NAME:_____ **PERIOD:** _____ **DATE:**_____

LAB PARTNERS: _____ **LAB #24**

ROCK CORRELATION

Claim: By comparing outcrops from different localities, we can look for similarities and use those similarities to reconstruct a completed rock record

SEP's: Throughout this lab, the following SEP's (science engineering practices) will be touched upon:

1. Asking questions and defining problems
2. Developing and using models
3. Analyzing and interpreting data
4. Constructing explanations

Phenomena:

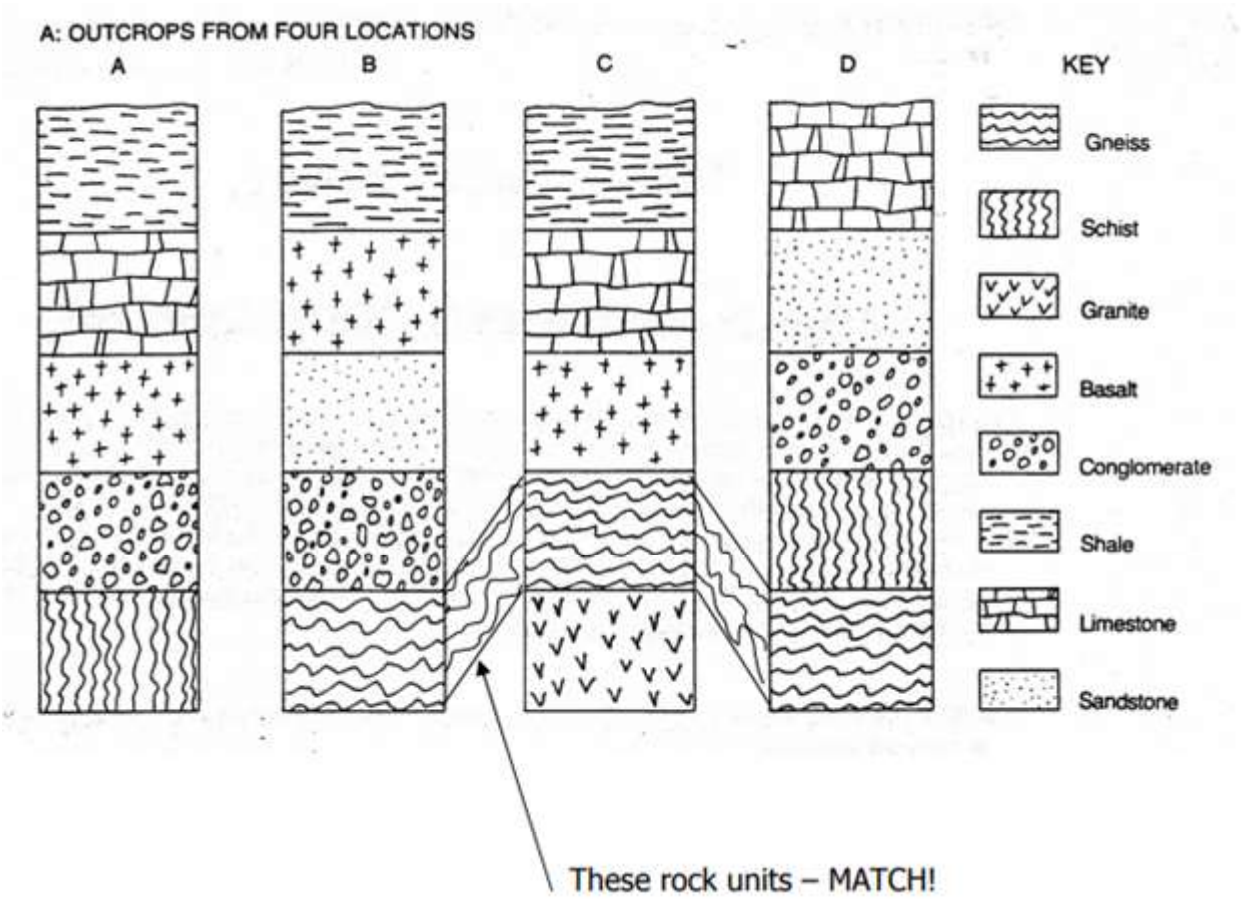
1. Demonstration rock correlating using colored sand to build rock layers. Have students identify relative ages of the rocks. Remove part of the top layer, then have another layer form over it. Discuss what happened. If we are not there to witness it, how can we prove a rock layer had once existed where the unconformity now lies?

