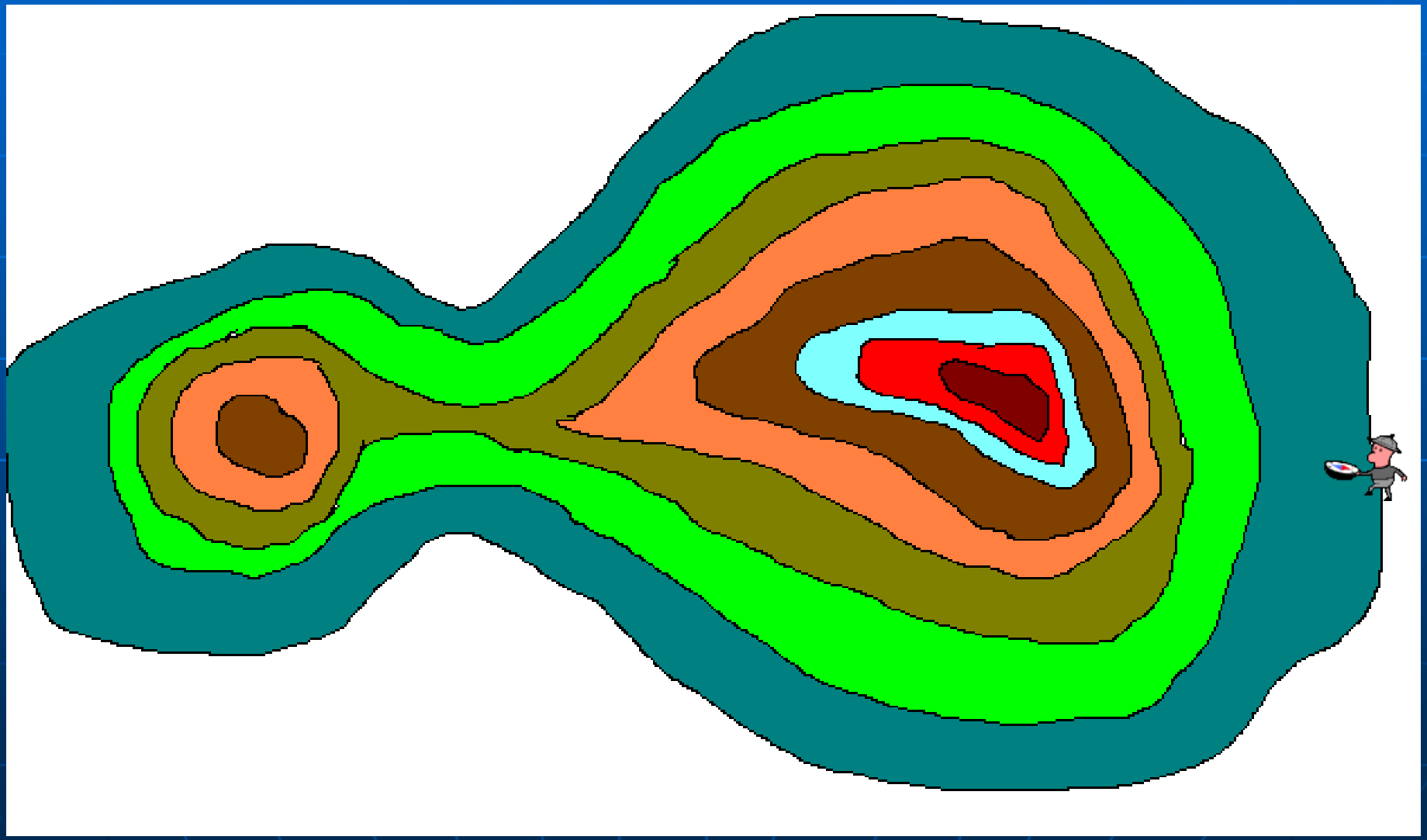


Let's
now look at the
same hill, but the
way we might see it
from an airplane!

