

Topographical Maps



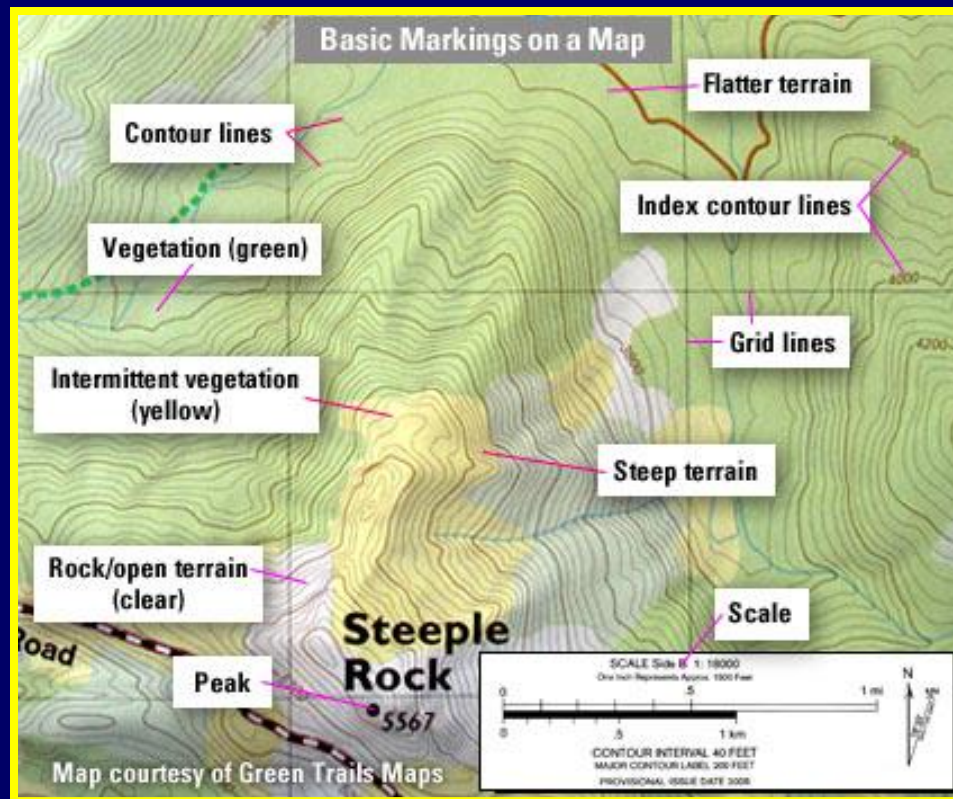
I Can Statements

At the end of this lesson, you should be able to say, with confidence:

- I can determine the elevation above sea level for any given point on a topographical map.
- I can determine whether the terrain will have steep hills or gentle slopes, based on a topographical map.
- I can determine which way the water will flow in a stream, based on a topographical map.

Topographical Maps

Topographical maps are detailed representations of a part of Earth's surface, drawn to scale using lines, symbols and colors to represent changes in elevations.



Use of Topographical Maps

Topographical maps are used by a variety of people including: geologists, engineers, field biologists, developers, military, hunters, and hikers.



