

Topo What?

How to read and understand the basics of a topographical maps

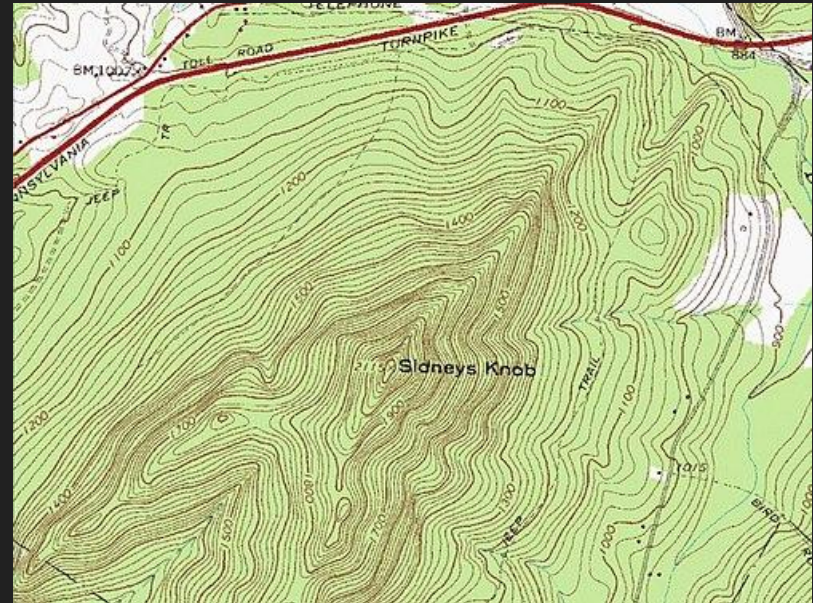
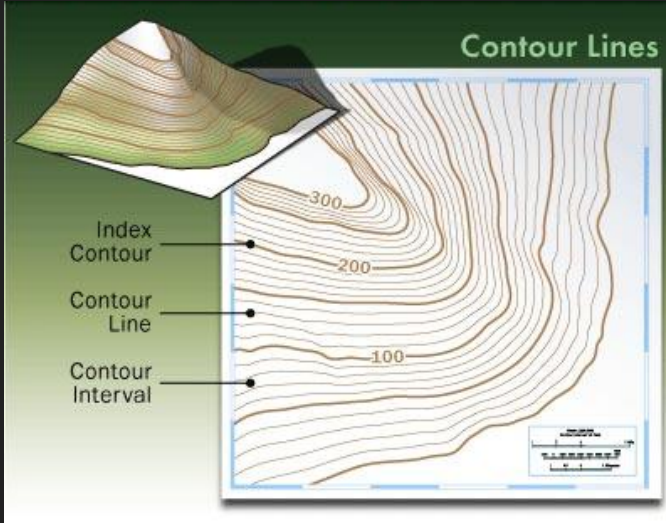
What is a topographical map?

- Topographic maps are detailed, accurate graphic representations of features that appear on the Earth's surface. These features include roads, buildings, railways, airports, names of places and geographic features like elevation, streams and rivers, State and international borders and so on.
- Topography = “shape of land”
- Elevation = height above sea level

What is a contour line?

Let's start by looking at a Topographical map.

Contour lines are continuous lines used on a topo map in order to show points in same elevation.



What is Contour?