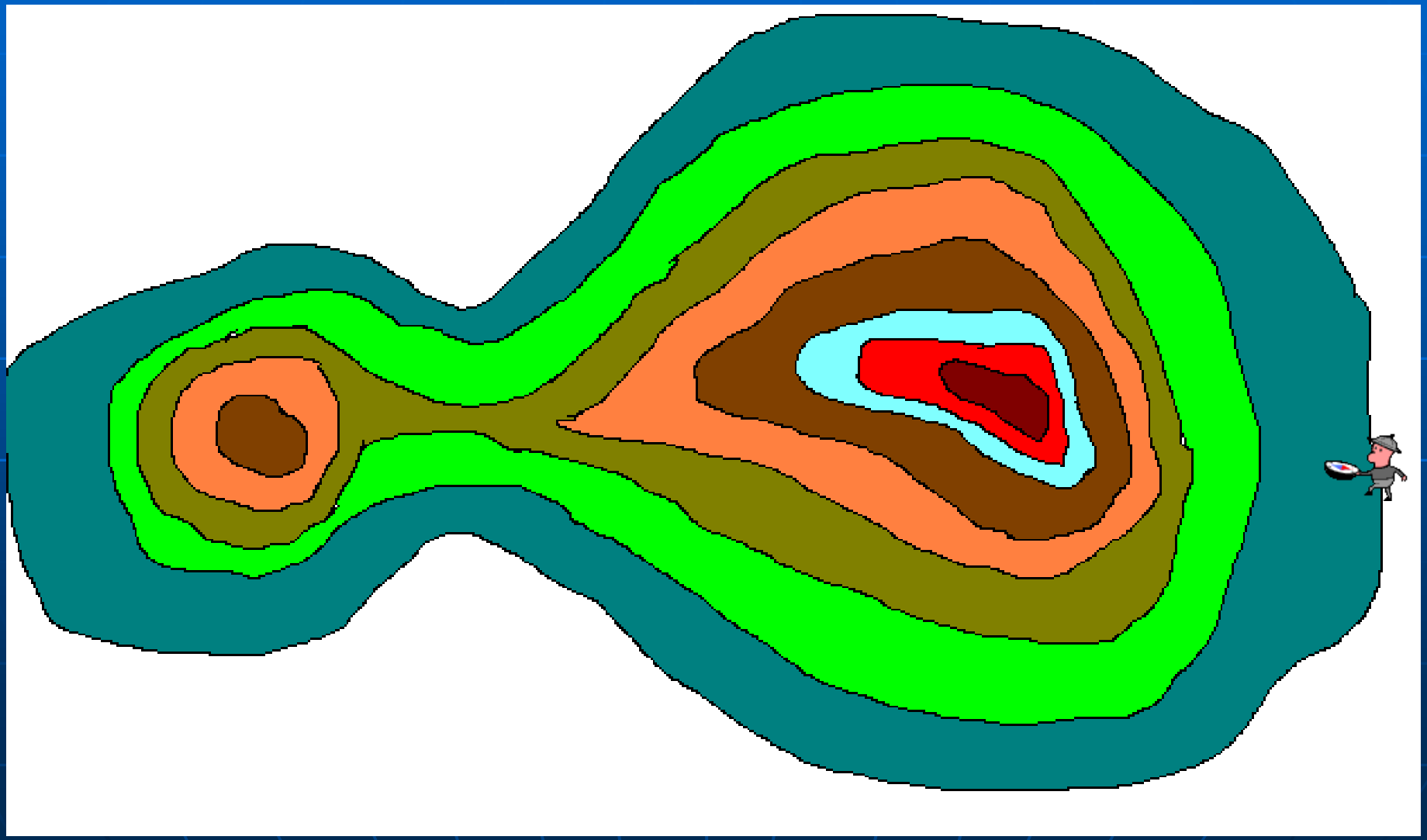
Each color change represents a 50 meter increase.



