

# TOPOGRAPHIC MAPS

*A NEW WAY TO VIEW THE WORLD!*

[http://courtneyjennings.weebly.com/unit-4---weathering-erosion-  
topo-maps-past.html](http://courtneyjennings.weebly.com/unit-4---weathering-erosion-topo-maps-past.html)

- A **topographic map**, simply put, is a **two-dimensional** representation of a portion of the **three-dimensional** surface of the earth.



*Figure 1*

- **Topography** is the **shape** of the land surface.



*Figure 2*

- Topographic maps exist to **represent** the land surface.



# What are topographic maps used for?

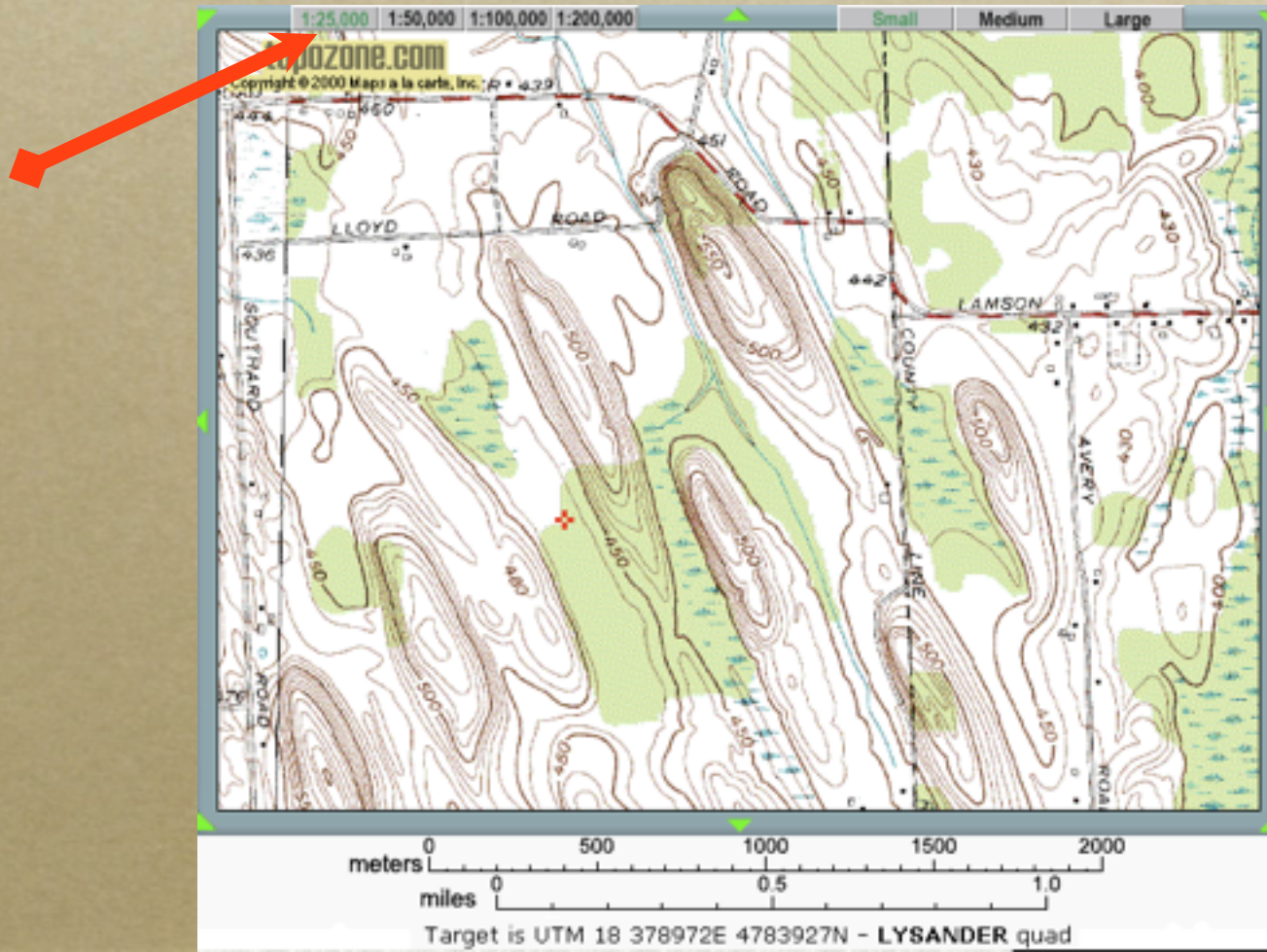
- *Topographic maps usually portray (show) both natural and man-made features.*
- *They show and name features including **mountains**, valleys, plains, **lakes**, rivers and vegetation.*

# What are topographic maps used for?

*Topographic maps are used for engineering, energy exploration, natural resource conservation, environmental management, public works design, commercial and residential planning, and outdoor activities like hiking, camping, and fishing.*

# Tools of the Trade

- **Map Scale:** Maps come in a variety of scales, covering areas ranging from the entire earth to a city block (or less).

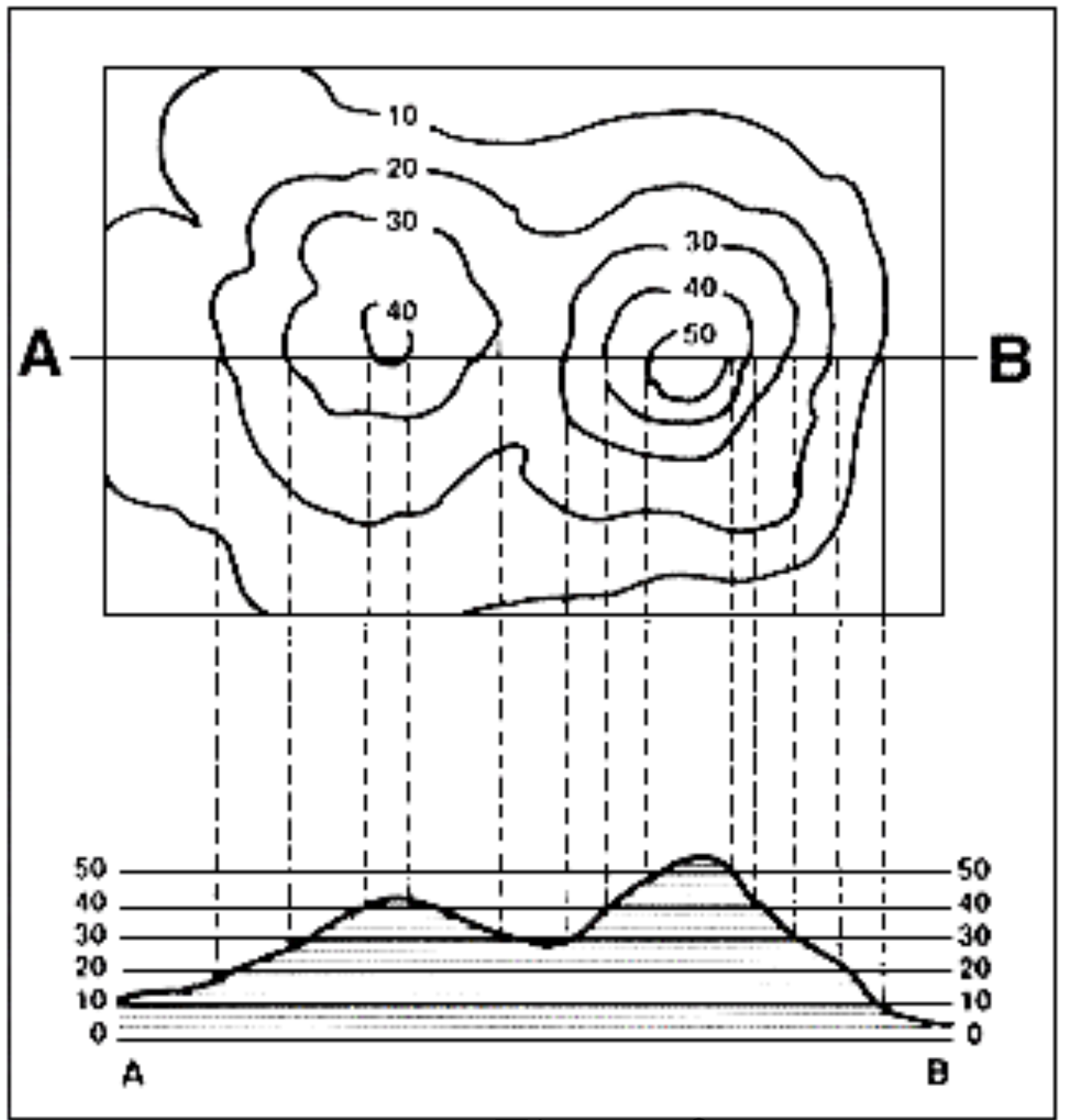


- *Overhead*

*View*

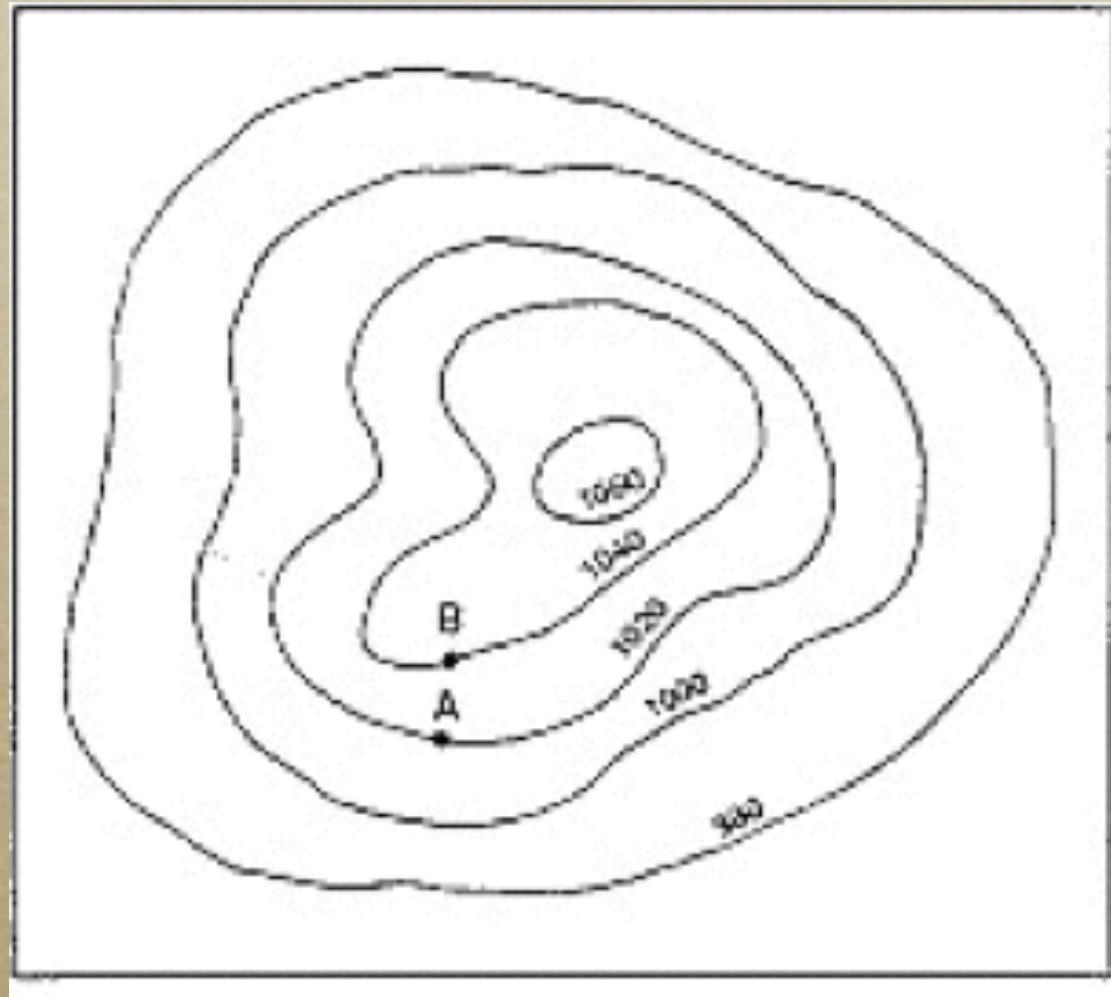
- *Profile*

*View*



*Figure 3*

- **Contour Lines:**  
Contour lines are used to determine **elevations**.
- If you walk along a contour line you neither **gain or lose** elevation.