Index Contour line

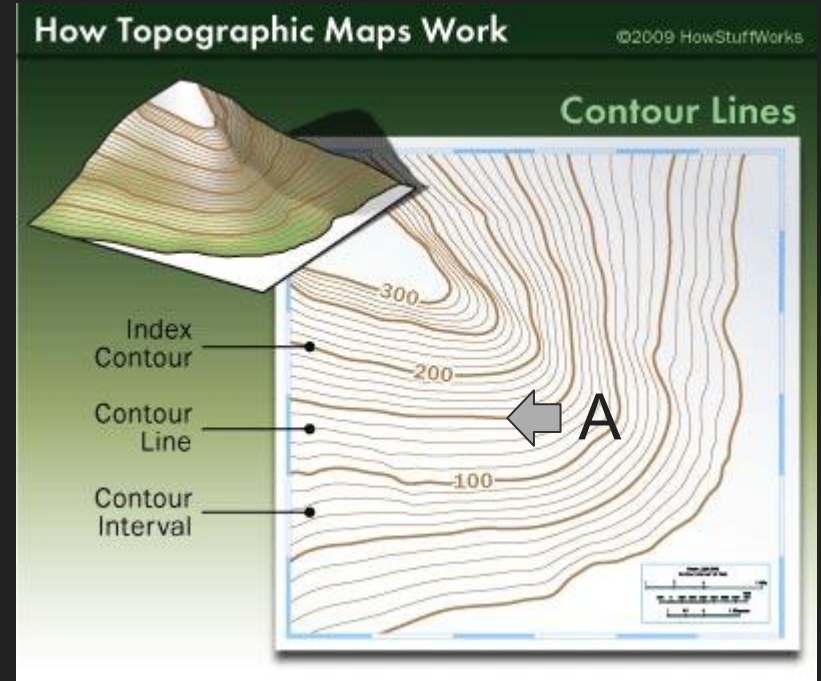
Labeled with elevation above sea level

Contour interval

The elevation between two contour lines

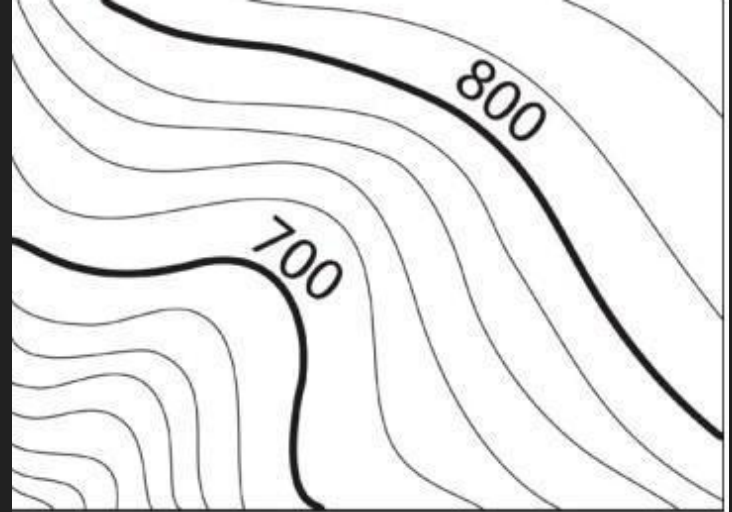
What is point A on your map?

It is the halfway point between the index lines. Between the 100 and 200 foot marks the line is drawn at 150 ft but not numbered. Count the Contour intervals between the 100 and 200 and you will count 10 total. That means it is 10 foot intervals.