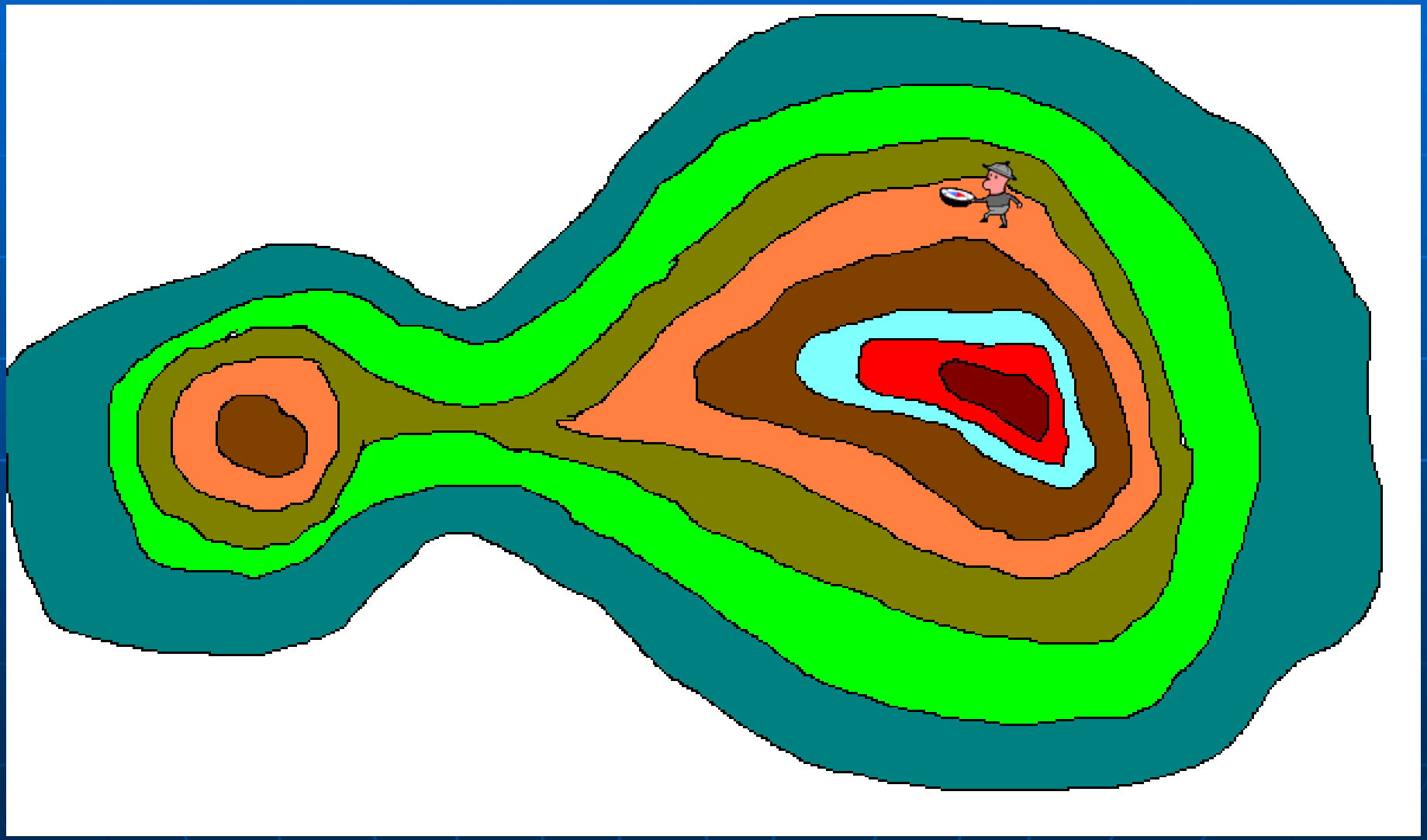
Now, let's try the same hike! Our elevation is 0 meters.



