

ES202 Additional Map Exercise – Whitwell, TN Map

Refer to the attached map and answer the following questions. **Examine Figure 11.6 on p. 292 of your AGI Lab Manual (10th Edition). Read the Figure caption and graphic, explaining how to measure stream gradient or slope of a river channel.**

1. What is the contour interval of the map?
2. Using a ruler and the graphical scales, determine the fractional scale of the map. Show all of your math work.
3. What is the drainage pattern of the stream network in “Alum Cove”, north-central portion of the map?
4. Which direction is the Sequatchie River flowing? Which direction is the stream in Alum Cove flowing?
5. Calculate the average gradient of the Sequatchie River between points A and B. Calculate gradient in ft/mi. Show all your math work.
6. What is the elevation of point C?
7. In which direction is “Smith Stream” flowing?
8. Calculate the average gradient of Smith Stream between points D and E. Calculate gradient in ft/mi. Show all your math work **(Refer to a copy of Figure 11.6 on the following page).**
9. Calculate the average gradient of Smith Stream between points E and F. Calculate gradient in ft/mi. Show all your math work.
10. Based on your results from questions 8 and 9 above, what can you conclude about the change in stream gradient when water flows from high elevation to low elevation? Describe your observations.
11. What is the shape of the channel pattern of Sequatchie River near point A? What about point B? Is this river braided in any given reach?
12. Calculate the maximum relief for this map (answer in feet).
13. Is the topography around Dittany Point relatively steep or relatively gentle? What about the hill above Dancing Fern Cave?
14. What fluvial landform is Coppinger Chapel located on? Is this an erosional or depositional landform? What fluvial landform is Camp Glancy located on?