*Figure 4*



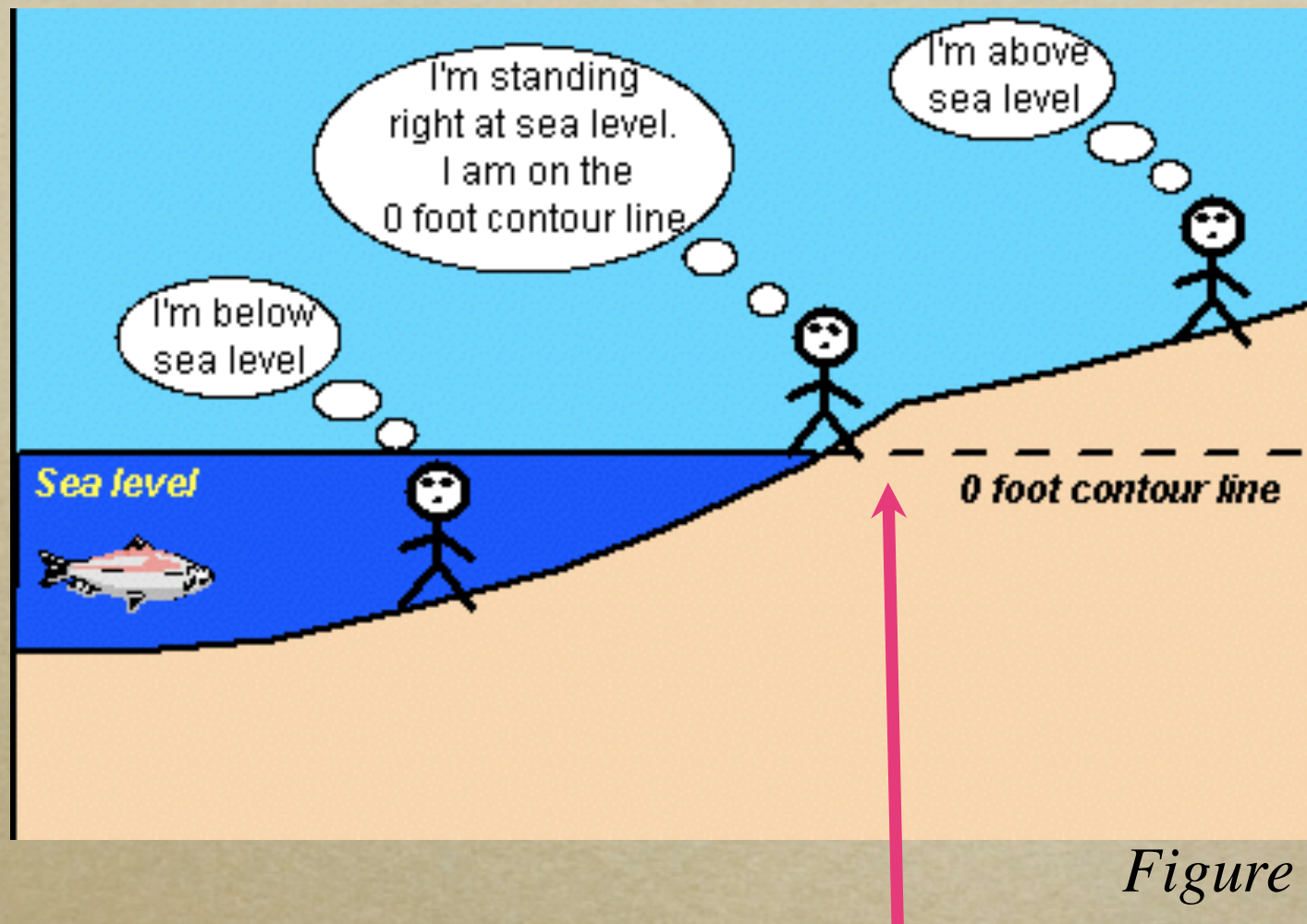


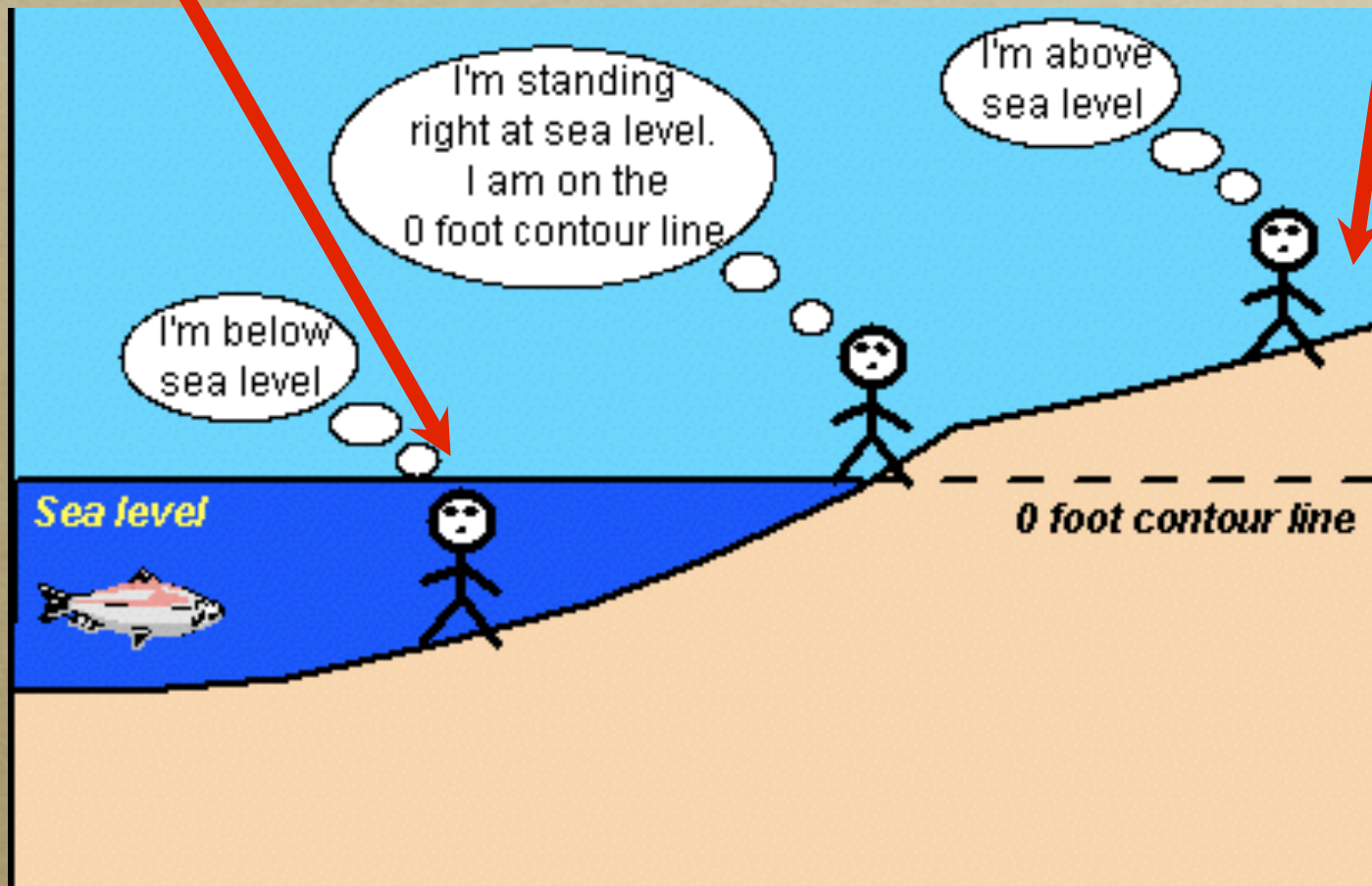
Figure 5

## Picture walking along a beach exactly where the water meets the land

- The water surface marks an elevation we call sea level, or zero.
- *As you walk along the shore your elevation will remain the same, you will be following a contour line.*

- If you stray from the shoreline and start walking **down** into the ocean, the elevation of the ground (in this case the seafloor) is **below sea level**.