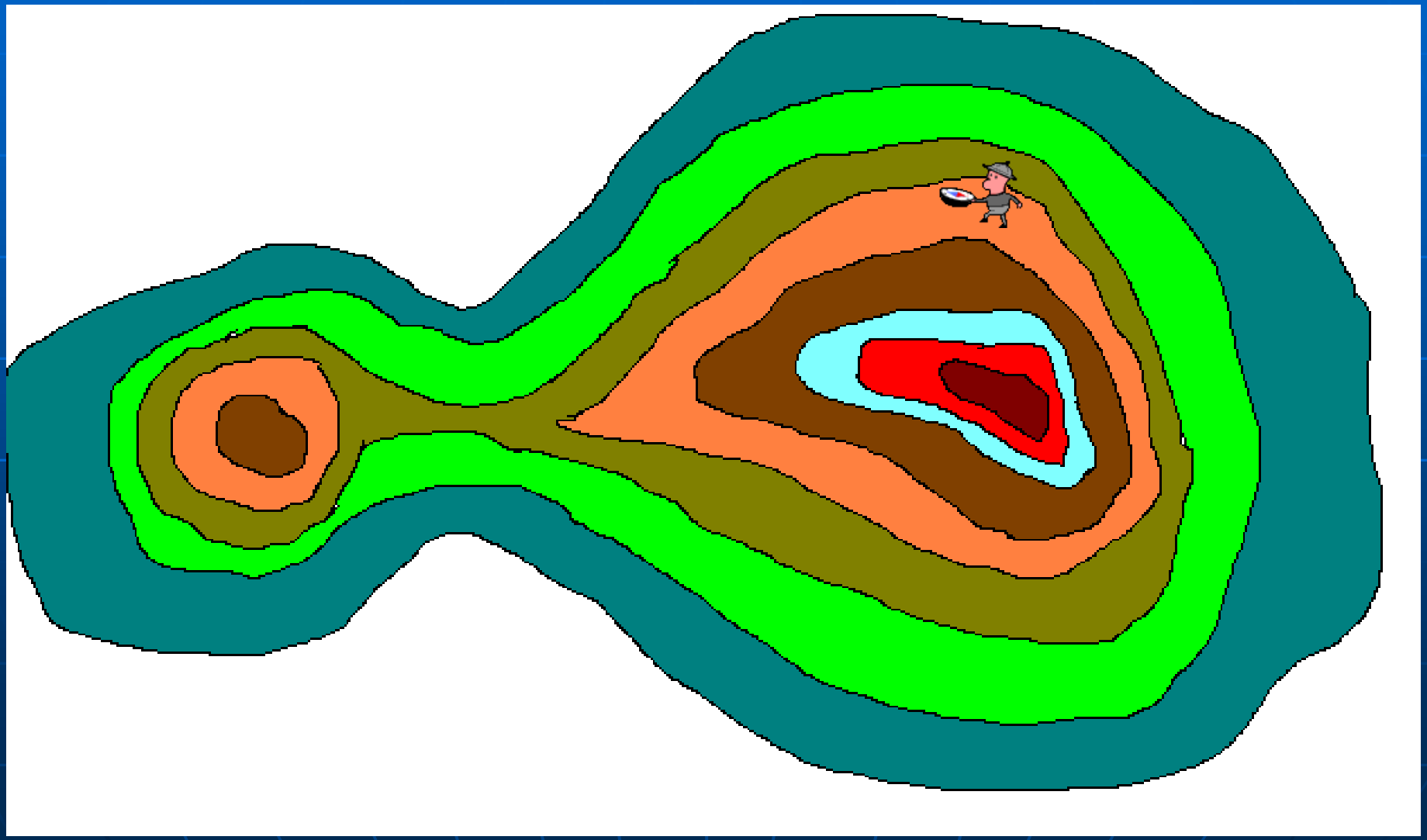
Now what is our elevation?