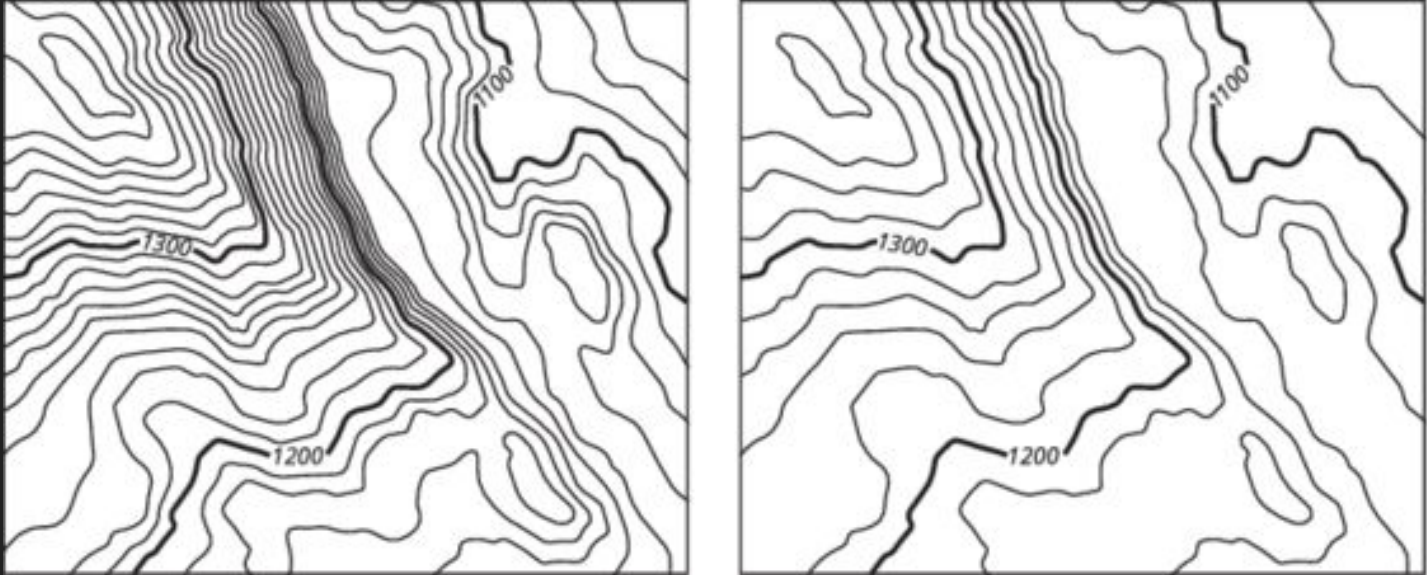
Example of contour interval

Count the contour intervals between 700 and 800. You should have counted four. Depending on how many intervals there are determines the value of the interval. In this case the value is 20. That means there is 20 foot intervals between 700 and 800.