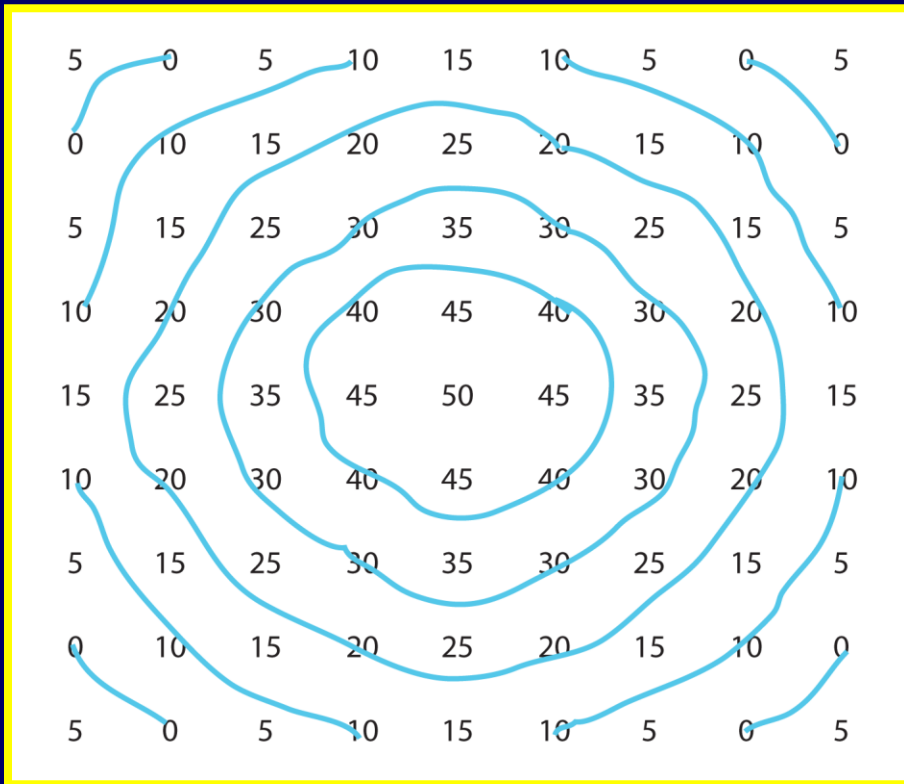
Map Features

The features on a topographical map can be divided into four groups:

1. Relief – changes in elevation
2. Vegetation – Dense vegetation or open areas
3. Water features – creeks, rivers, lakes, waterfalls
4. Cultural features – man-made features such as roads, bridges, dams, buildings

Relief

Relief refers to the difference in elevation between any two points.

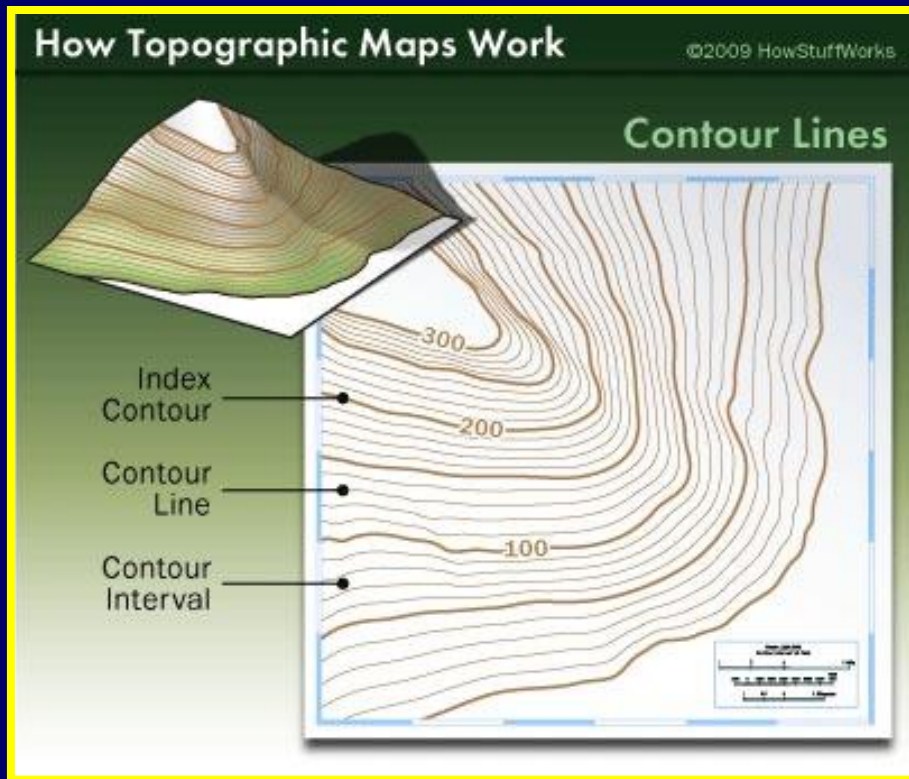


Relief is represented on topographical maps using contour lines.