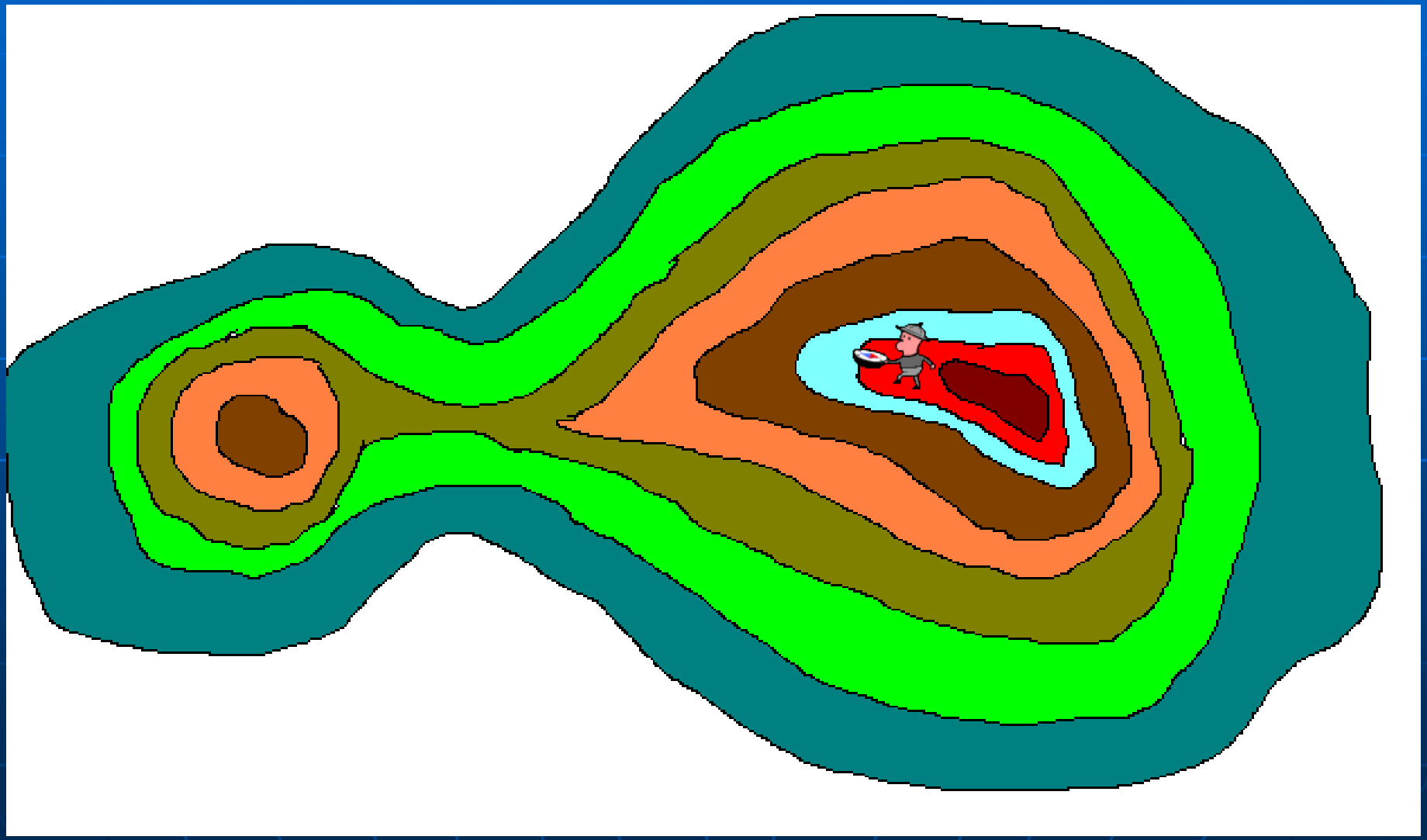
If you said more than 150 meters, but less than 200 meters your right!



Let’s go a little higher.

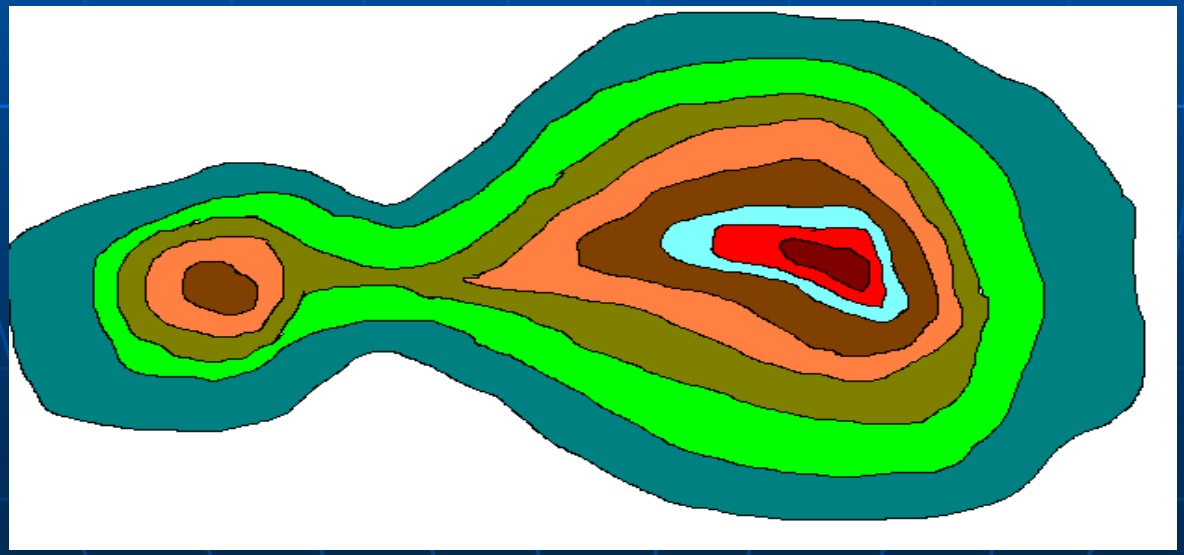


What is our elevation now?