Practice counting the intervals with these two examples

Both seem similar but one is steeper than the other



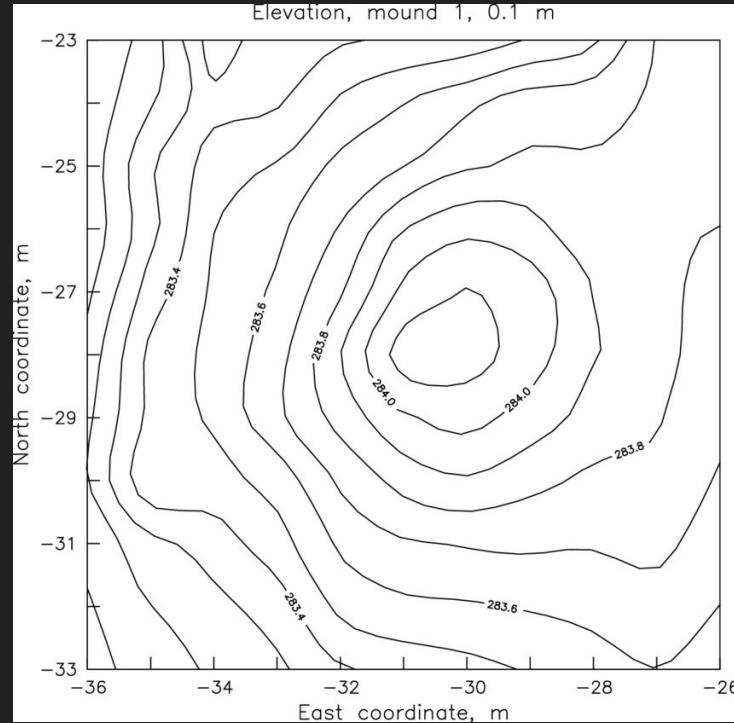
Rules for contours

Contour lines never cross each other



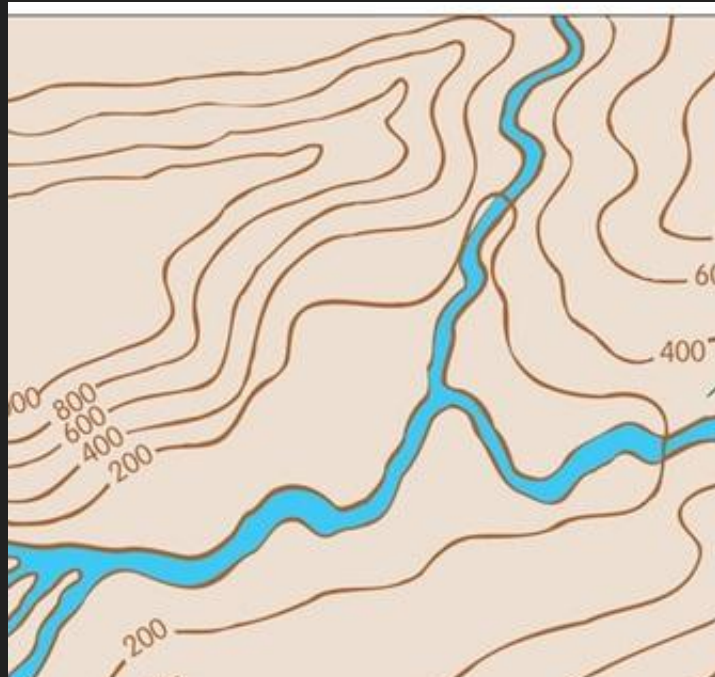
Rules for contours

Contours always form closed loops even if not shown on a map



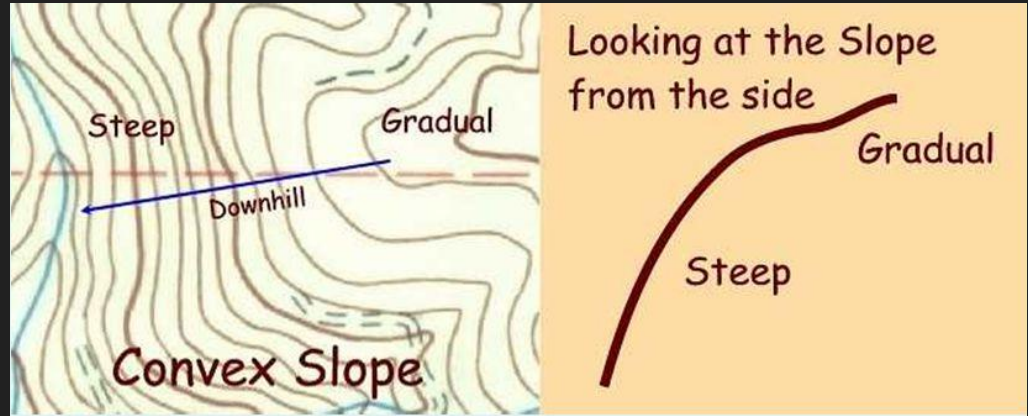
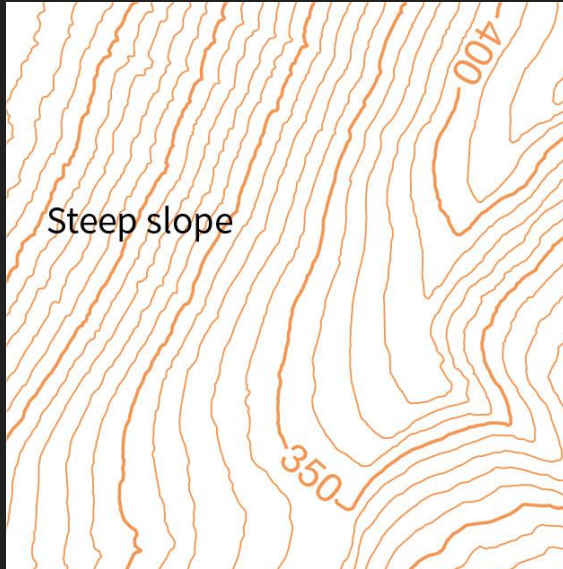
Rules for contours