Introduction: Geologists can determine the relative ages of the rock layers in a rock formation. But how do they determine whether the rocks or geologic events occurring at one location are of the same age as those at another location? The process of showing that rocks or geologic events occurring at different locations are of the same age is called **correlation.**

Geologists have developed a system for correlating rocks by looking for similarities in composition and rock layer sequences at different locations. Certain fossils, called **index fossils**, existed for a very short time and were distributed over a large geographic area. They aid the geologist in correlating sedimentary rock layers.

Directions Procedure A:

The first set of four diagrams represents four outcrops at different locations.



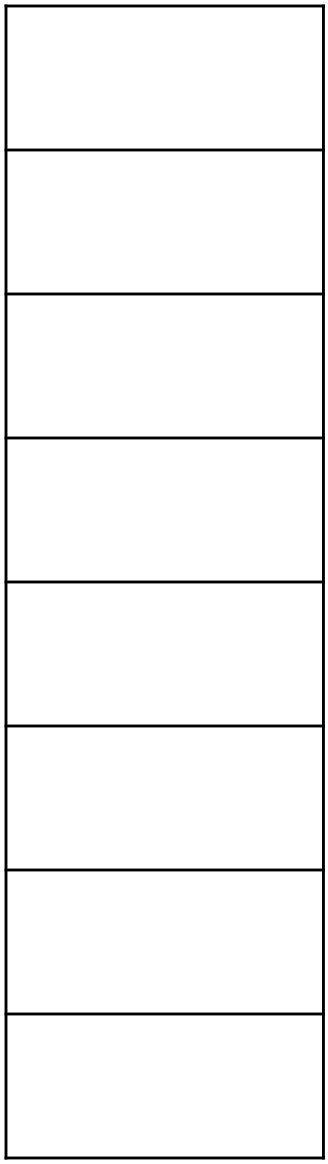
1. Reconstruct the complete sequence of events. How do you plan to do this? Be able to explain your procedure