Contour lines on a topographical map connect points of equal elevation.

Contour Lines

Usually, every 5th line is printed darker than the others and contains the elevation above sea level.

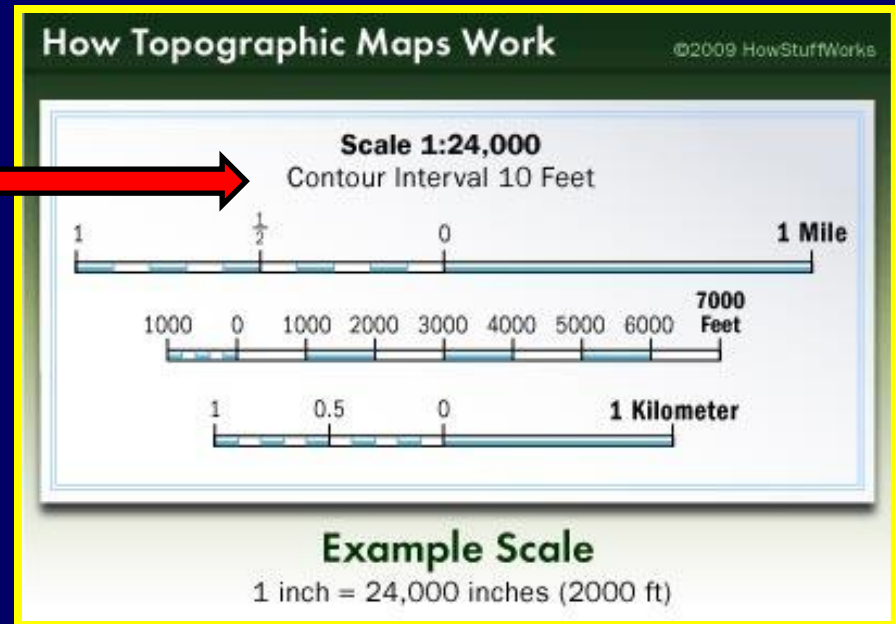


Darker lines that contain the elevation above sea level are called index contour lines.

The contour interval represents the change in elevation between two adjacent contour lines.

Contour Interval

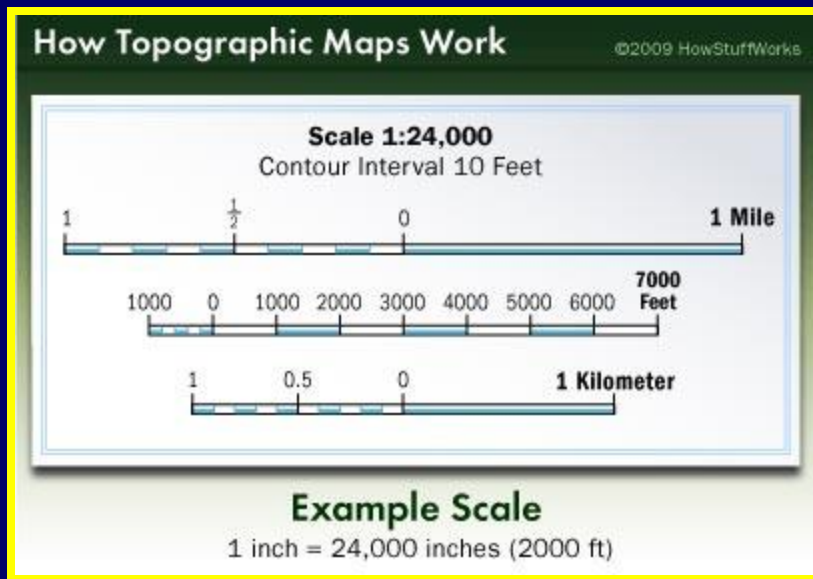
Contour intervals are identified on the map legend.