Contour lines bend upstream (up hill) when crossing a river



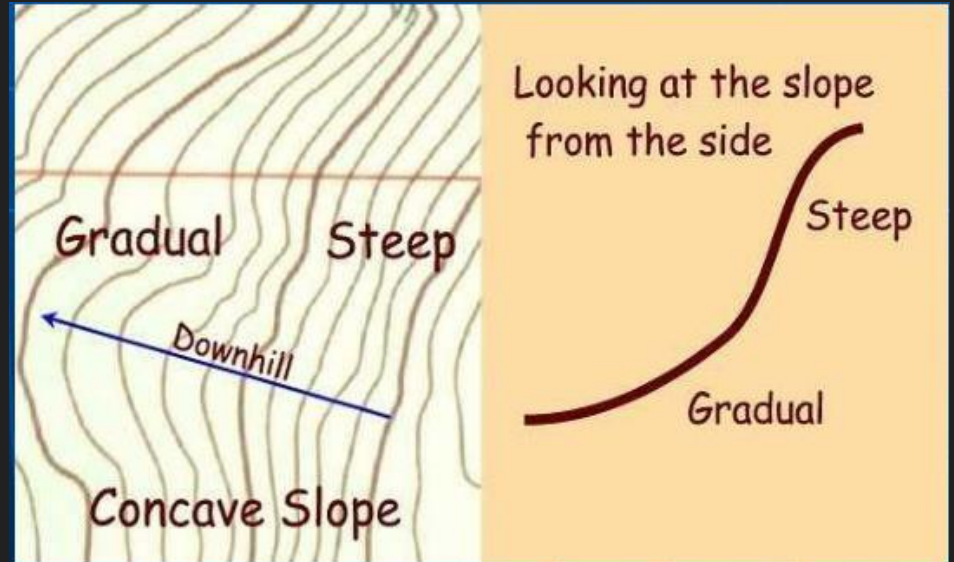
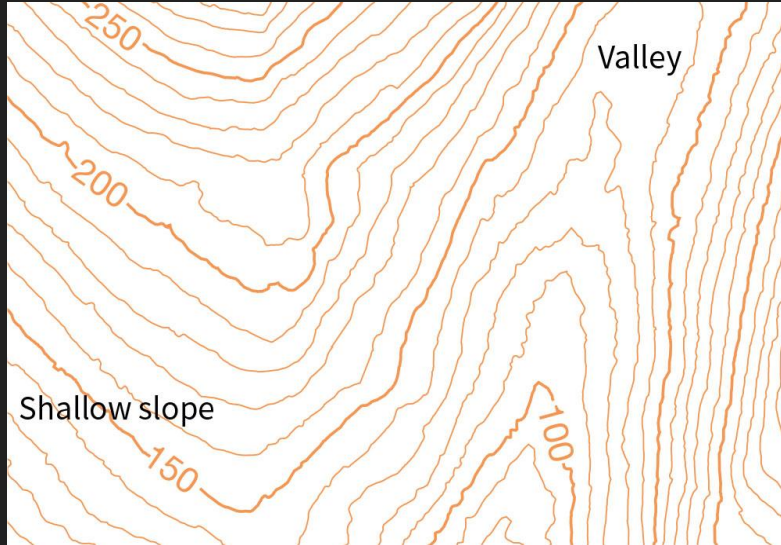
Closely spaced contours

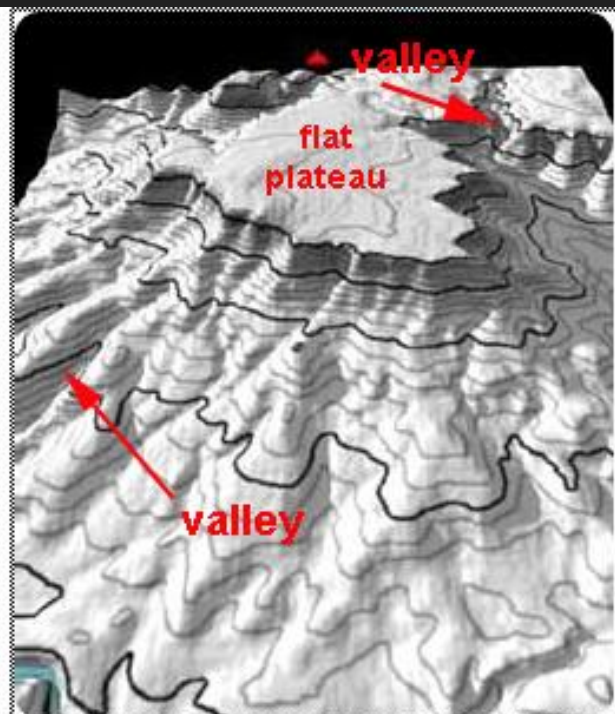
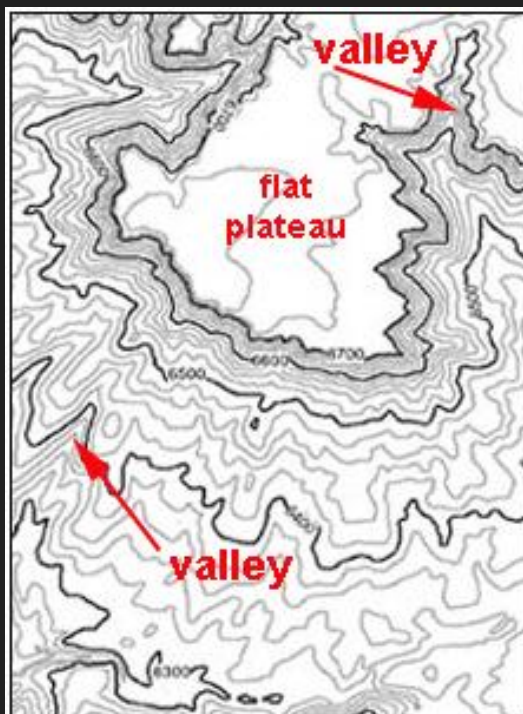
On a steep slope contour lines are close together.