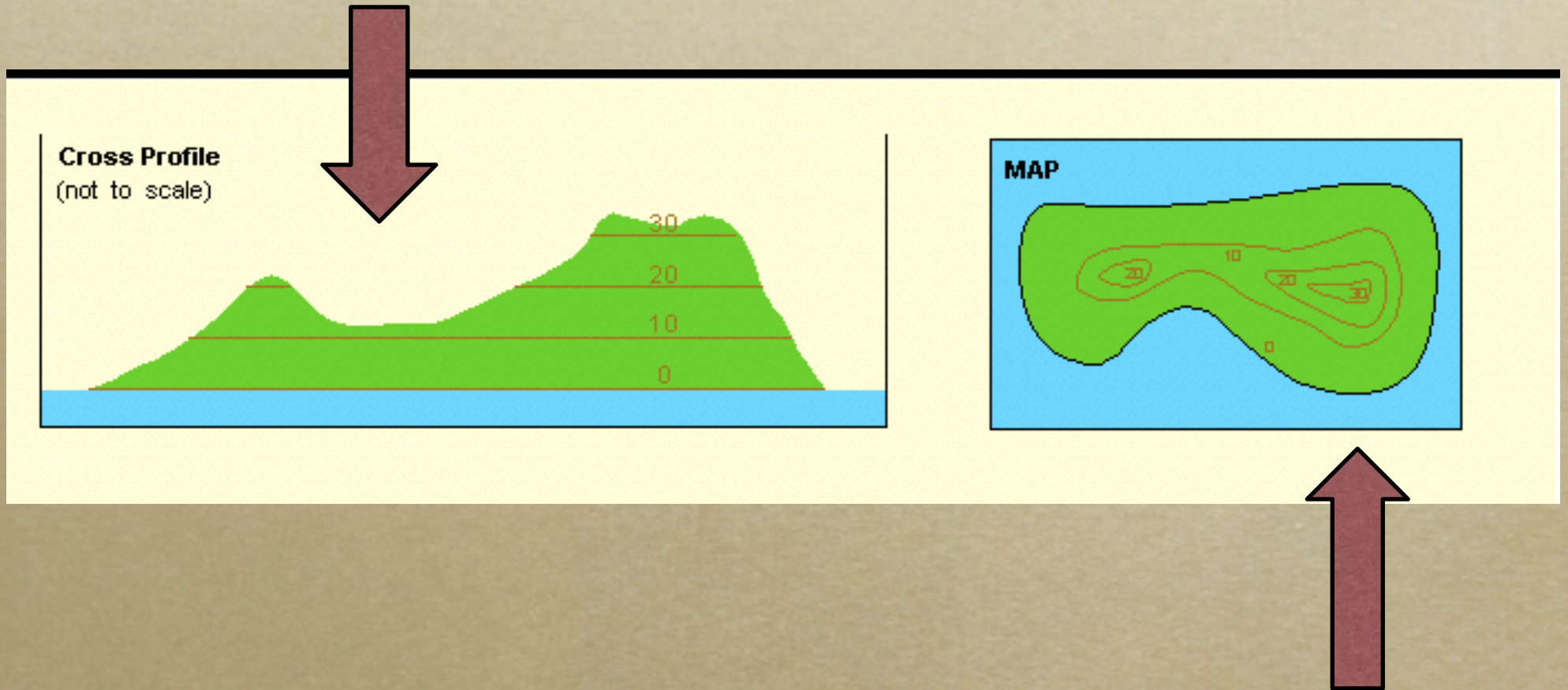
- *If you stray the other direction and walk **up** the beach your elevation will be **above sea level**.*



# Topographic Map RULES

- Contour lines do not **cross** each other. In fact, contour lines can **never touch** each other.
- Contours that are spaced close together represent **steep** slopes.
- Contour lines that are spaced **far apart** represent gentle slopes.

# Profile and Aerial Views



- Contour lines are useful because they allow us to show the shape of the land surface (topography) on a **map**. The two diagrams below illustrate the **same island**.
- The diagram on the left is a **view from the side** (cross profile view) such as you would see from a ship offshore.
- The diagram at right is a **view from above** (map view) such as you would see from an airplane flying over the island.

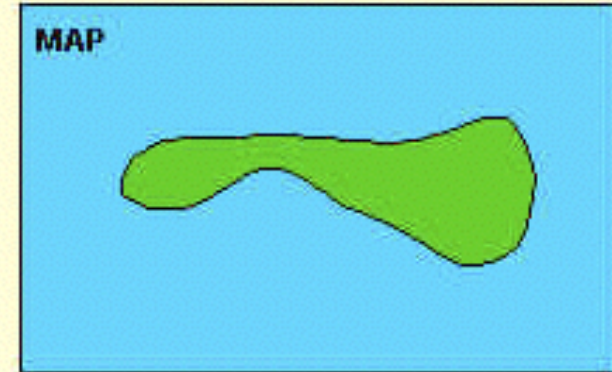


*Figure 6*

**Cross Profile**  
(not to scale)

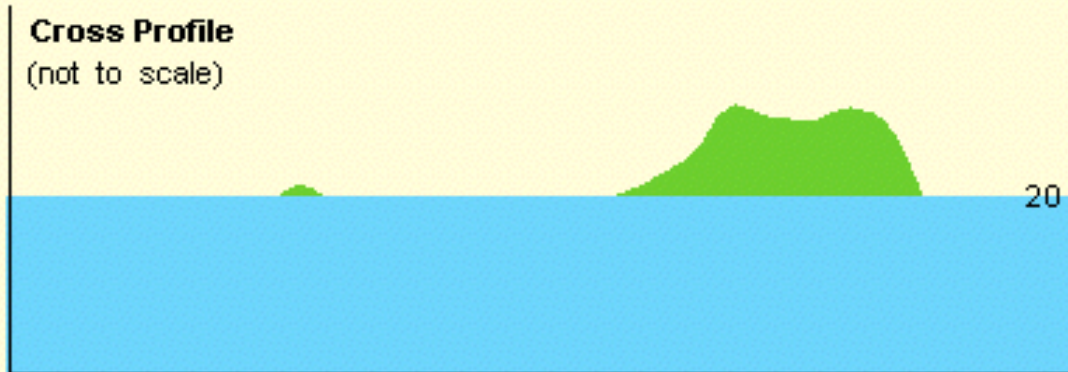


**MAP**

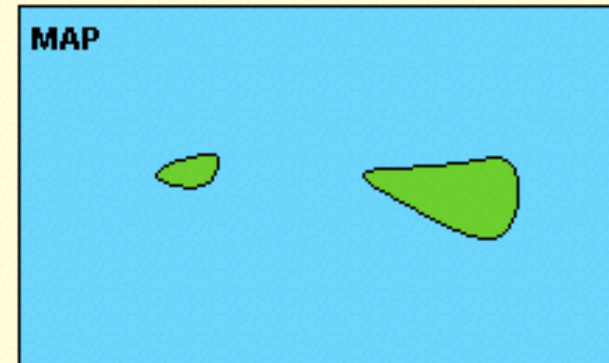


*Compare these two topographic maps*

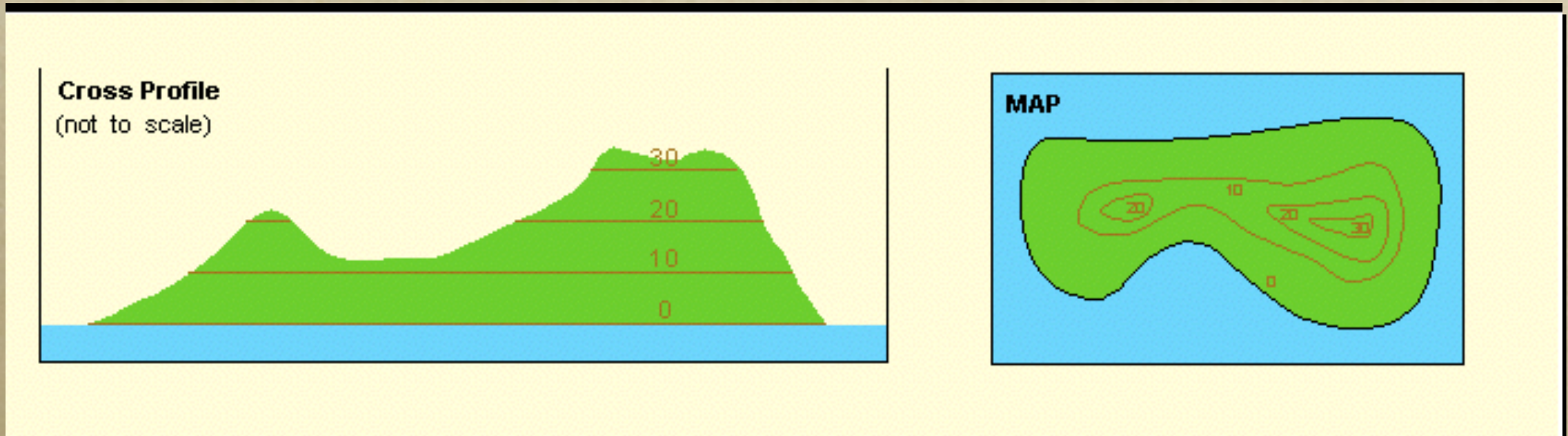
**Cross Profile**  
(not to scale)



**MAP**



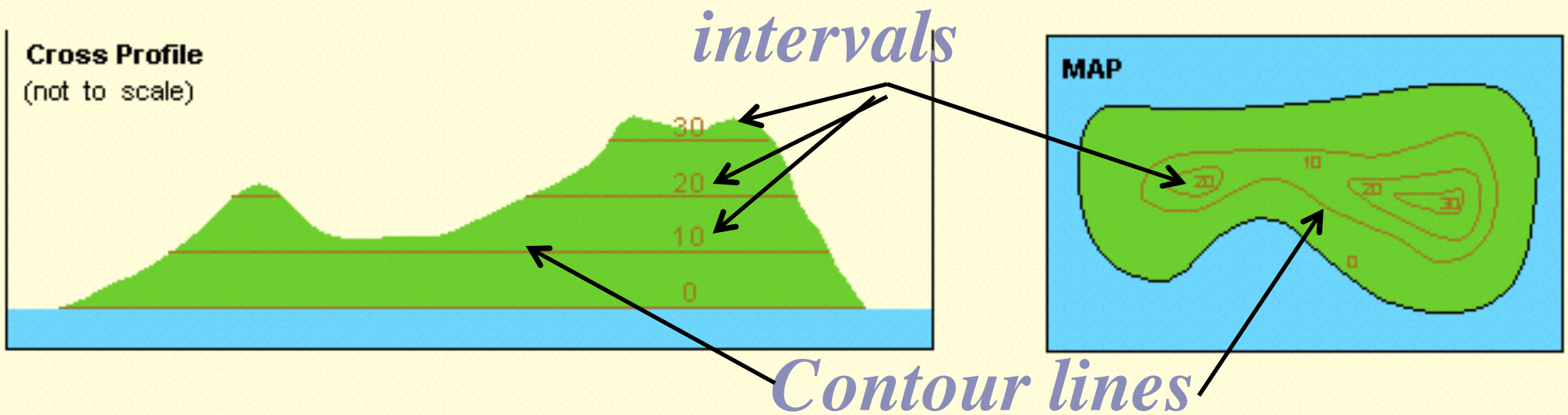
*The lines on a map are the contour lines*



*The numbers on the line represent different elevations. These are called intervals.*