A contour interval of 10 feet would mean there is a 10 foot change in elevation between each adjacent contour line.

Scale

Scale refers to the relationship between distance on the map and the true distance on Earth's surface.



Scale is usually expressed as a ratio.

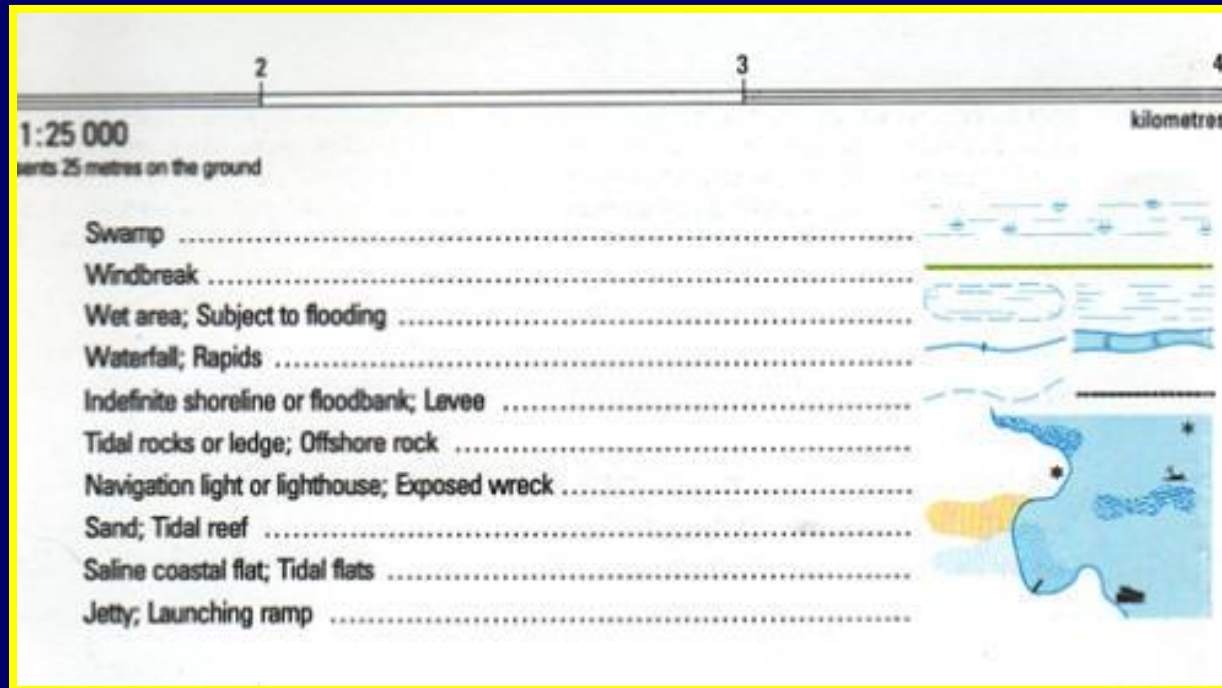
USGS maps generally always use 1:24,000.

1 = 1 inch map distance

24,000 = 24,000 inches or 2,000 feet ground distance

Scale

Countries that use the metric system use topographical scales of 1:25,000.



In this case, the 1 represents 1 cm and the 25,000 represents meters.