Widely spaced contours

On a gradual slope the contours are far apart

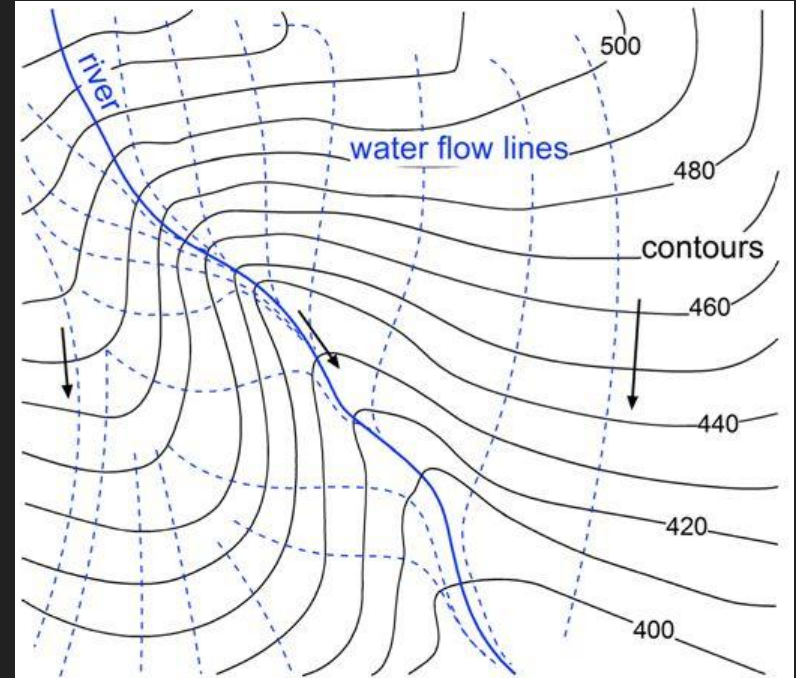




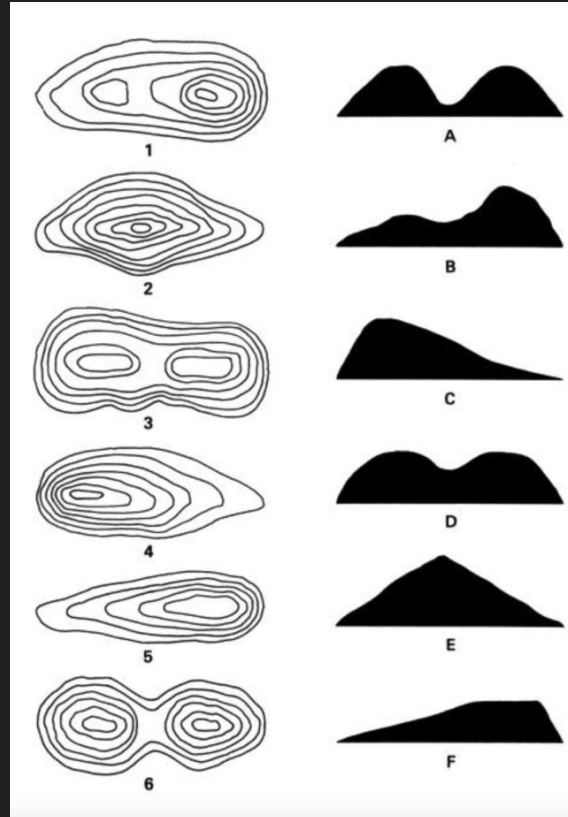
Stephen J. Reynolds and Carla McAuliffe,
Arizona State University