Steps:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

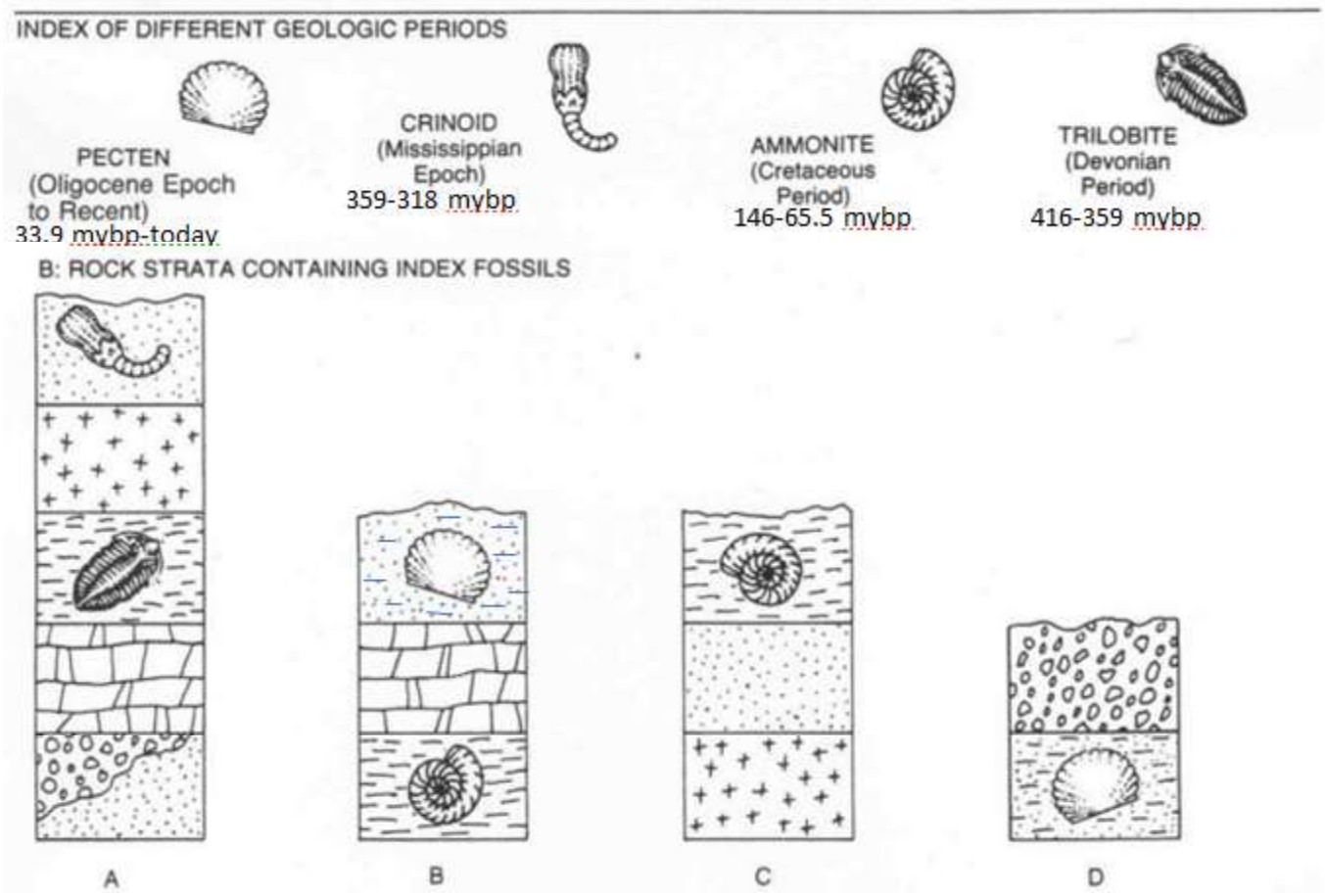
2. Draw in the layers on the appropriate column on the **Report Sheet**

Procedure A - Report Sheet