Slope



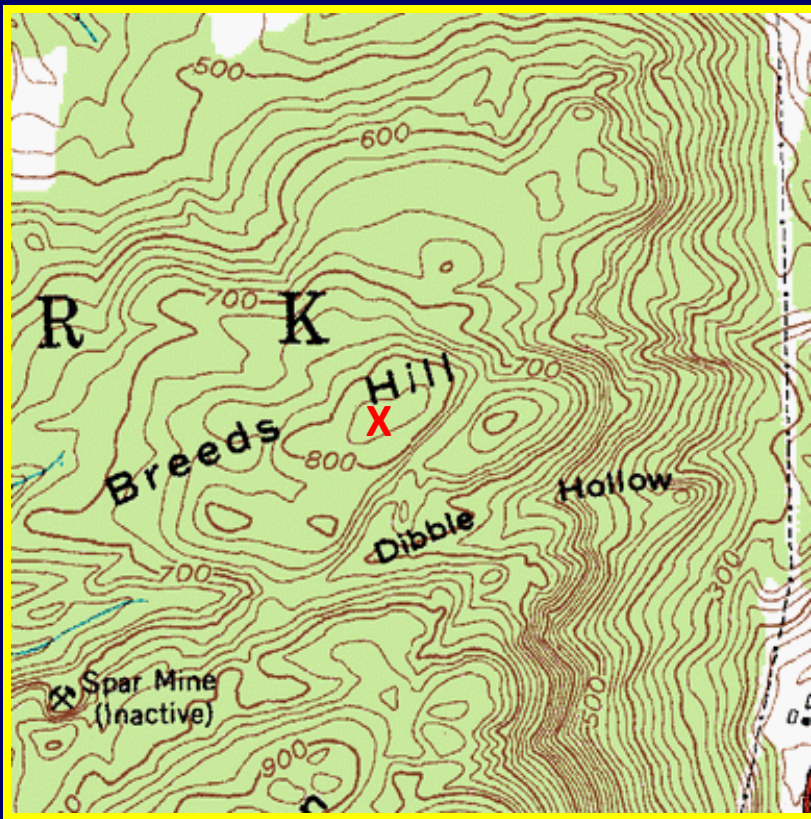
When the contour lines are spaced far apart, the elevation is changing very slowly and the terrain has gentle slopes.

When the contour lines are spaced close together, the elevation is changing quickly and the terrain has steeper slopes.



Hills

Contour lines near the top of hills form circles and the elevation of the hill is higher than the elevation of the highest circle.

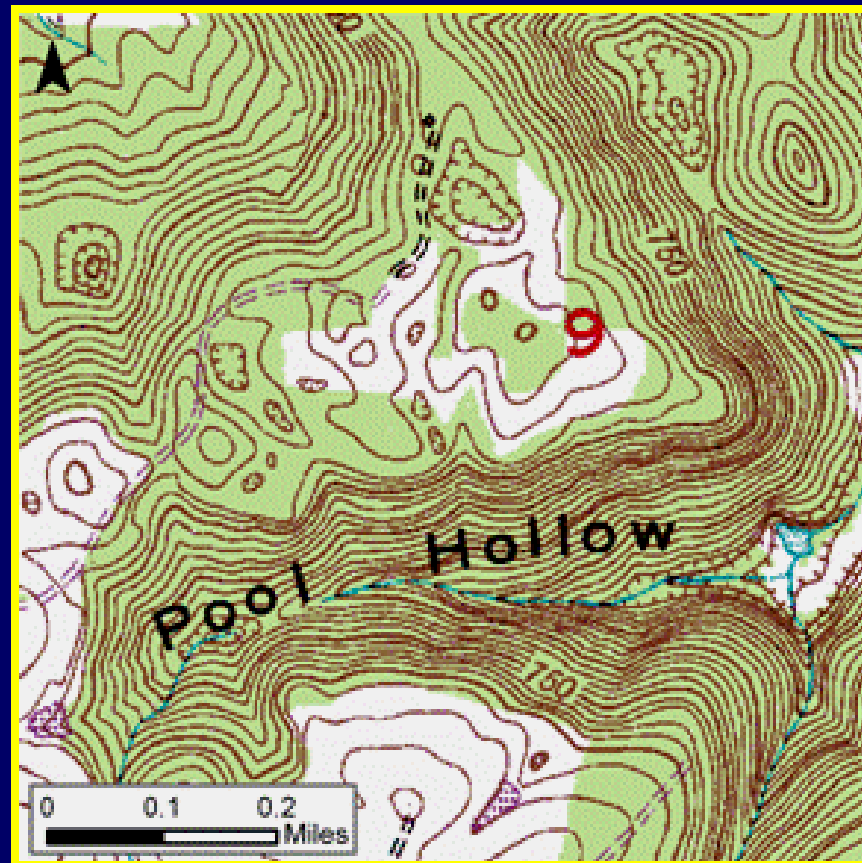


How high is the top of Breeds Hill?