Direction of Water flow lines

What can you observe about contour lines regarding water flow? Water flows perpendicular to the contour lines. Rivers flow downhill through the concave part of the contour. concave slope mean the surface that bends inward.



Contour Practice!



Did you get it right?

1-B

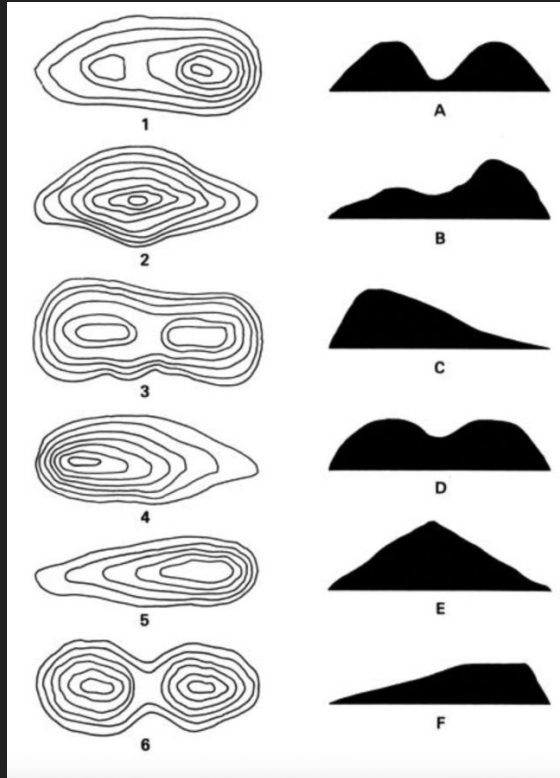
2-E

3-D

4-C

5-F

6-A



Topographical map key

Most topographical maps have a map key. Once you study and learn how to read the maps you will be able to identify symbols and lines on the map without needed reference. On the next side you will see an example of a map key.

RIVERS, LAKES, AND CANALS – continued

Perennial lake/pond	
Intermittent lake/pond	
Dry lake/pond	
Narrow wash	
Wide wash	
Canal, flume, or aqueduct with lock	
Elevated aqueduct, flume, or conduit	
Aqueduct tunnel	
Water well, geyser, fumarole, or mud pot	
Spring or seep	

ROADS AND RELATED FEATURES

Please note: Roads on Provisional-edition maps are not classified as primary, secondary, or light duty. These roads are all classified as improved roads and are symbolized the same as light duty roads.

Primary highway	
Secondary highway	
Light duty road	
Light duty road, paved*	
Light duty road, gravel*	
Light duty road, dirt*	
Light duty road, unspecified*	
Unimproved road	
Unimproved road*	
4WD road	
4WD road*	
Trail	
Highway or road with median strip	
Highway or road under construction	
Highway or road underpass; overpass	
Highway or road bridge; drawbridge	
Highway or road tunnel	
Road block, berm, or barrier*	
Gate on road*	
Trailhead*	

SUBMERGED AREAS AND BOGS

Marsh or swamp	
Submerged marsh or swamp	
Wooded marsh or swamp	
Submerged wooded marsh or swamp	
Land subject to inundation	

SURFACE FEATURES

Levee	
Sand or mud	
Disturbed surface	
Gravel beach or glacial moraine	
Tailings pond	