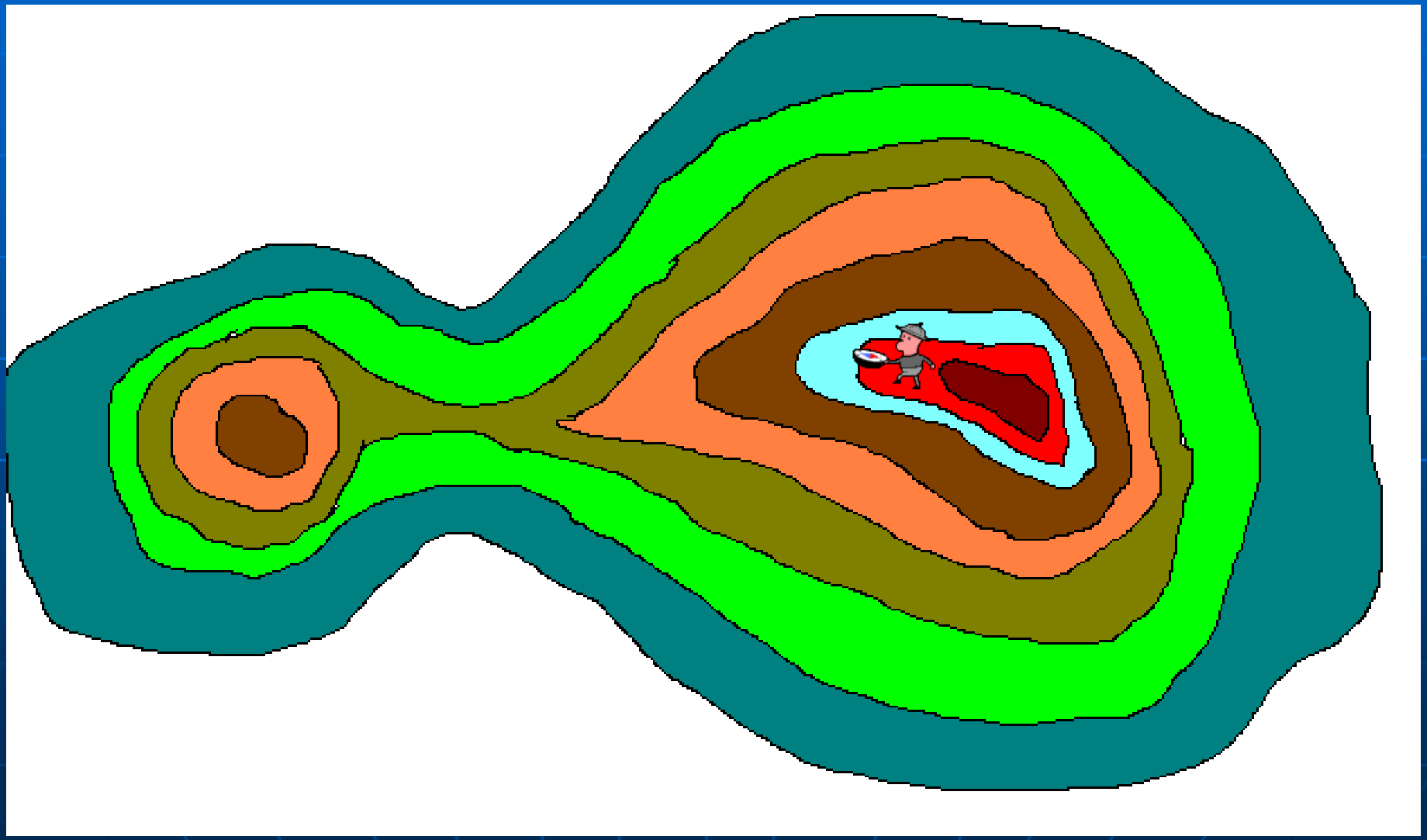


If we were standing on the peak, what would be our elevation?