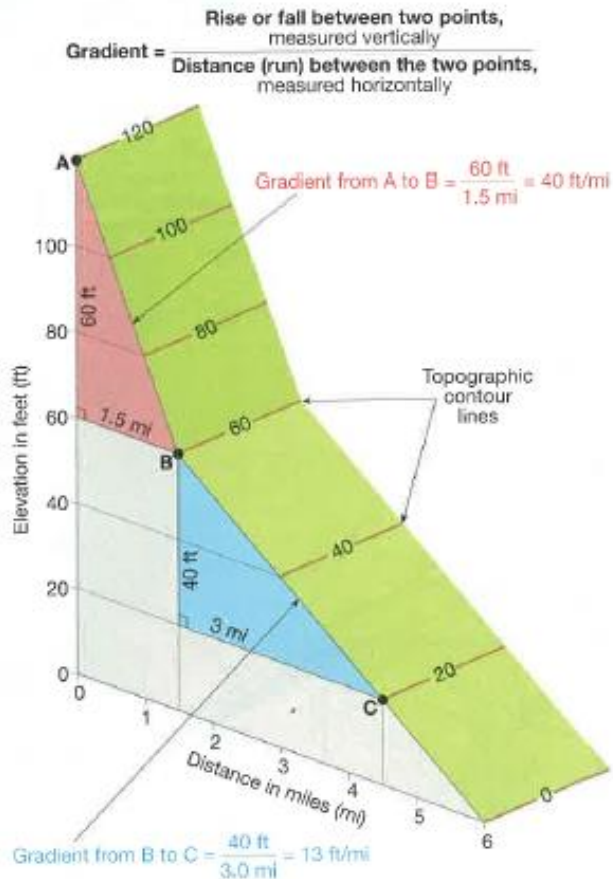
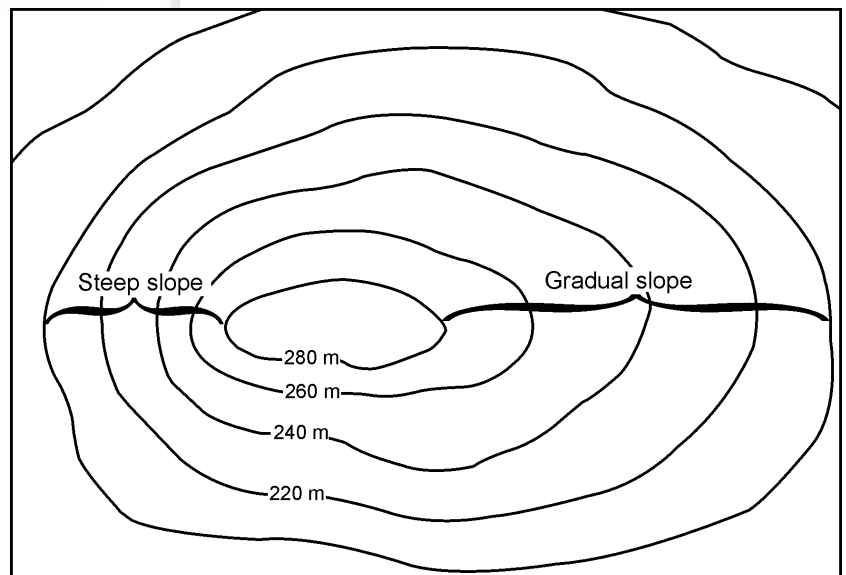
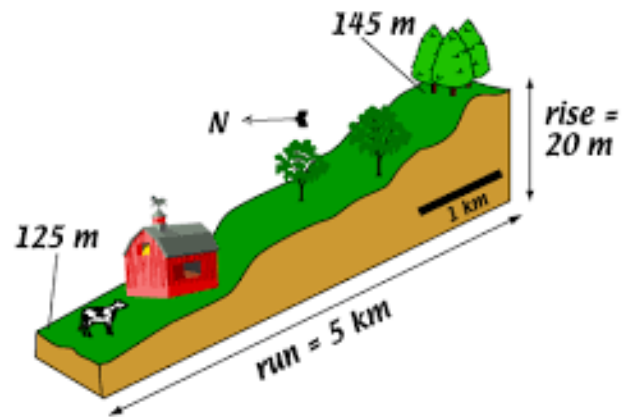
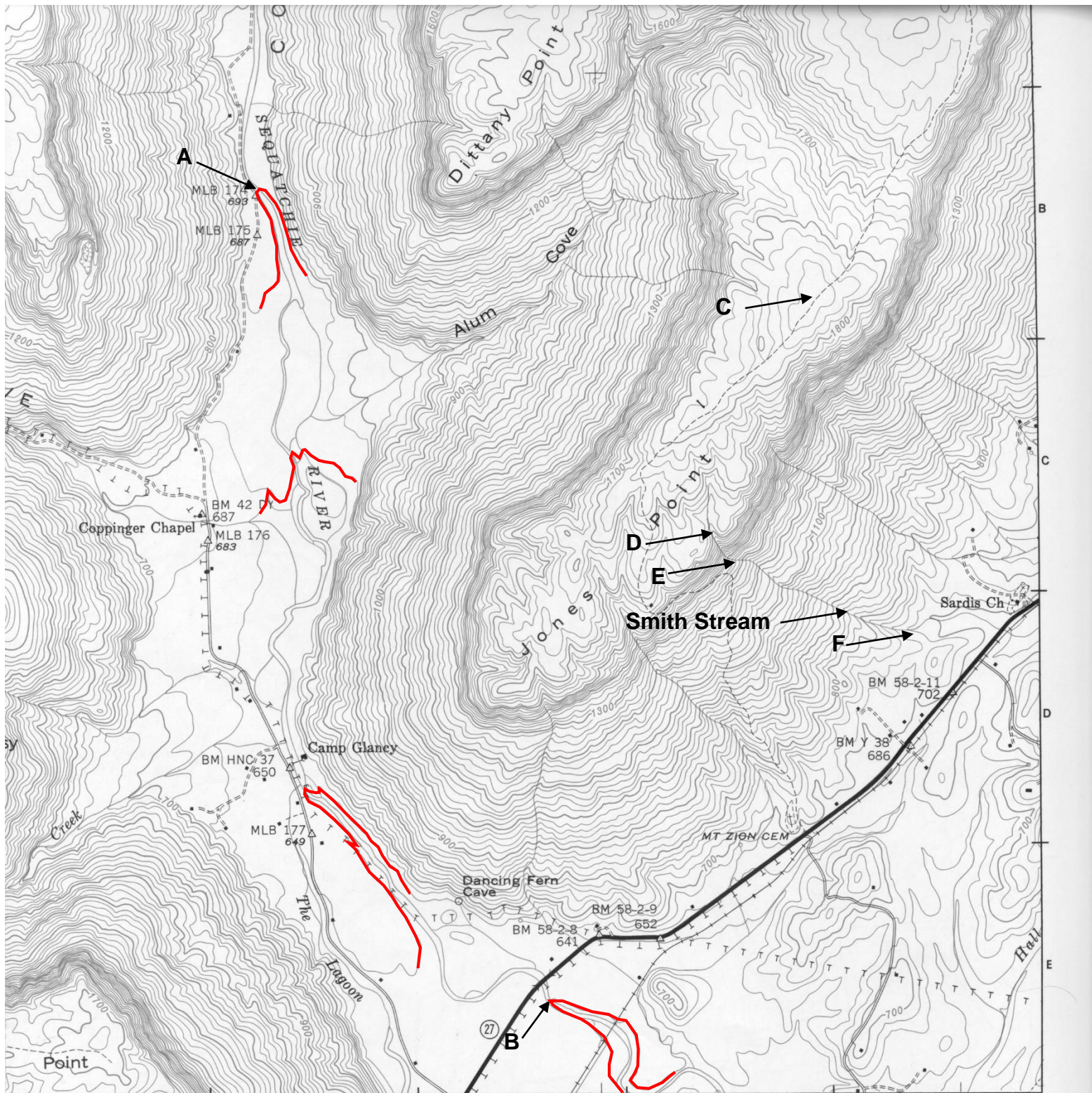


FIGURE 11.6 Stream gradient (slope). The gradient of a stream is a measure of the steepness of its slope. As above, gradient is usually determined by dividing the rise or fall (vertical relief) between two points on the map by the distance (run) between them. It is usually expressed as a fraction in feet per mile (as above) or meters per kilometer.

A second way to determine and express the gradient of a slope is by measuring its steepness in degrees relative to horizontal. Thirdly, gradient can be expressed as a percentage (also called *grade* of a slope). For example, a grade of 10% would mean a grade of 10 units of rise divided by (per) 100 units of distance (i.e., 10 in. per 100 in., 10 m per 100 m).





Red Lines Show
Highlighted Contours
that Cross
Sequatchie River