Directions procedure B:

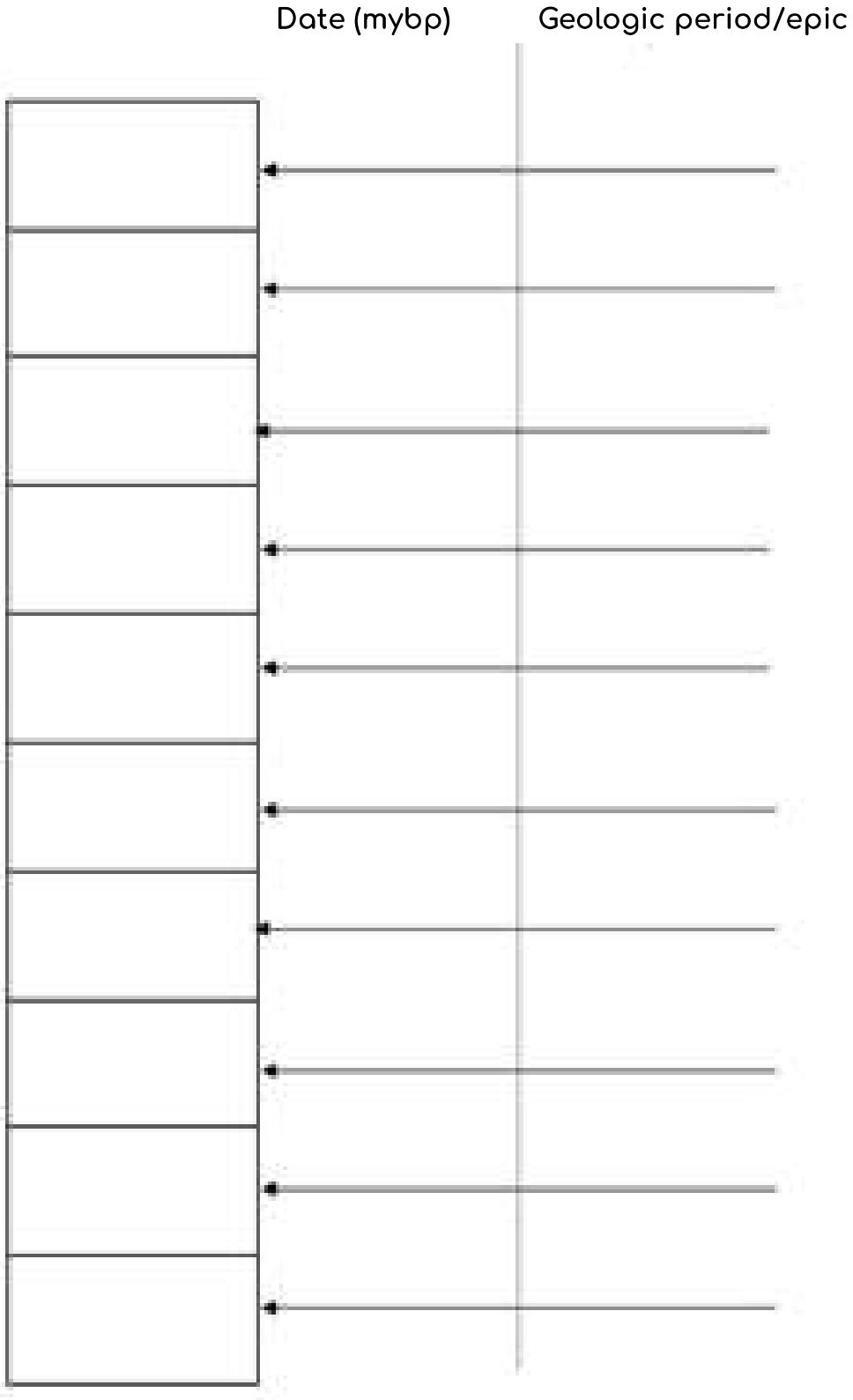
The second set of diagrams identifies four types of index fossils and shows four columns of fossil bearing rock strata. Assume overturning has not occurred.