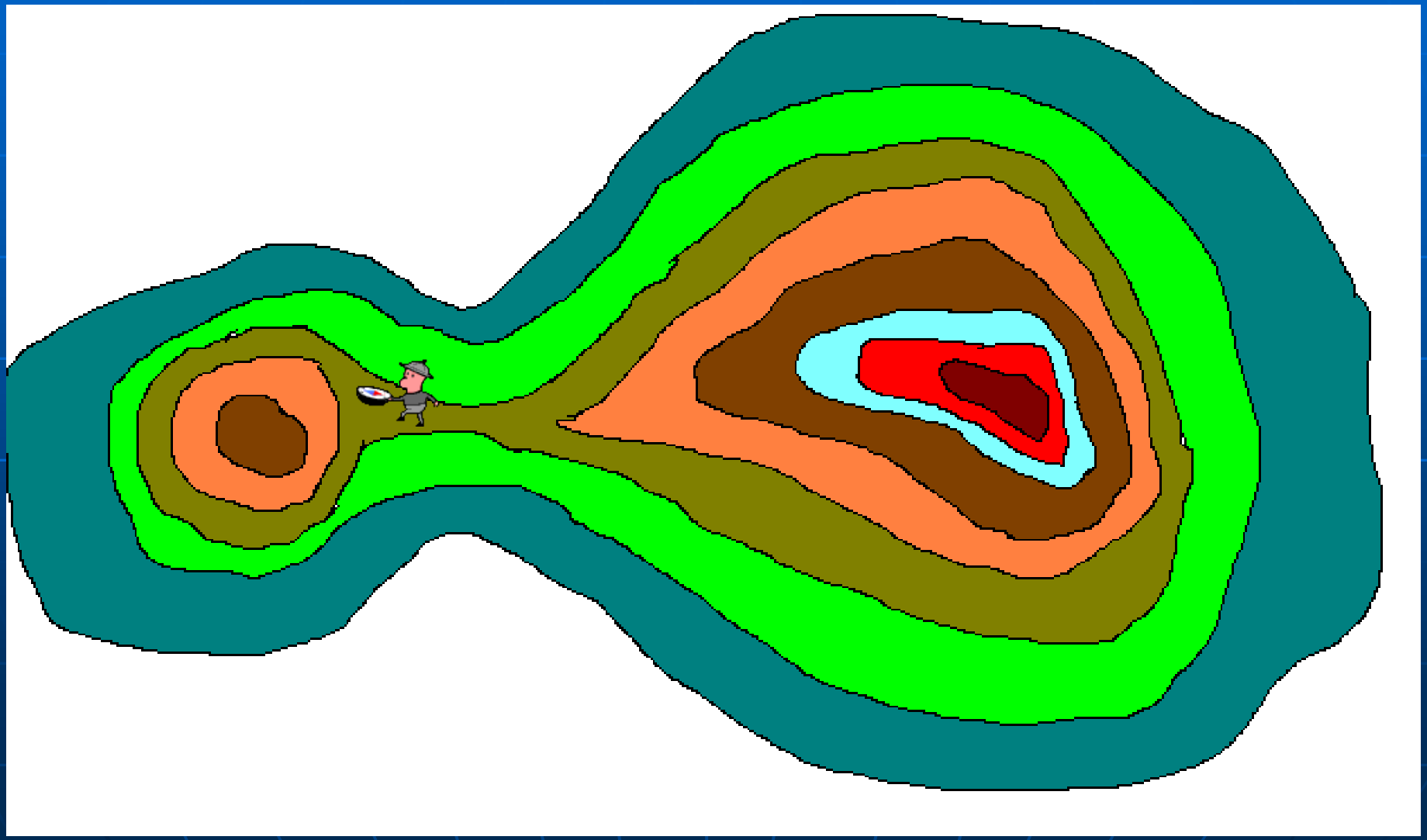
- More than 350 meters, less than 400 meters



Let’s head down hill.