# PROFILE

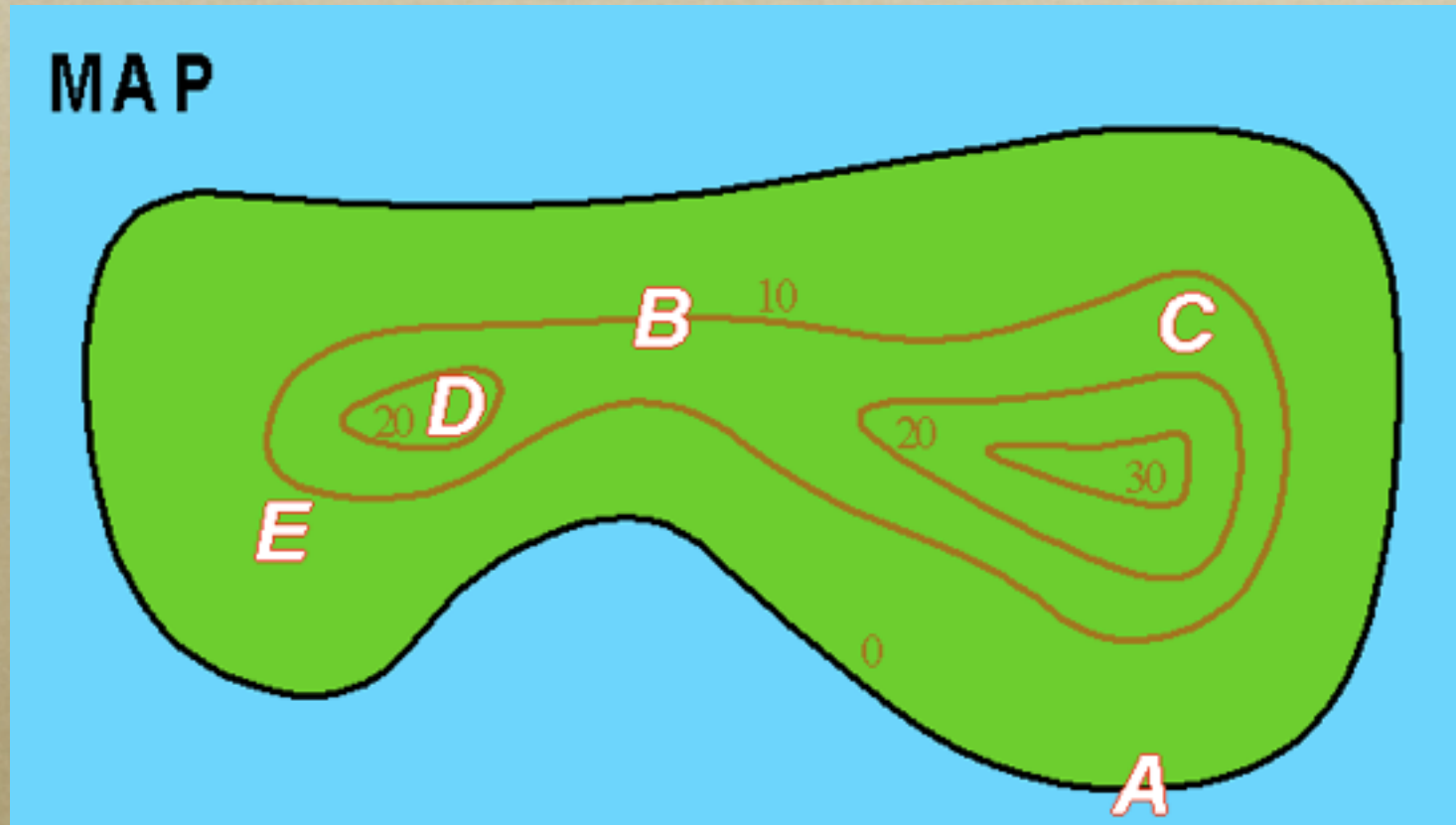
# AERIAL



*Label the intervals and contour lines*  
*Label the profile and aerial views*

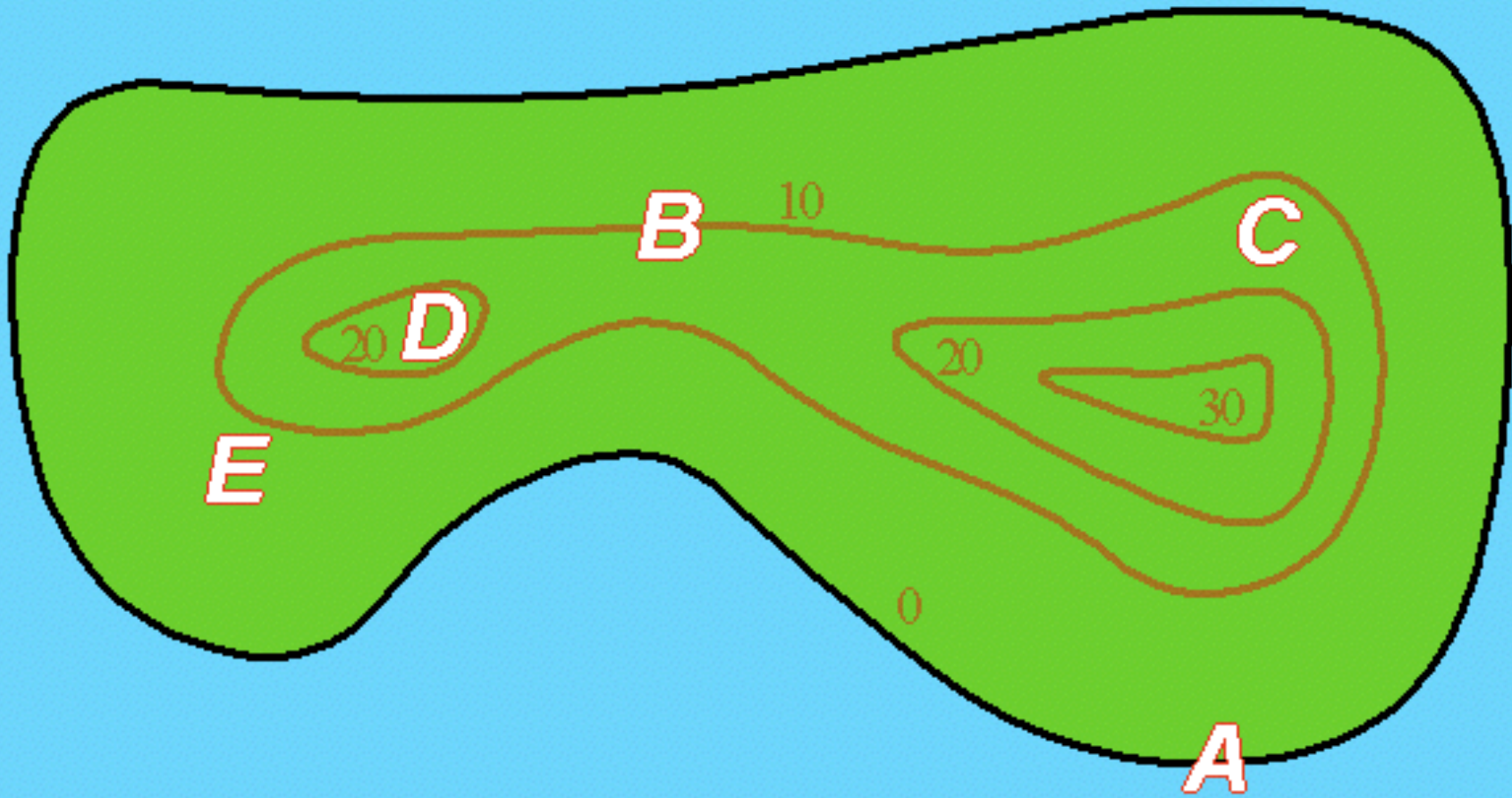


*So how do you read a topographic map?*



*Follow along as we discuss Points A-E on this map.*

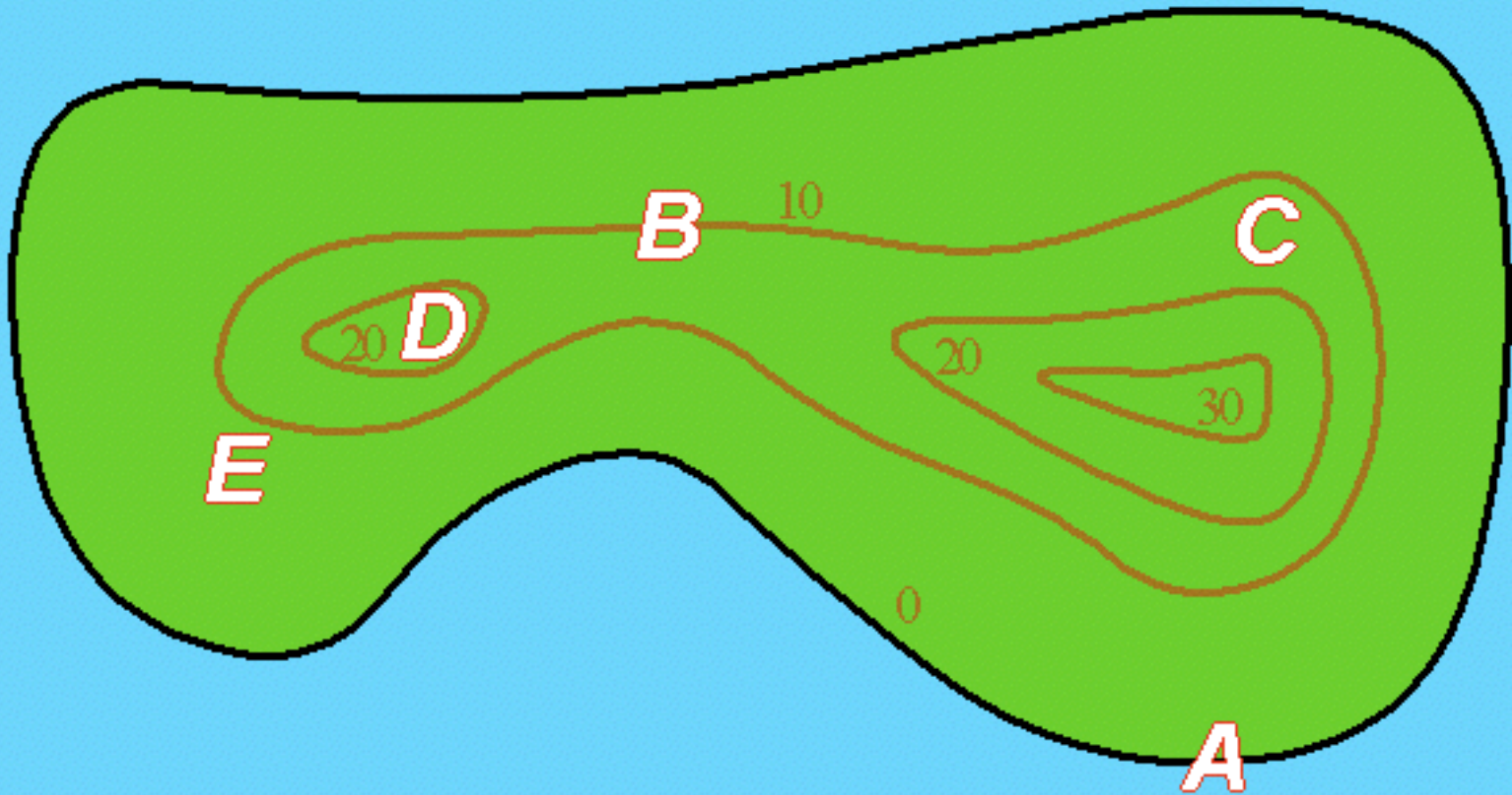
# MAP



- **Point A = 0 ft**

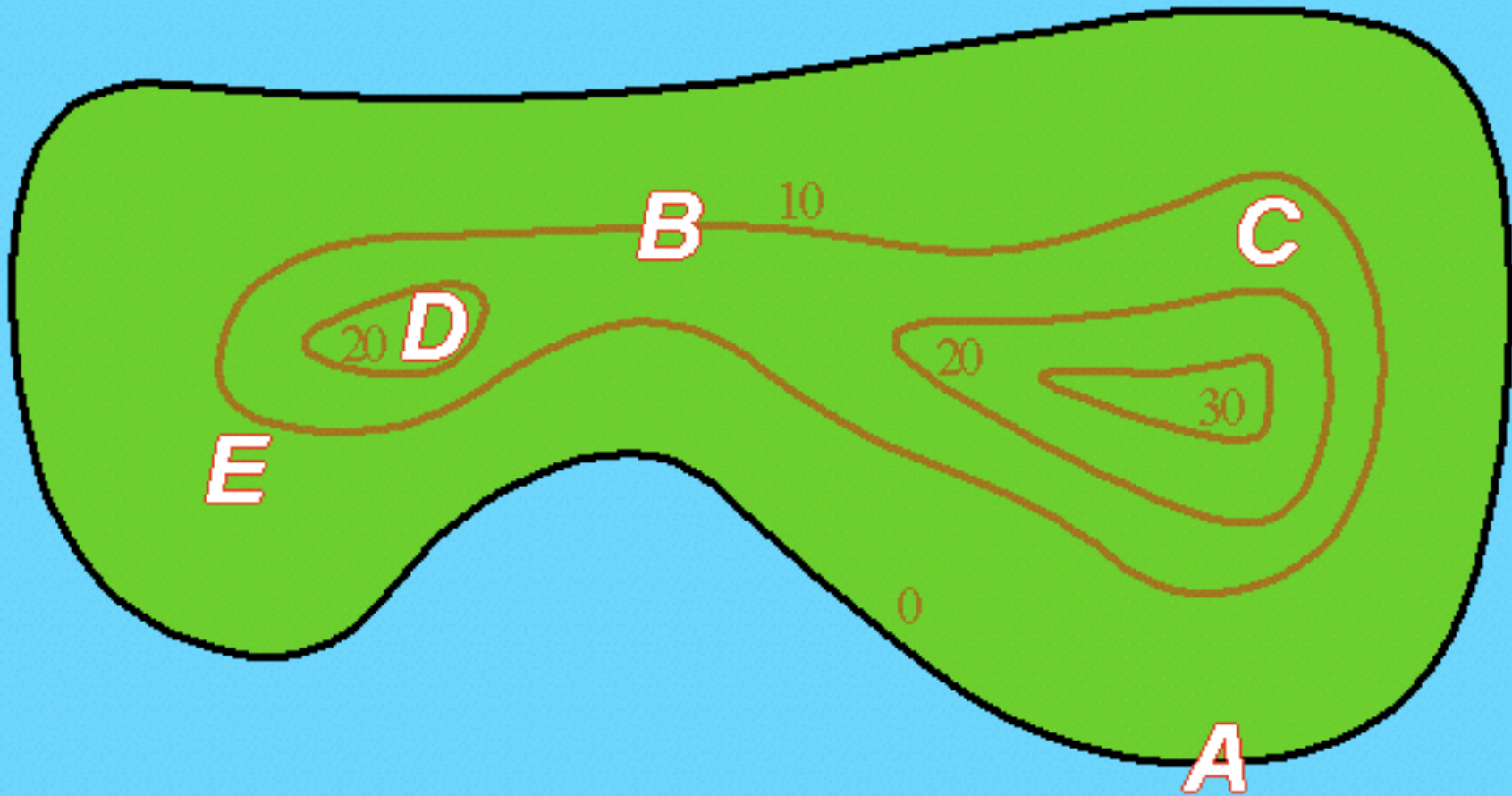
- *Point A sits right on the 0 ft contour line. Since all points on this line have an elevation of 0 ft, the **elevation** of point A is zero.*