1. Reconstruct the complete sequence of events and draw the layers (with the fossils if present) on the appropriate column of your Report Sheet.

2. On the Report Sheet, label its age and time period/epoch. The abbreviation “mybp” means millions of years before present. It may be expressed as a range of several million years.

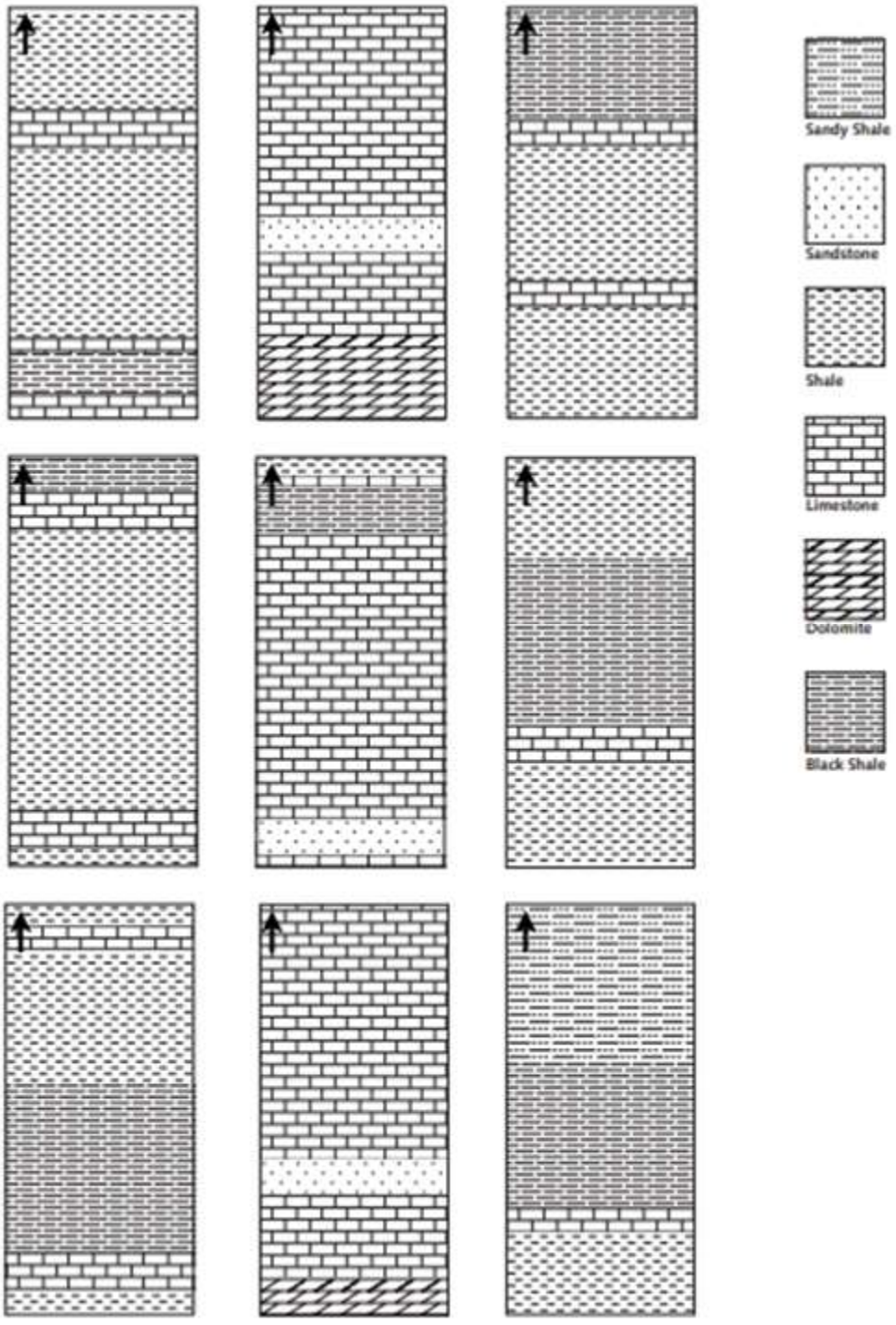
Procedure B - Report Sheet



Directions for Procedure C:

Apply what you've learned

You have been given partial rock records of 9 outcrops, your goal is to create a completed rock record using the partial outcrops. All supplies from the classroom supply station are available to assist you if you should need it. When finished, your completed outcrop should fit neatly on a piece of printer paper. Up for the challenge?



Questions

1. Explain why some rock layers can be missing from the sequence in some outcrops?

_____

2. What characteristics do geologists look for in rock outcrops to help ID different rock layers?

_____

3. In Procedure B, how many years are represented between the top and bottom fossil bearing layers?

_____

4. Why is it necessary to observe the rock layers of several different localities in order to obtain a complete sequence of events?

_____

5. Why are ancient volcanic ash deposits important to geologists?

_____

6. Living corals are found in warm shallow seas. Coral fossils have been found in the sedimentary rocks of Alaska. What do these findings suggest?_____

_____

7. Unless a series of sedimentary rock layers has been overturned, the bottom rock layer usually (circle one) older/younger. Name this principle _____

8. What are the characteristics of index fossils that make them are most useful in correlating sedimentary rock layers?_____

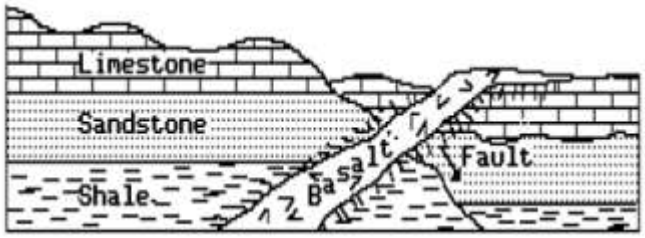
_____

9. The diagram below represents a cross section of the Earth's crust showing rock units and a fault. The rock layers are not overturned. Which rock unit is the youngest?_____

Explain how you know?

_____

_____



10. How does rock correlation help us understand the past and why is that important?

_____

_____

11. Why is it important to correlate different rock strata together? _____

_____

Now that you have completed the procedures in this lab, go back to the original Claim that stated:

Claim: By comparing outcrops from different localities, we can look for similarities and use those similarities to reconstruct a completed rock record

List the **EVIDENCE** to support this claim and describe your **REASONING** as to whether or not this is an accurate claim?

Evidence:

Reasoning: