Name _____ Date _____

Chapter 29 Lab Activity

Rock Correlation

The Cayuga Lake Basin contains one of the scenic Finger Lakes of central New York State. During the Devonian Period, this area was under a warm, shallow sea. Sediments deposited on this seafloor led to the formation of sedimentary rock up to 1200 meters thick. Many quarries, road cuts, and spectacular gorges allow the study of these rock layers. By correlating the rocks of different outcrops, geologists have been able to determine the order in which the layers were formed. A **stratigraphic column** shows all the rocks in an area in this order. In this activity, you will construct such a column for the Cayuga Lake Basin, using information from nine outcrops.

Lab Skills and Objectives

- ***Construct*** a stratigraphic column by correlating rock outcrops.
- ***Analyze*** a stratigraphic column to learn about a region's geologic history.

Materials

- scissors
- paste or glue
- construction paper, 1 piece 40 cm long
- page 676 of your text

Procedure

1. Page 129 shows cross sections of nine outcrops in the Cayuga Lake Basin. Study the cross sections and identify the types of sedimentary rocks that occur in each.
2. On the back of each cross section, draw an arrow pointing to the top of the page. (You will need the arrow to identify which way is "up.")
3.  **CAUTION: Use care when working with scissors.** Turn the page back over and carefully cut out each cross section.
4. Lay the cross sections on your desk and move them around to match the rocks of one outcrop with similar rocks in other outcrops.
5. Once you have matched all of the cross sections, paste them to the construction paper to form a single stratigraphic column. The cross sections will overlap each other where layers are duplicated.
6. The table on the next page describes the rock layers in your column. The oldest rock units are at the bottom, and the youngest are at the top. Use the table to label each of the rock units in your column.

Analysis and Conclusions

1. Which rock units are entirely limestone? Which rock units are entirely shale? Which rock units are shale with limestone at the top?

_____

_____

2. One of the rock units in this stratigraphic column is thought to have originally been beach sand dating from the Middle Devonian. Which rock unit is most likely to have originated as a beach? Why?

_____

_____

3 The Tully is a prominent rock layer of the Cayuga Lake Basin. It stands out visibly between the Moscow below it and the Geneseo above it. What could cause this difference in the appearance of the rock layers?

_____

_____

4 Read the Devonian Period section of your text, found on page 676. The upper layers of the Onondaga limestone contain some volcanic ash. What was the most likely location of the volcanoes from which this ash came?

_____

_____

5 The Onondaga contains an abundance of coral fossils, along with crinoids, brachiopods, and trilobites. Why are fossils of ferns, rushes, and primitive conifers unlikely to be found in these rocks?

_____

_____

6 Lime obtained from limestone is an important ingredient in the manufacture of cement. Would the Cayuga Lake Basin be a good or poor location for a cement-making plant? Why?

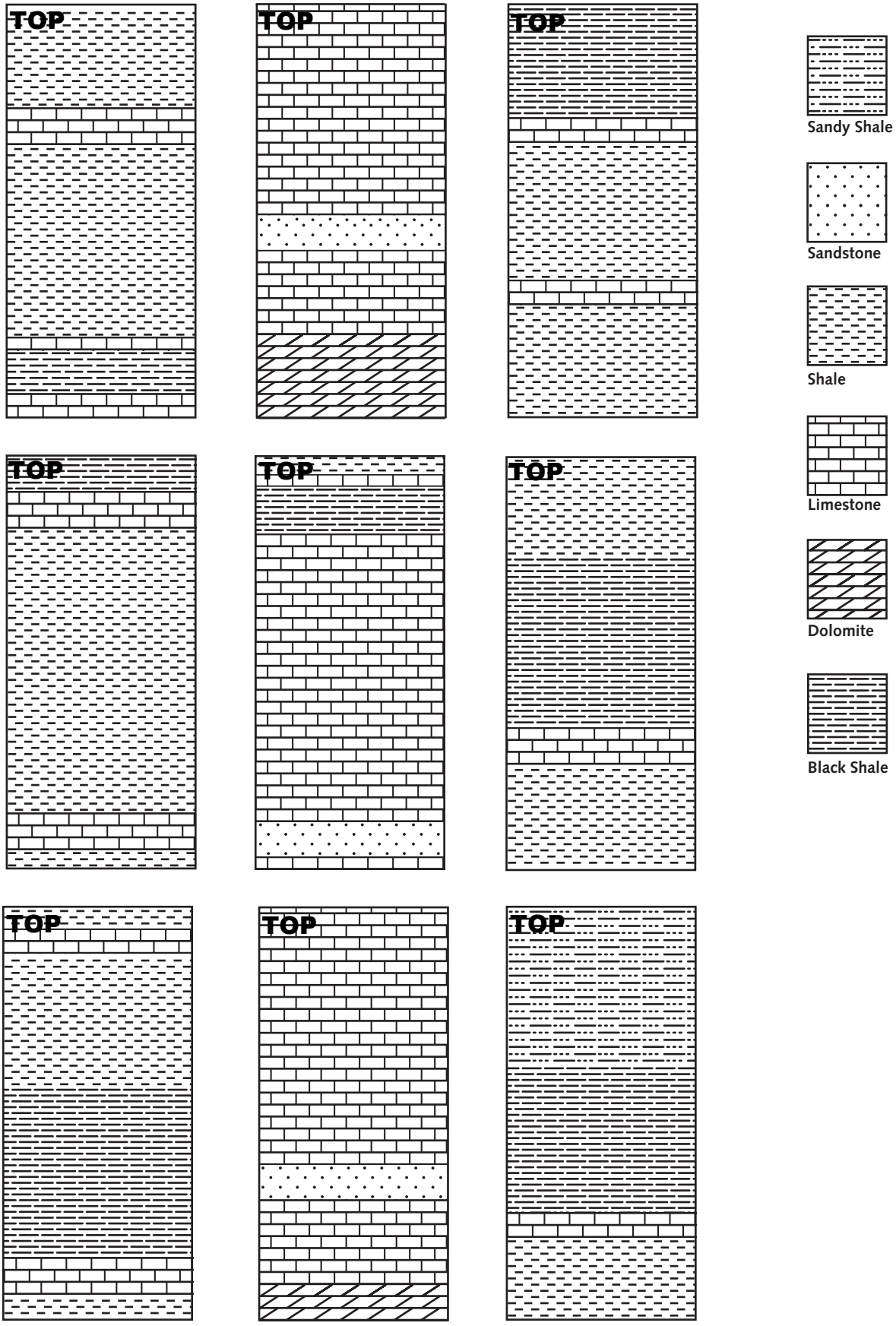
_____

_____

Devonian Rock Units of the Cayuga Lake Basin

Name	Description
Sherburne	shale with increasing sand
Geneseo	black shale; about 10 m thick
Tully	limestone; about 3 m thick
Moscow	shale with limestone at base; about 15 m thick
Ludlowville	shale; about 25 m thick
Skaneateles	shale with limestone on top; total thickness about 28 m
Marcellus	primarily shale, black shale at base, then thin limestone; nearly 4-m thick limestone at top, total thickness nearly 25 m
Onondaga	limestone; over 25 m thick
Oriskany	sandstone; about 1.2 m thick
Manilus	limestone; about 7.6 m thick
Rondout	dolomite; about 7.6 m thick

Name _____ Date _____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Sandy Shale
Sandstone
Shale
Limestone
Dolomite
Black Shale