Name _____ Class _____ Date _____

Investigation Contour Map Profiles

Skills: Predict; Record data; Graph; Compare and contrast; Interpret data; Generalize; Infer

Background Information

A topographic, or contour, map shows different elevations within an area. Study Figure 4.1, which shows a contour map of part of a state park. Hiking trails have been proposed between various locations, represented by letters on the map. The dashed lines represent the terrain over which the proposed trails will take hikers. The dot-and-dash line is a stream. Also note the horizontal-distance scale on the contour map. A distance of 1 cm on the map corresponds to an actual horizontal distance of 0.2 km.

Profiles are to be constructed so that each proposed trail can be rated as *easy*, *moderately difficult*, or *strenuous*. The top part of the figure shows you how a profile of trail YZ is constructed. Remember that a profile is like a graph with elevations on the vertical axis (*y*-axis) and horizontal map distance on the horizontal axis (*x*-axis).

Notice that for every contour line that the trail crosses, a dot is drawn on the graph. Each dot is plotted at the correct horizontal distance from other dots and at the elevation of its corresponding contour line. When all the dots have been plotted, they are connected with a smooth curve to form a profile. Review Figure 4.1 until you understand why each dot on the profile is positioned where it is.

Problem

What characteristics of an area can you infer from a contour map profile?

Goals

In this investigation, you will learn how a contour map profile is drawn and apply this information to draw two profiles. Then you will draw conclusions about the profiled area.

Prediction

Carefully read the investigation *before* stating your prediction. Remember to give reasons for your prediction.

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_____

Materials

pencil	scissors
paper	tape

Procedure

1. To draw a profile of trail *PQ*, begin by cutting a narrow strip of paper a little longer t the length of *PQ*. Place the strip so one long edge lines up with the *PQ* line.
2. **Record data** Mark and label dots *P* and *Q* on the edge of the strip. Beside each dot o strip, record the elevation. At each place where a contour line crosses *PQ*, mark the s with a dot and record its elevation along the edge of the strip.
3. **Graph** Tape your strip along the horizontal axis of the graph in Figure 4.2. On the graph, plot the elevation of each dot marked on your strip, as was done for *YZ* in Figure 4.1. Connect the dots smoothly to form a profile of *PQ*.
4. **Graph** Repeat steps 1 through 3 for *ST*. Plot your profile in Figure 4.3.

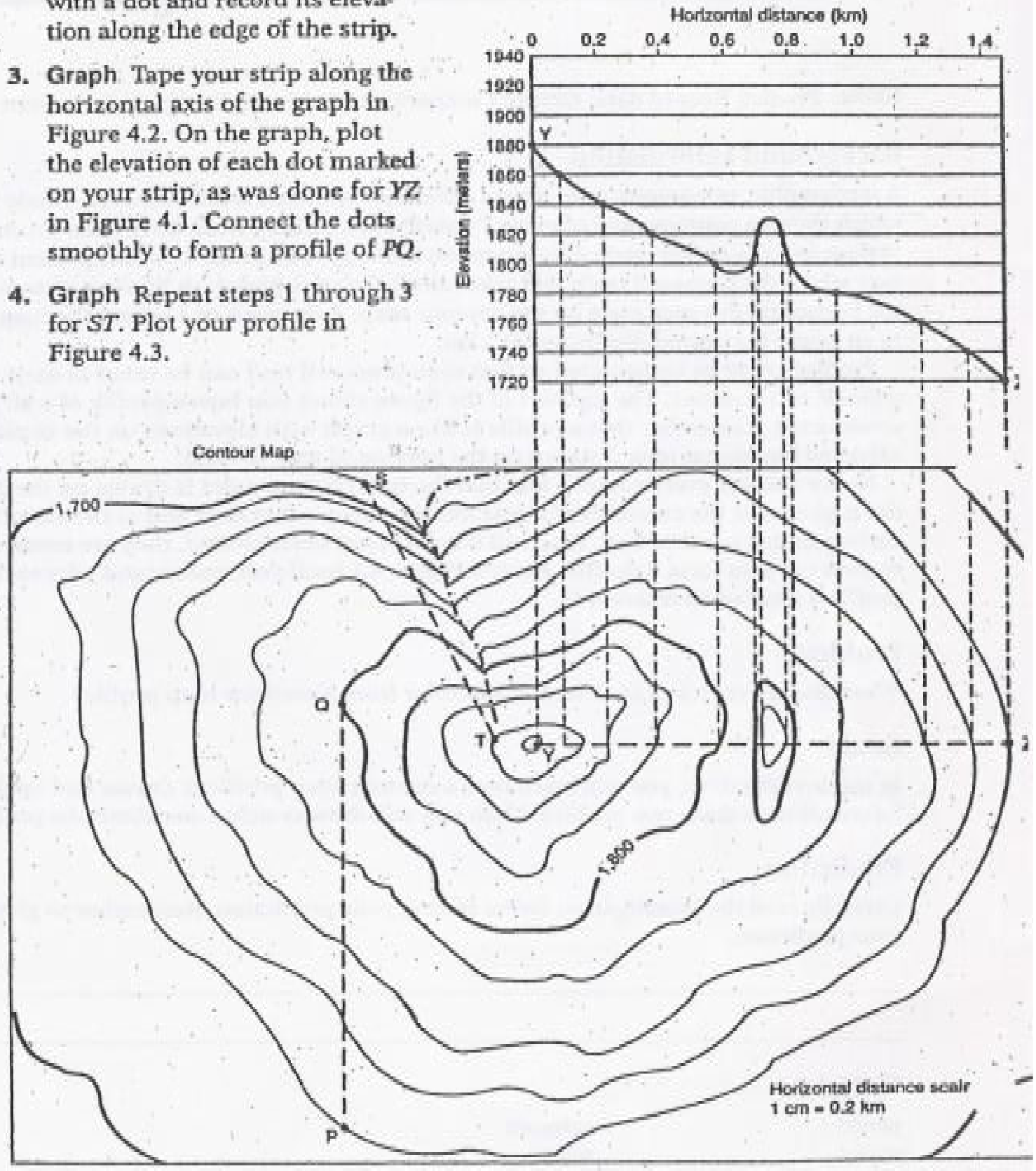


Figure 4.1

Data Record

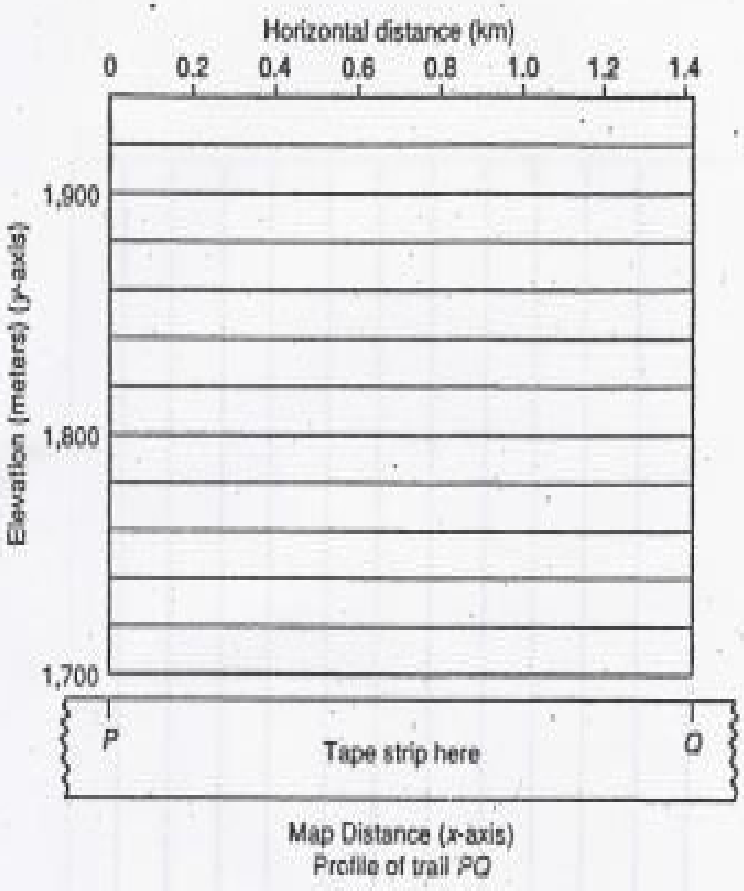


Figure 4.2

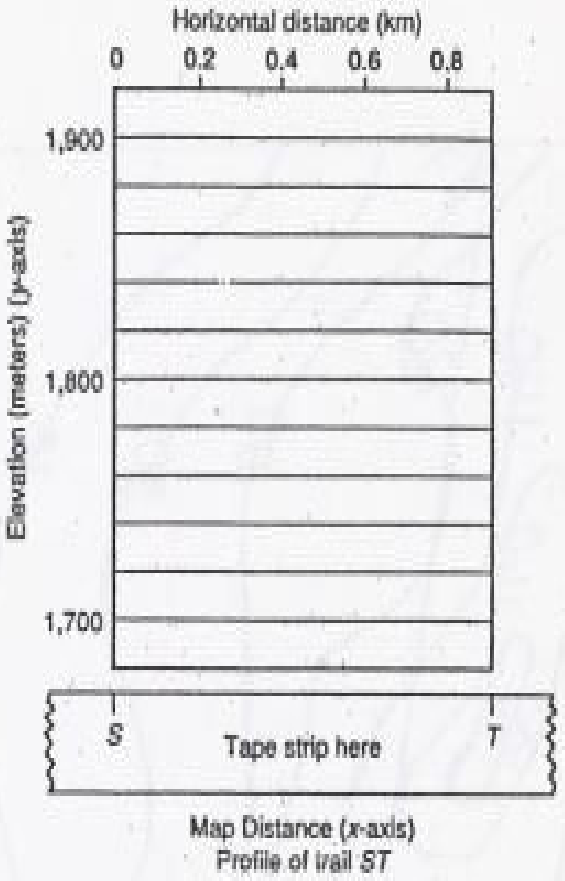


Figure 4.3

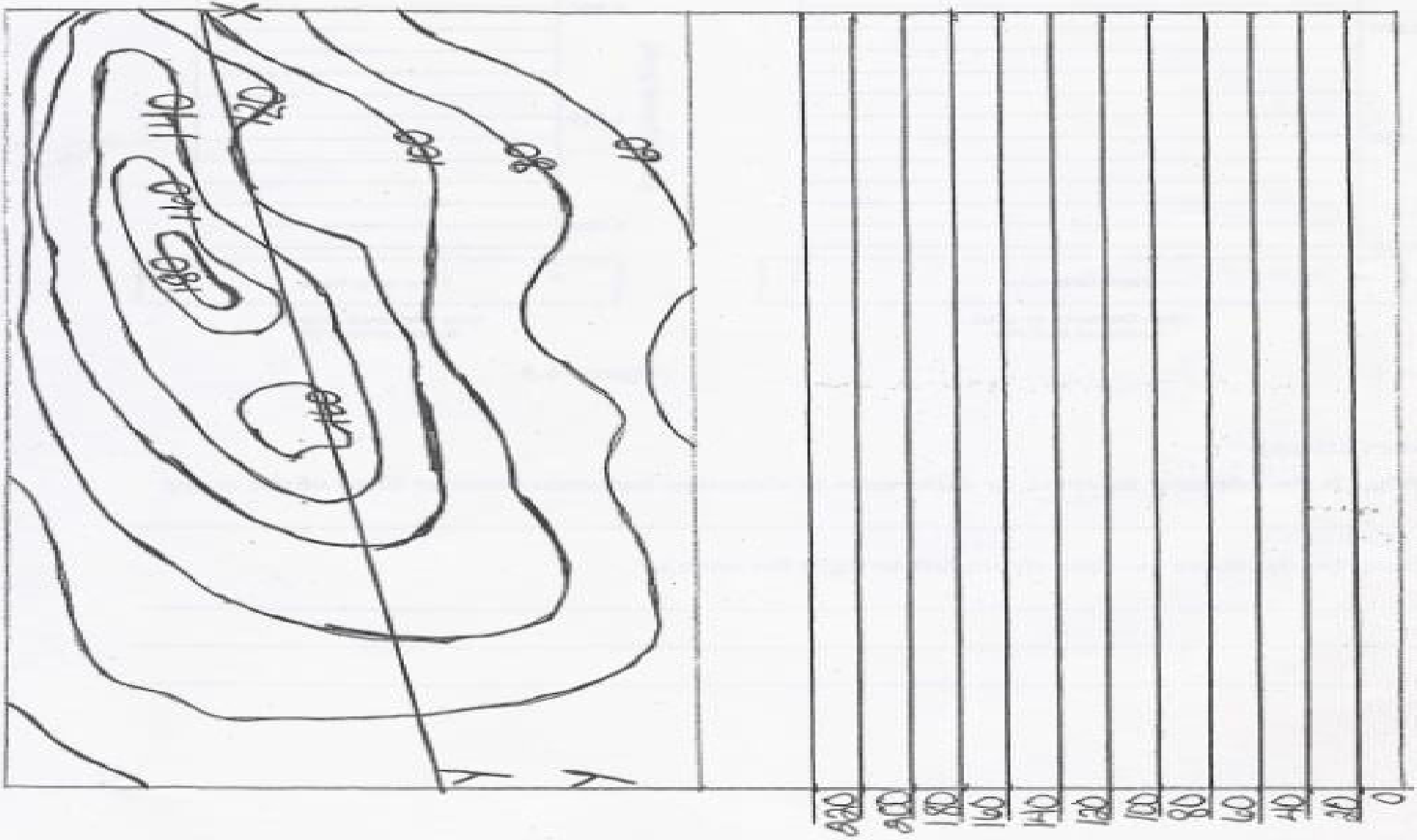
Observations

1. What is the contour interval, or difference in elevation between contour lines of the map?

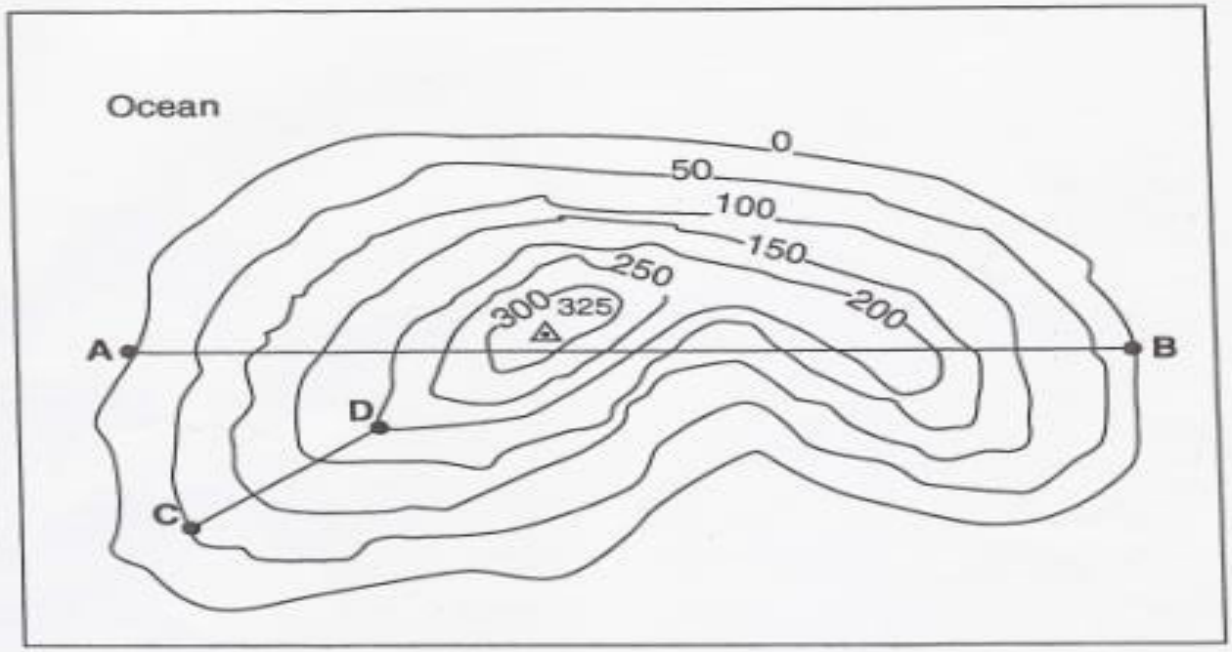
2. Describe the three profiles (from left to right for each).

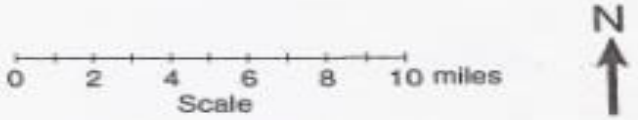
PART B: MAKE A TOPOGRAPHIC PROFILE

Make a topographic profile below along line XY



20. Base your answer to the following question on the topographic map of an island shown below. Elevations are expressed in feet. Points *A*, *B*, *C*, and *D* are locations on the island. A triangulation point shows the highest elevation on the island.





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a Plot the elevation of the land along line *AB* by marking, with a dot, the elevation of *each* point where a contour line is crossed by line *AB*.

b Connect the dots with a smooth, curved line to complete the topographic profile.