# MAP



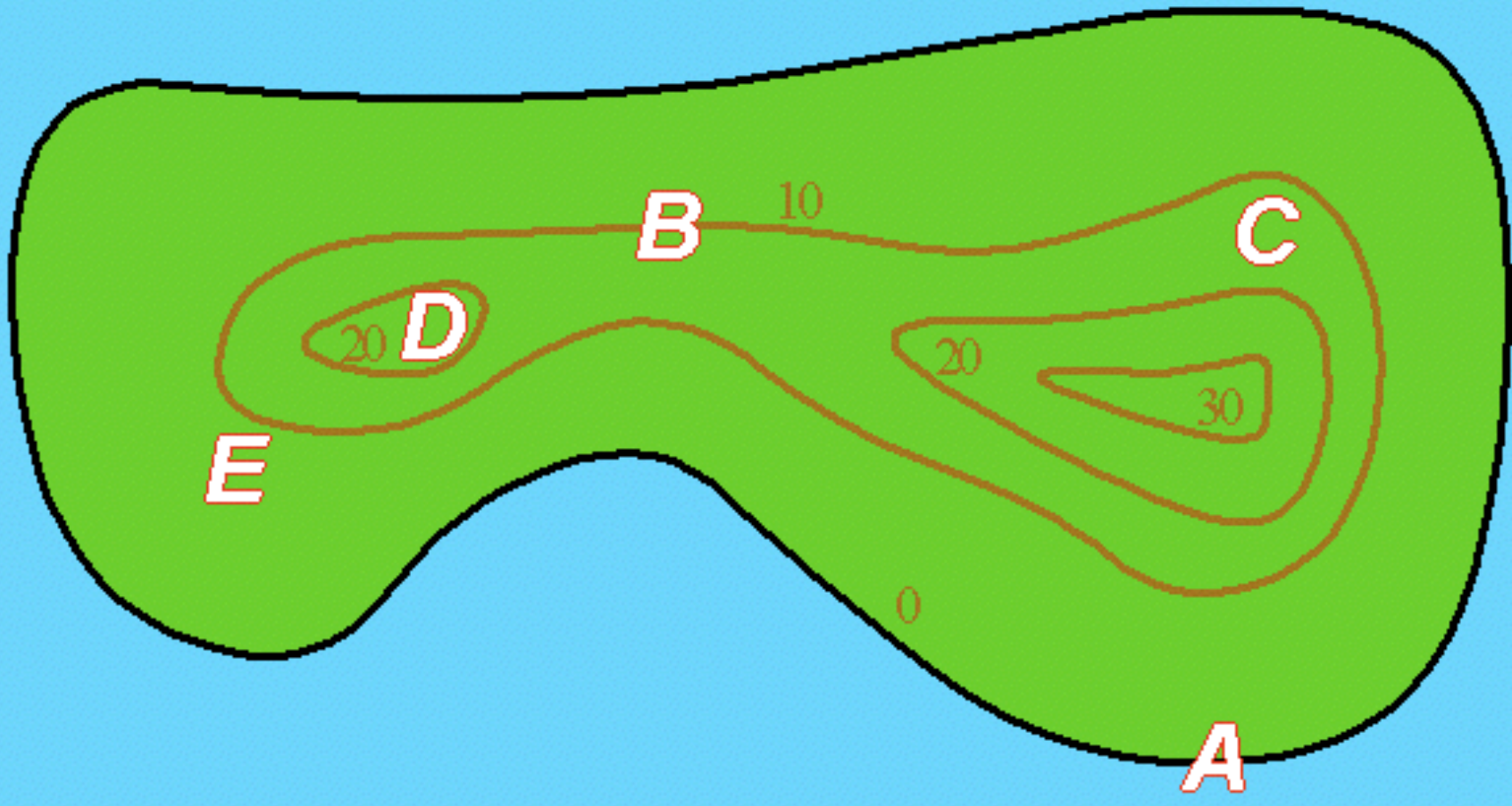
- **Point B = 10 ft.**
- *Point B sits right on the 10 ft contour line. Since all points on this line have an elevation of 10 ft, the elevation of point B is 10 ft.*

# MAP



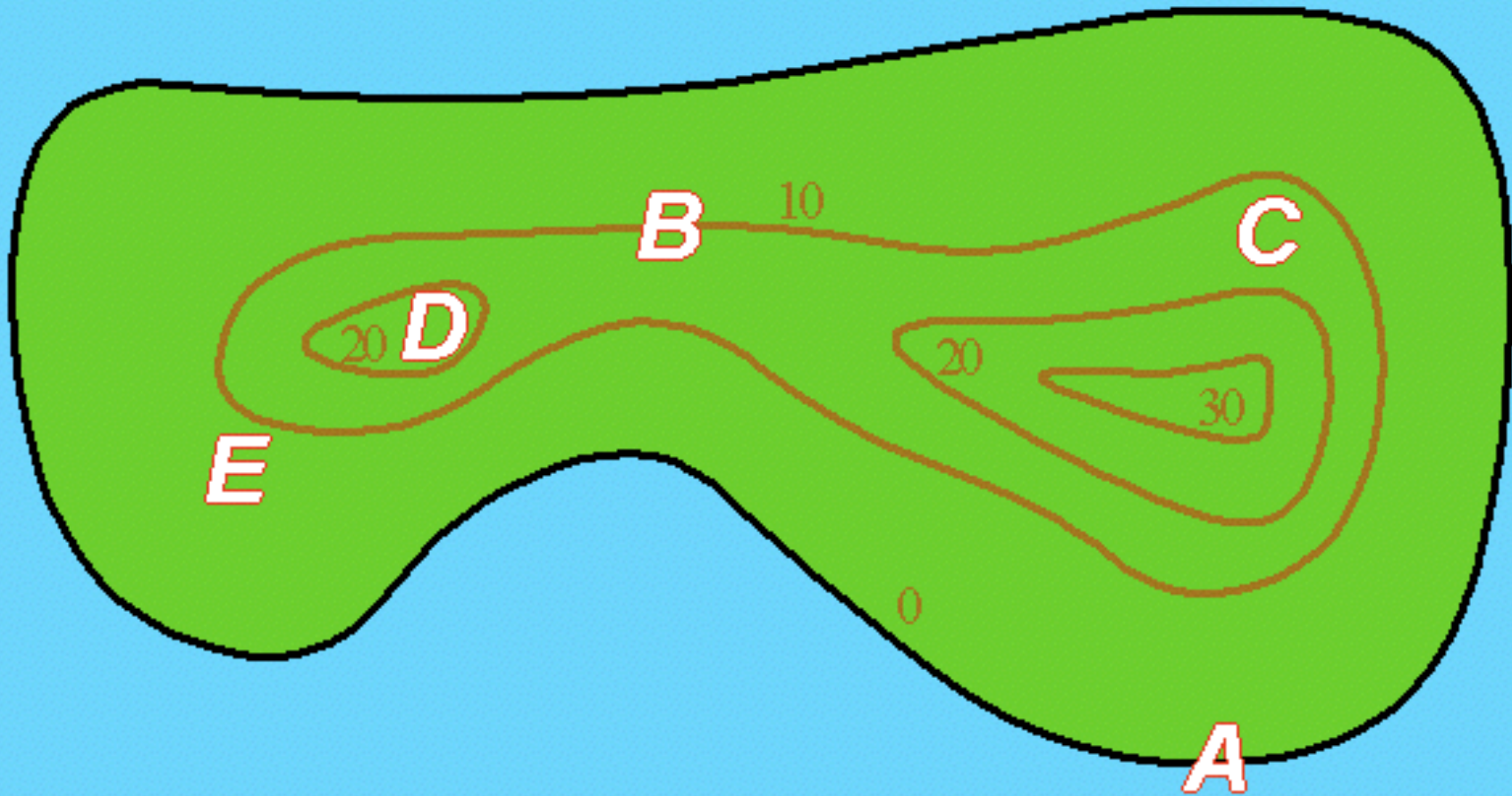
- **Point C ~ ?ft.**
- *Point C does not sit directly on a contour line so we can not determine the elevation precisely. We do know that point C is **between** the 10 ft and 20 ft contour lines so its elevation **must be greater than 10 ft and less than 20 ft.***