TRANSMISSION LINES AND PIPELINES

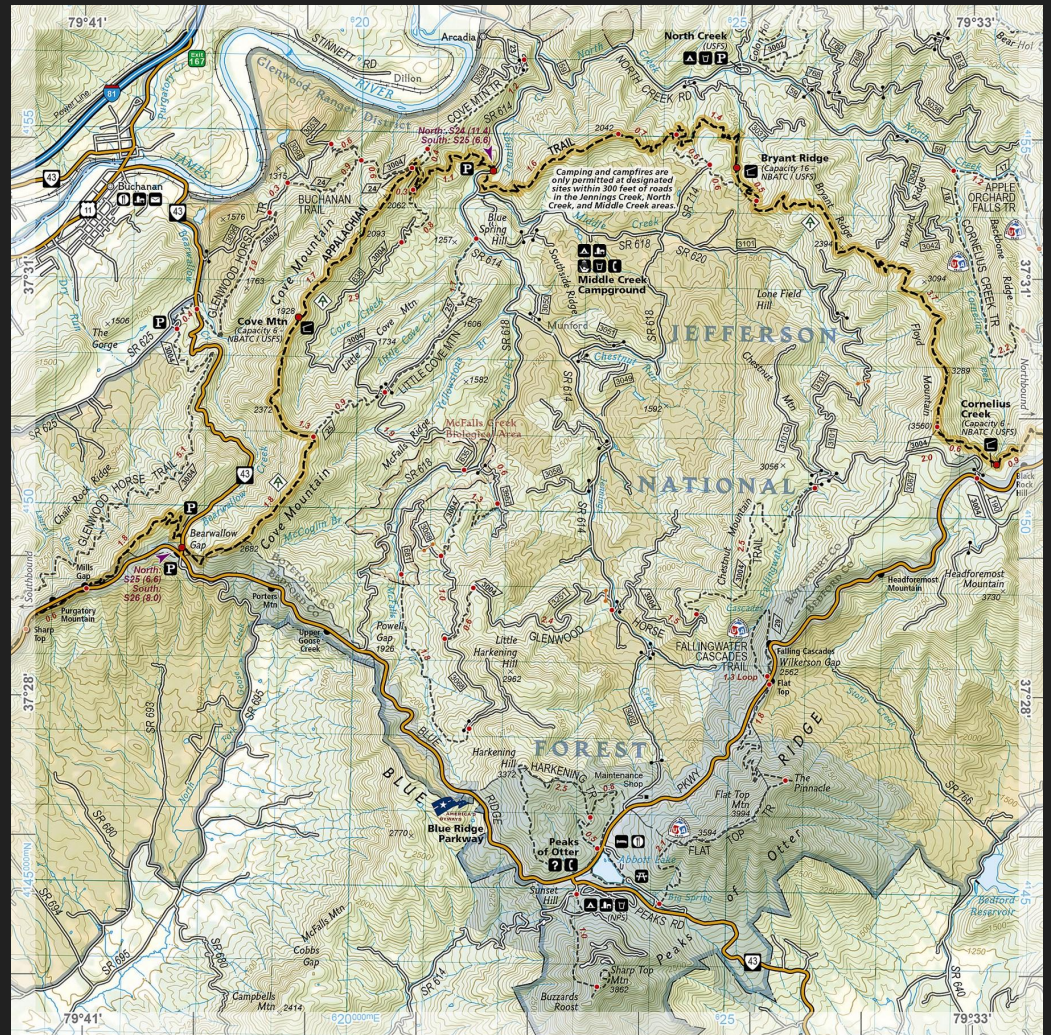
Power transmission line; pole; tower	
Telephone line	
Aboveground pipeline	
Underground pipeline	

VEGETATION

Woodland	
Shrubland	
Orchard	
Vineyard	
Mangrove	

Looking at the map

Use the map key to find points of interest on the map



Conclusion

There is still much to learn when it comes to understanding and using topographical maps. So I urge you to do more research then go out to your nearest national forest and use a provided map to learn and experience the important uses of these maps.

What you have learned in this lesson is the basics of what a topo map is and how to read and understand the lines on the map.

One last thing, it can be overwhelming when seeing all of the bunched up lines on the map. You should use your phone or other devices to find the map of where you are hiking then zoom in on the trails and study the location. So when you see the map in its larger size you can get more of an understanding on what you are looking at. Most people who carry these maps have a magnify glass with them to see the maps better.