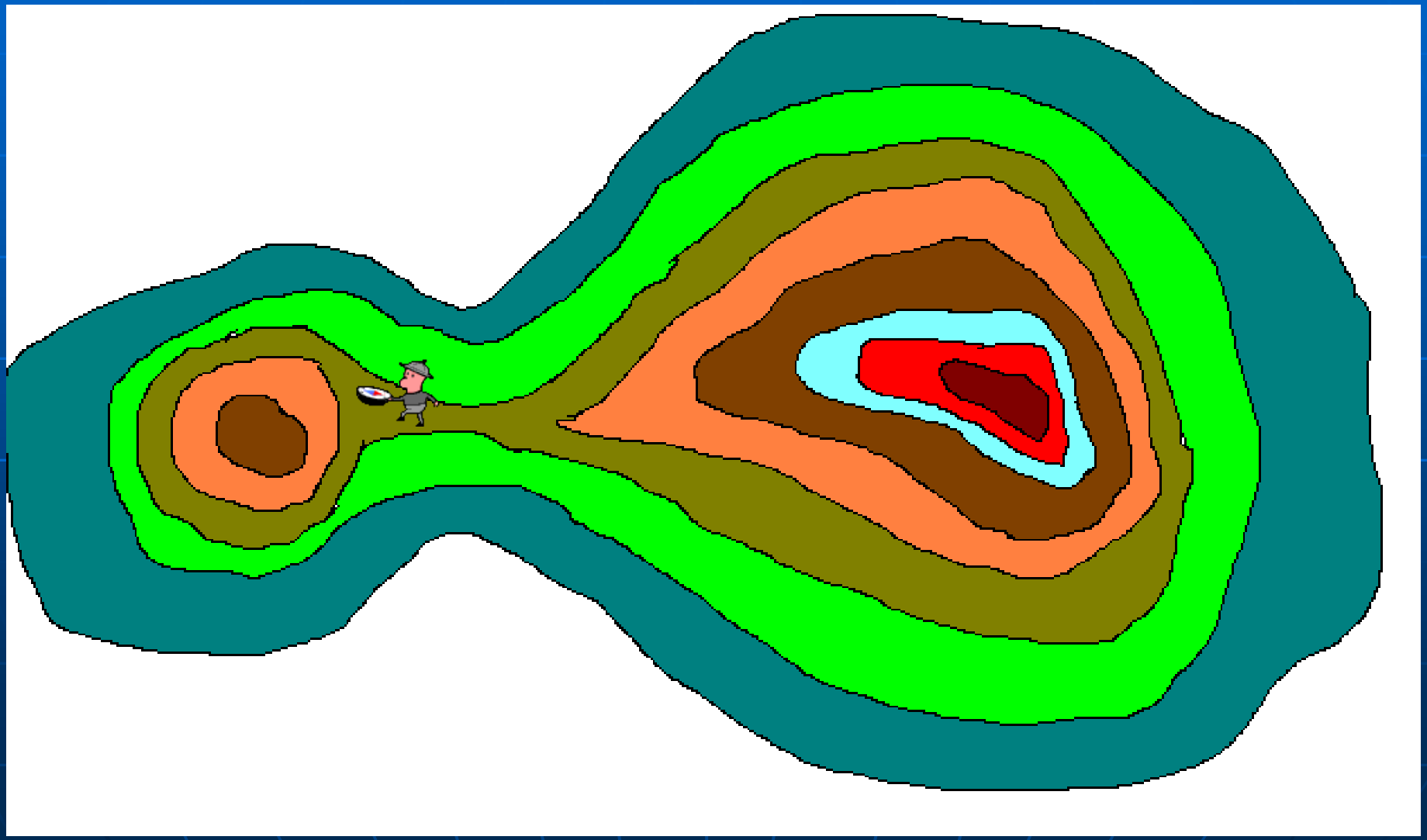


Know our elevation?



More than 100 meters,

less than 150 meters



To Do:

1. Go to: http://www.classzone.com/books/earth_science/terc/content/investigations/es0307/es0307page01.cfm
   and complete all 12 steps

2. Complete the worksheet and turn in

3. Find Phoenix on the map at http://www.naturefocused.com/maps/map.php and view the USA Topo and Satellite view of the mountains in Phoenix