# MAP



- WHAT IS THE ELEVATION OF POINT C?
- 15 ft

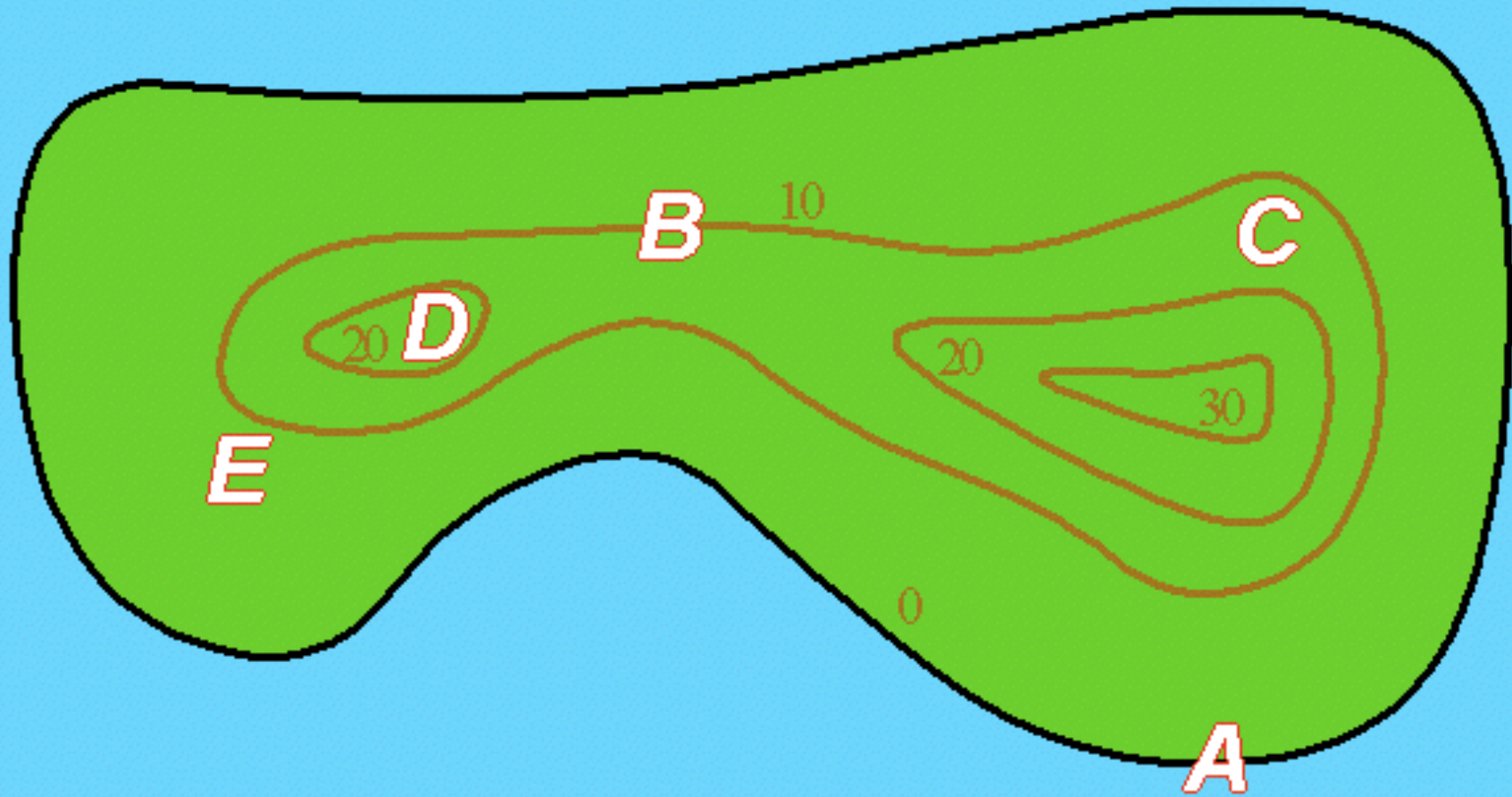
# MAP



○ **Point D ~ ? ft.**

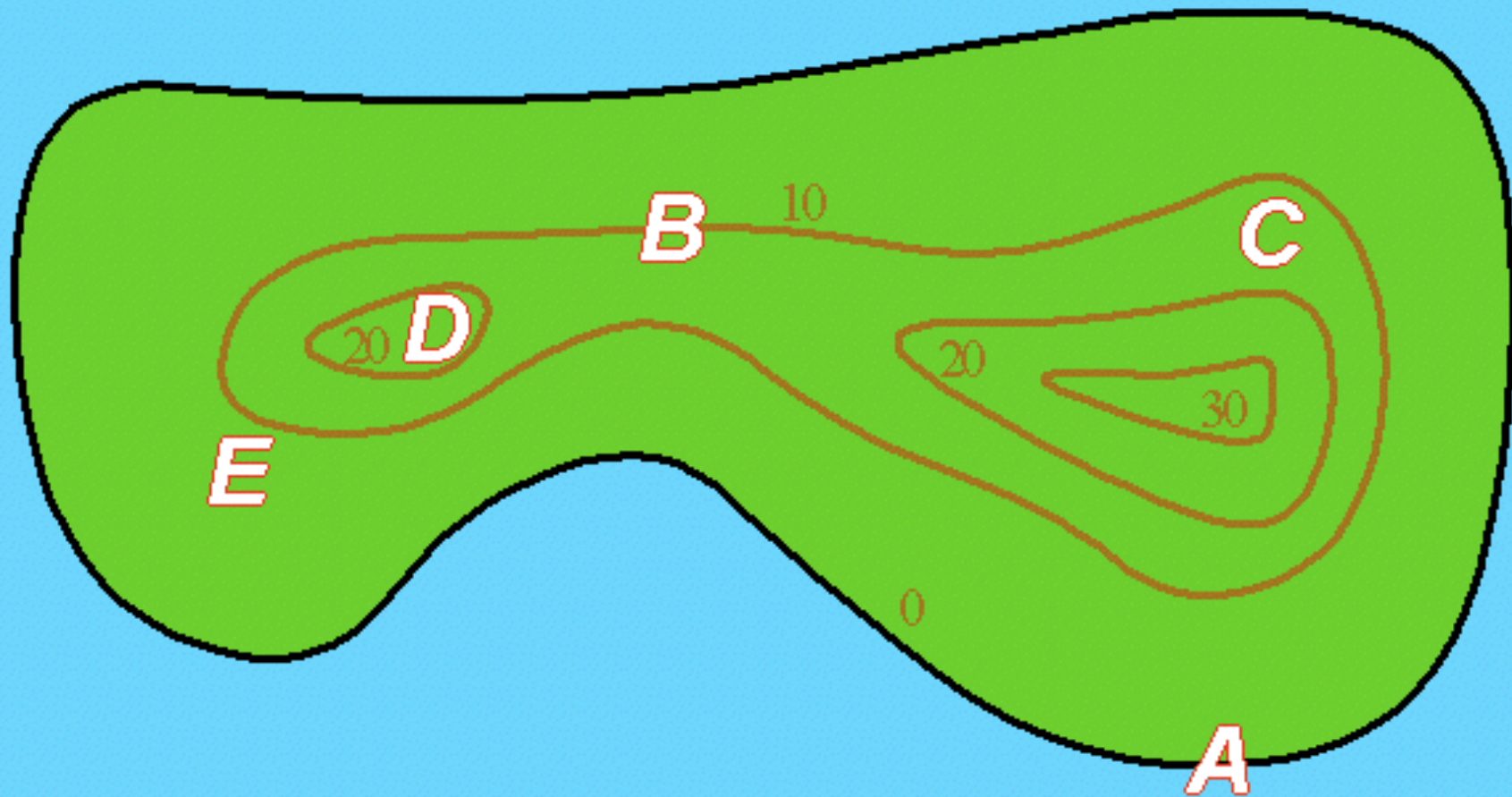
- *We are even less sure of the elevation of point D than point C. Point D is inside the 20 ft. contour line indicating its elevation is above 20 ft. Its elevation has to be less than 30 ft. because there is no 30 ft. contour line shown. **But how much less?***

# MAP



- There is no way to tell. The elevation could be 21 ft, or it could be 29 ft. There is no way to tell from the map.
- **Point D = 25 ft.**

# MAP



- **Point E ~ ? ft**
- Just as with point C above, we need to **estimate the elevation** of point E somewhere between the 0 ft and 10 ft contour lines it lies in between. Because this **point is closer** to the 10 ft line than the 0 ft. line we estimate an elevation closer to 10. In this case 8 ft. seems reasonable.