Between 820 ft. and 840 ft.

Depressions

Depressions without outlets, such as a sinkhole, are shown as closed, hatched circles and the elevation of the hollow is lower than the lowest closed circle.



Water Flow

Water always flows downhill, from higher elevation towards lower elevation. The path water tends to flow, can be found on topographical maps by looking for a group of V's in the contour lines.



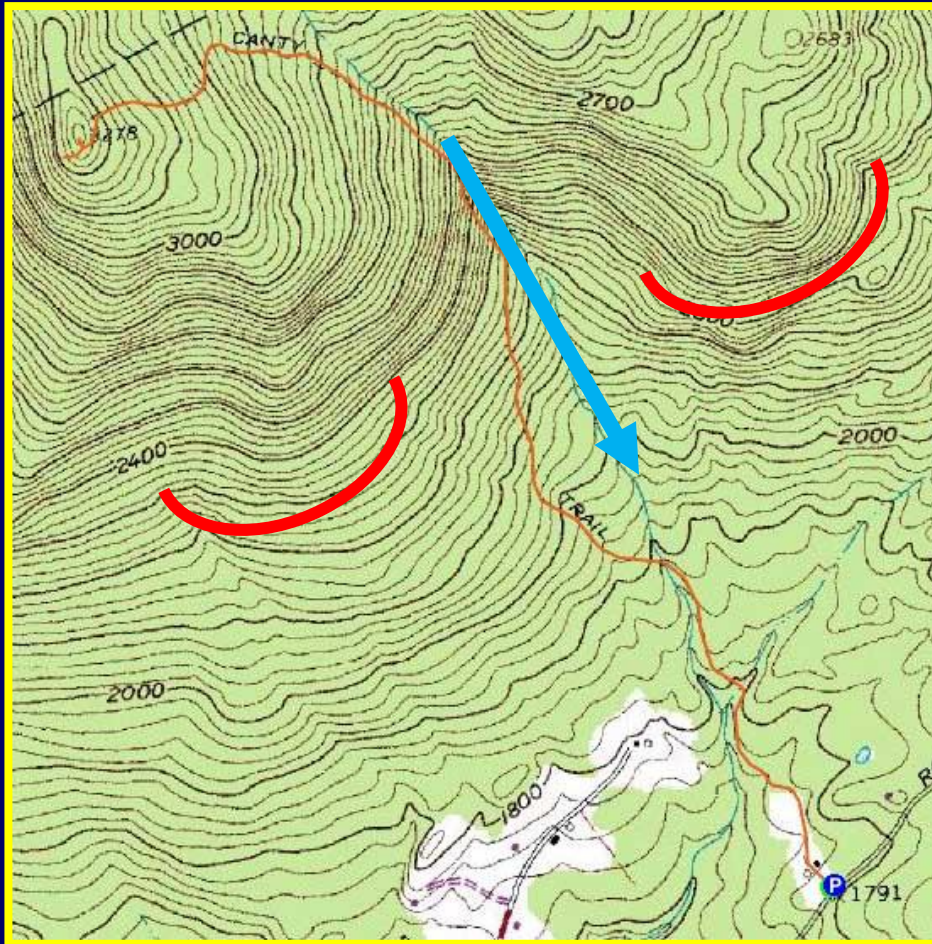
Water flows out of the open side of the V.

What way does the water flow in Deadman Gulch?

← Right to Left

Ridges

Ridges on topographical maps can be found by looking for a group of U's in the contour lines.



The map, on the left, shows water flowing (V's) between two fairly steep ridges (U's).

Color

Each color on a topographical map has a specific significance.

Blue = Water features

Green = Vegetated area with shrubs and trees

White = Open areas such as meadows or beaches

Red = Urban areas and important roads

Black = Man-made structures

Brown = Contour lines

Purple = Features seen by planes but not verified in the field.

The End

