

To complete this worksheet, see the instructions in the textbook (Chapter 7 Investigation).

### Table 1. Observations and Characteristics of Sedimentary Layers

This photograph shows a sequence of layers. Try to identify boundaries between different sedimentary rock units, and draw a dashed line on the photograph along any main boundary. The stratigraphic section to the right contains some descriptions of the units shown in the photograph and refer to additional photographs to the right of the stratigraphic section in the textbook. You do not have to write any observations on this worksheet, but your instructor may have you discuss these in class.



#### Stratigraphic Section



07.16.b1

This unit includes sandstone, mudstone, and layers of coal (shown in black). The upper part of the unit contains sandstone beds with small cross beds. The mudstone has mudcracks and plant fossils. The lowest part of the unit contains tan sandstone with broken marine shells. This photograph (▶) shows thin layers of black coal in this unit.

This shale is medium to dark gray because it has a high amount of organic matter. It contains fossils of clams and other marine organisms. Thin limestone beds are locally present in the middle of the unit but are not shown in the section. The shale and limestone contain abundant marine fossils. The photograph (▶) shows a close-up of the transition from the shale to the overlying sandstone.

This unit is mostly a yellowish-tan sandstone containing quartz sand with small pieces of marine shells. As shown in the photograph (▶), the very base of the unit is a thin conglomerate that overlies a scoured erosion surface. This lower part locally contains fossils of wood and leaves.

The lowest unit includes a conglomerate with moderately rounded pebbles and coarse sand containing scattered rounded pebbles and pieces of fossilized wood. The conglomerate is overlain by reddish, maroon, and gray shale and mudstone with plant fossils. This photograph (▶) shows a nearly circular dinosaur track where a large, plant-eating dinosaur with huge round feet stepped into and pressed down the then-soft sediment.

**Table 2: Interpreting the Sedimentary History from a Stratigraphic Section**

Using both the stratigraphic section and the cross section located in the textbook (Chapter 7 Investigation), determine the environment of deposition and list supporting evidence for that environment. Then, answer the questions below this table.

Rock Unit	Interpreted Environment of Deposition of Rock Unit (not what it is like today) (circle all that apply, and list key characteristics that support your interpretation)
Upper sandstone and mudstone unit	(a) steep mountain front, (b) river system, (c) middle of a lake, (d) sand dunes, (e) sandy beach or delta, (f) plant-rich swamp, (g) coral reef, (h) muddy part of ocean <i>Key characteristics:</i>
Dark gray shale	(a) steep mountain front, (b) river system, (c) middle of a lake, (d) sand dunes, (e) sandy beach or delta, (f) plant-rich swamp, (g) coral reef, (h) muddy part of ocean <i>Key characteristics:</i>
Yellowish-tan sandstone	(a) steep mountain front, (b) river system, (c) middle of a lake, (d) sand dunes, (e) sandy beach or delta, (f) plant-rich swamp, (g) coral reef, (h) muddy part of ocean <i>Key characteristics:</i>
Lower basal conglomerate	(a) steep mountain front, (b) river system, (c) middle of a lake, (d) sand dunes, (e) sandy beach or delta, (f) plant-rich swamp, (g) coral reef, (h) muddy part of ocean <i>Key characteristics:</i>

Question 1: Does the change of environment from the base of the section up to the thick gray shale indicate a transgression or regression of the sea (circle one)?

Transgression/Regression

List observations that support this interpretation \_\_\_\_\_

Question 2: Does the change from the thick gray shale to the overlying sandstone indicate a transgression or regression of the sea (circle one)?

Transgression/Regression

List observations that support this interpretation \_\_\_\_\_

Question 3: Which of the following phrases summarizes the history of the entire sequence (circle your answer): (a) transgression, (b) regression, (c) transgression followed by a regression, or (d) regression followed by a transgression?