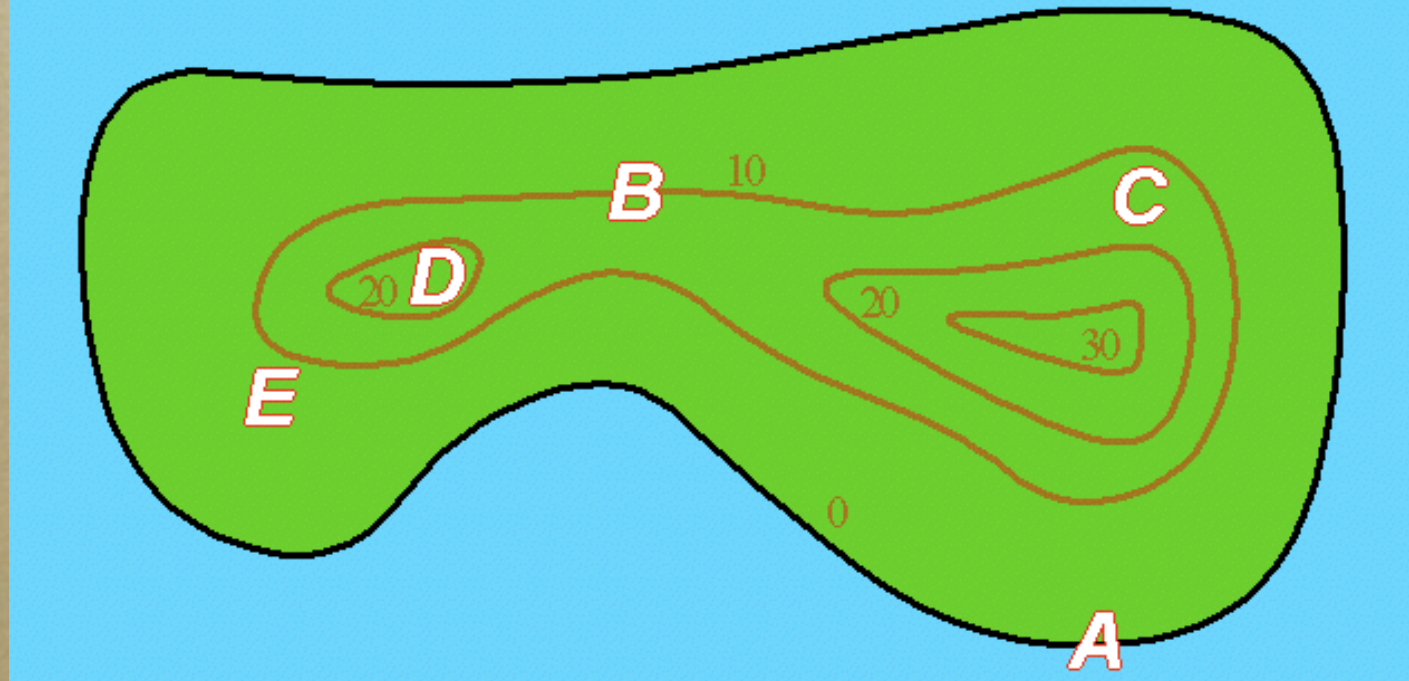
**Cross Profile**  
(not to scale)



**MAP**

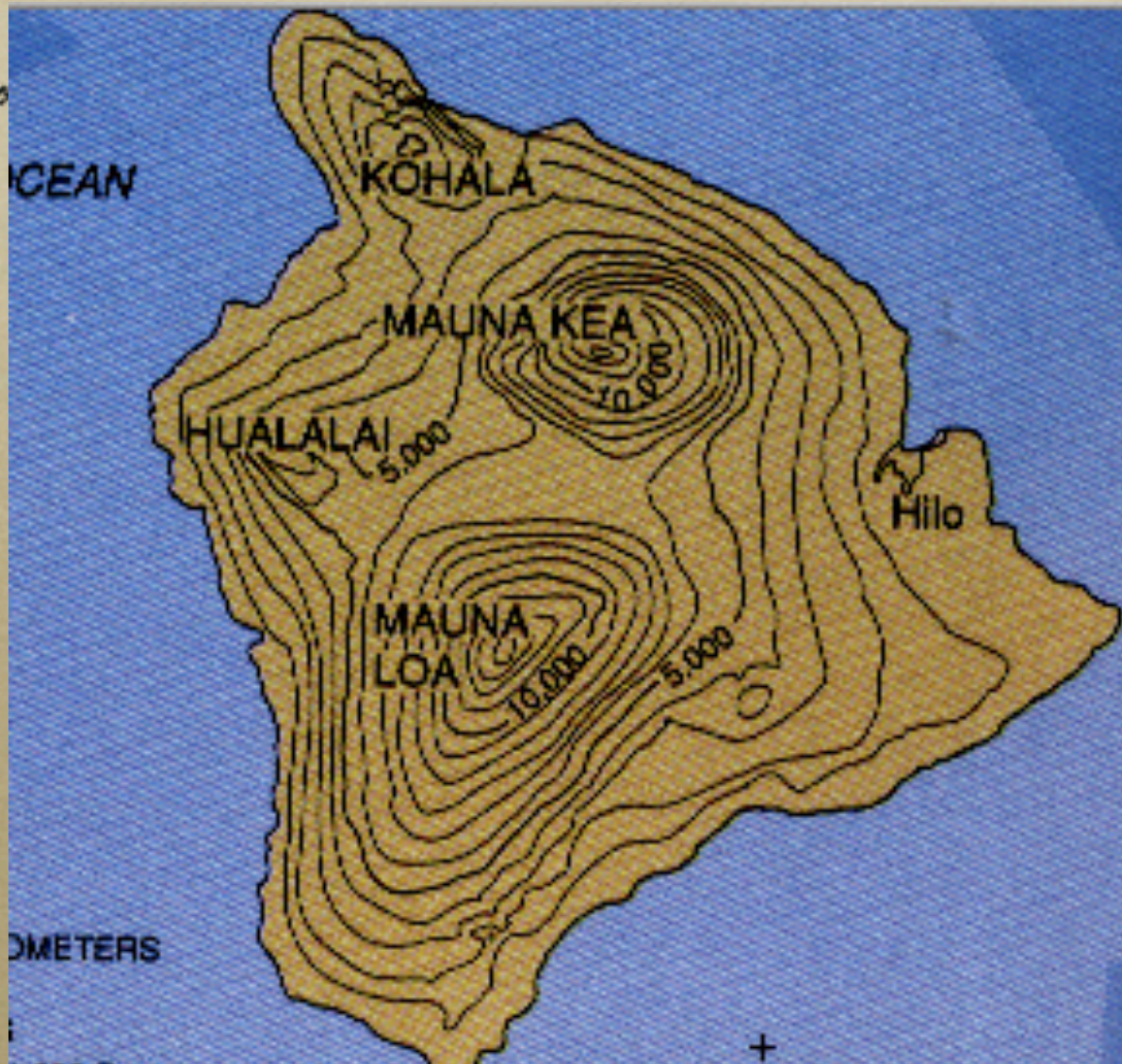


**MAP**

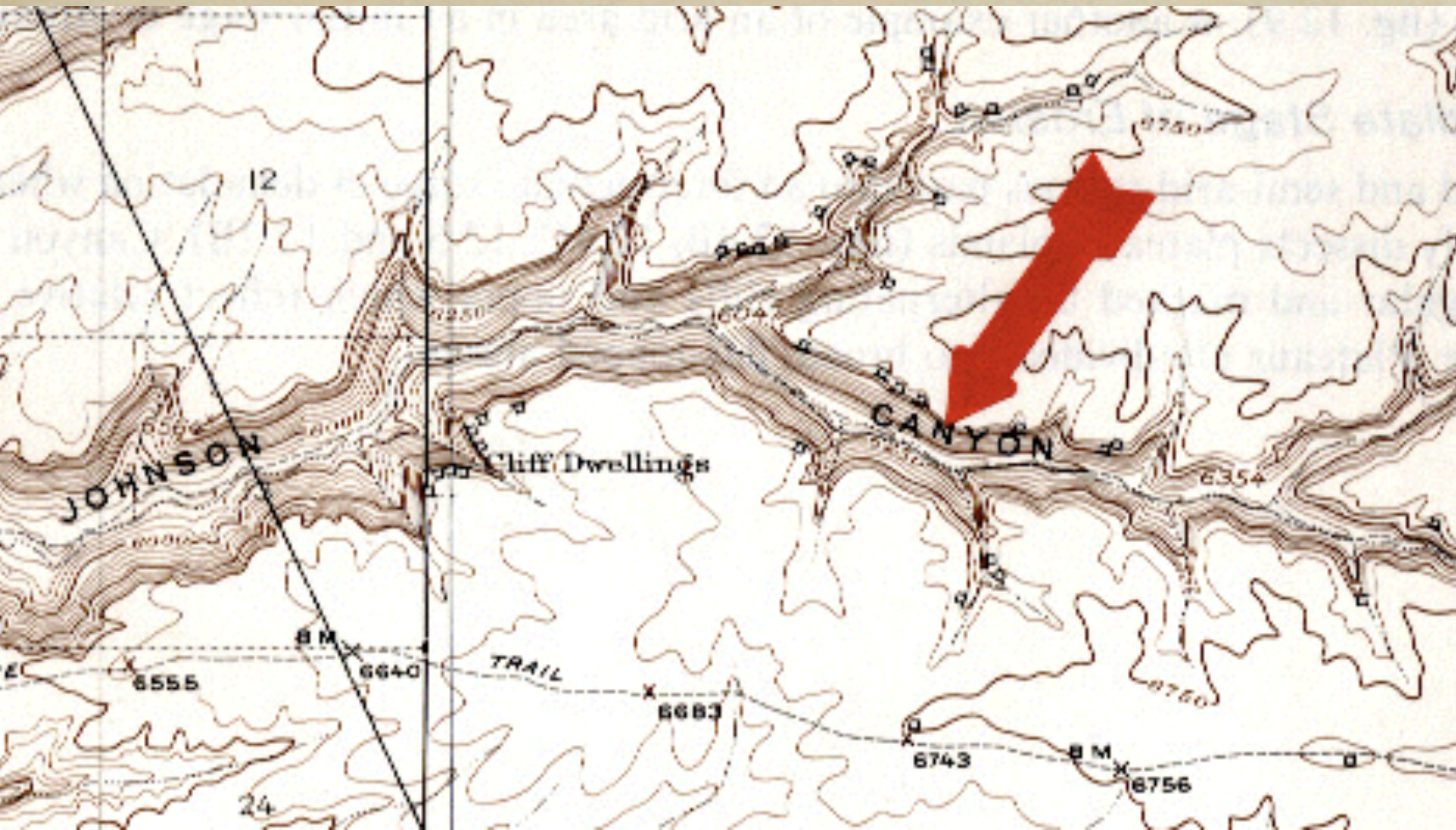


- Point E  
~ 8 ft

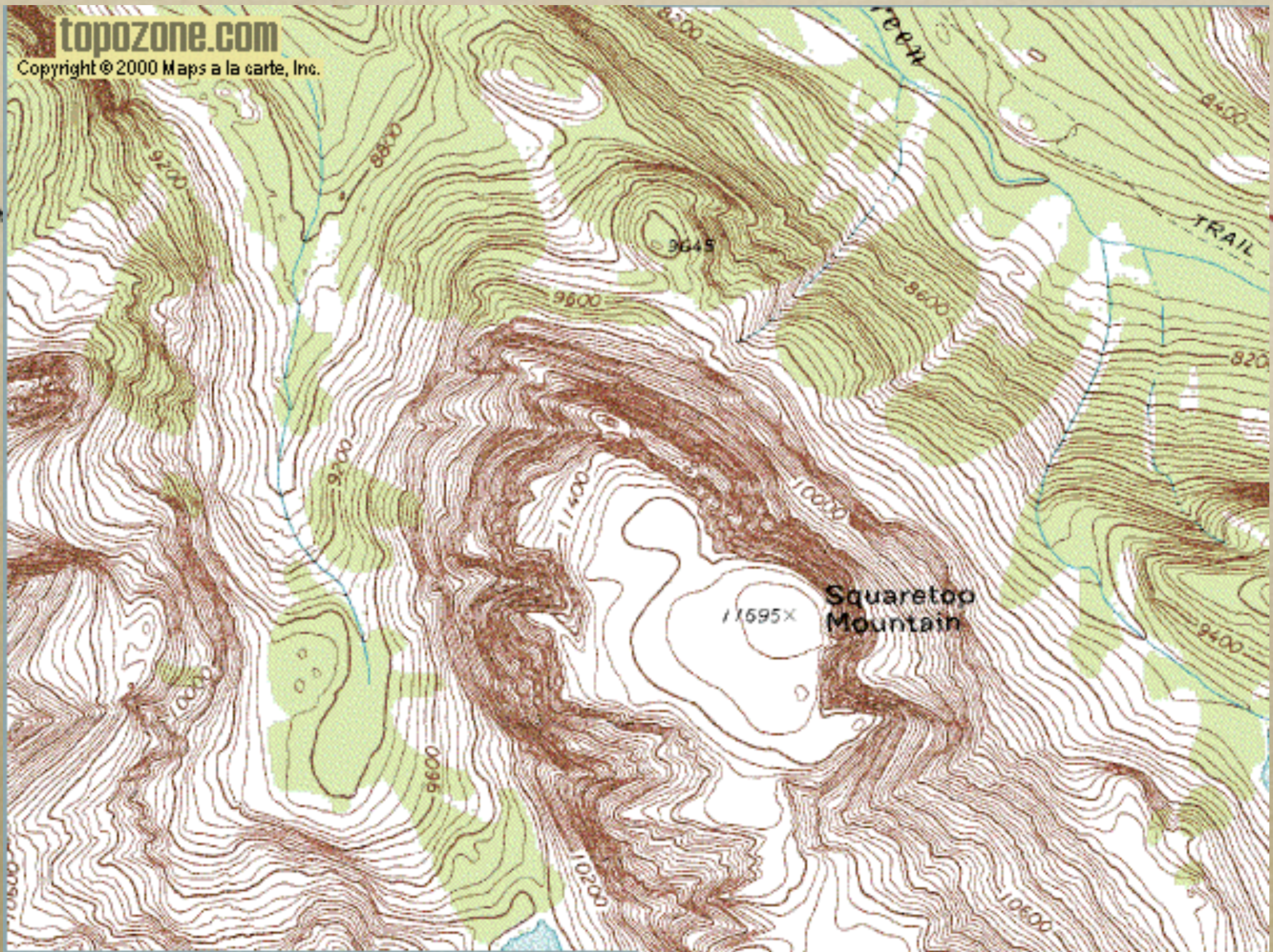
# *Topographic map examples*



*Sometimes topographic maps show islands*



*Sometimes topographic maps show canyons*

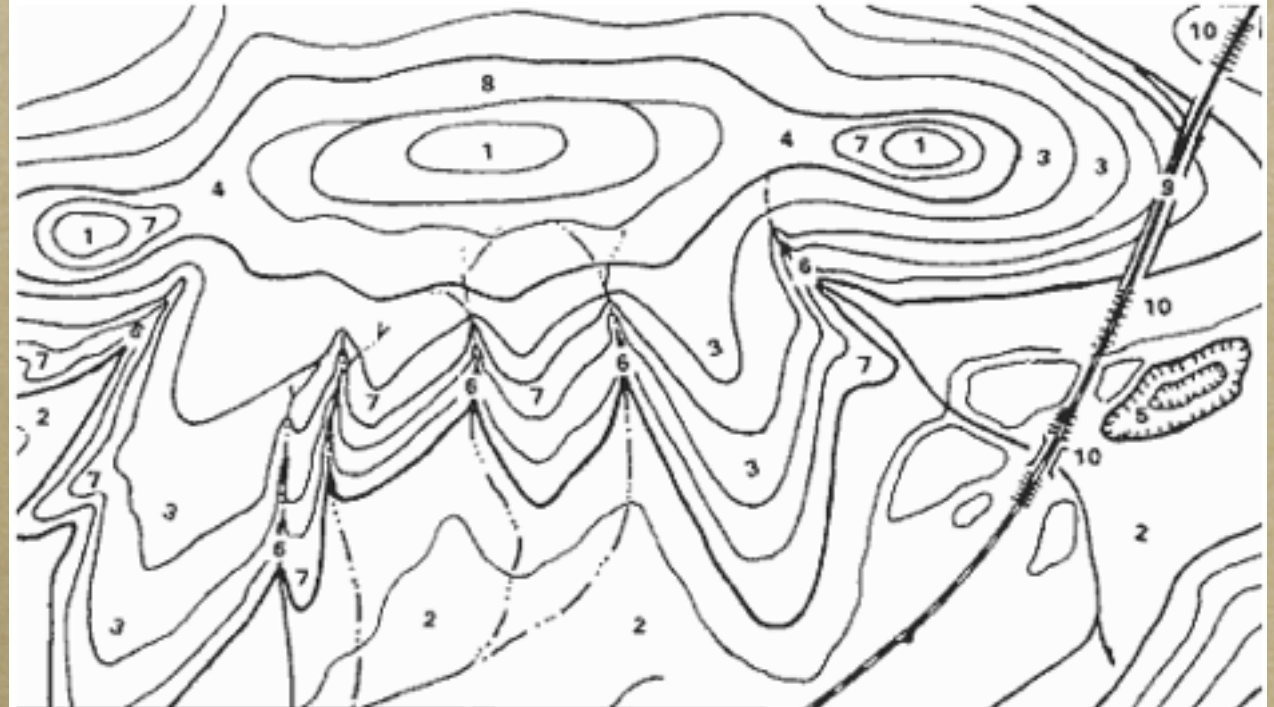


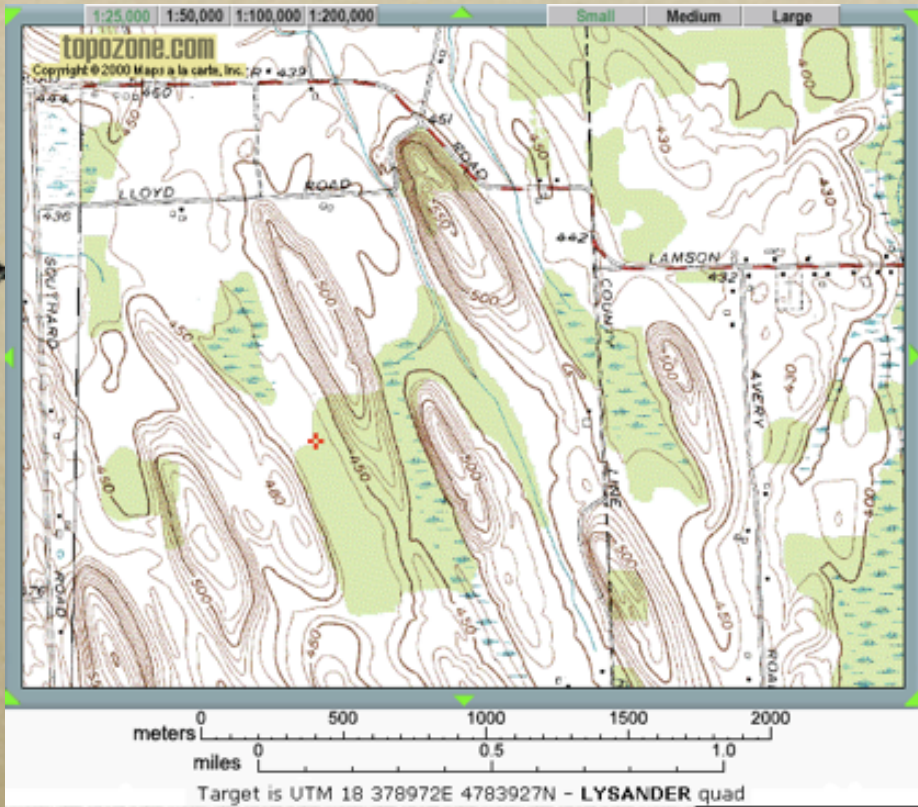
*Sometimes they show mountains.*



*Sometimes they are  
simple*

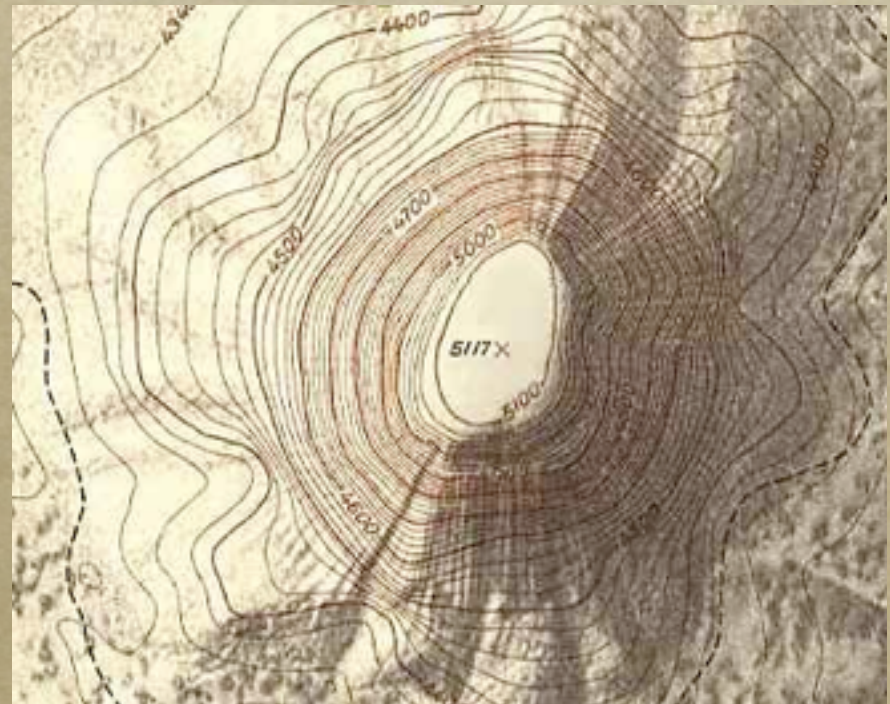
*Sometimes  
they are  
complicated*





*Sometimes they  
show many  
landforms over a  
large region.*

*Sometimes they  
show a single  
landform in detail.*



# Credits Page

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- *Figure 1:* <http://www.compassdude.com/contour-quiz.shtml>
- *Figure 2:* <http://www.forgefx.com/casestudies/prenticehall/ph/topo/topo.htm>
- *Figure 3* [http://interactive2.er.usgs.gov/learningweb/teachers/mapsshow\\_act4.htm](http://interactive2.er.usgs.gov/learningweb/teachers/mapsshow_act4.htm)
- *Figure 4:* <http://www.nycswcd.net/files/NRCS%20Reading%20Topo%20Maps%20to%20Delineate%20Watersheds1.pdf> 20Watersheds1.pdf
- *Figure 5:* <http://raider.muc.edu/~mcnaugma/Topographic%20Maps/contour.htm>