Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fossil lab

Background

Fossils are the direct evidence of past life. They are the tools around which geologists and paleontologists reconstruct the history of the earth. They are found in sedimentary rocks. This type of rock is the result of the consolidation of sediment that has accumulated in layers. These depositional environments come from lake bottoms, river bottoms, river sandbars, beaches, and oceans. Some sediments result from weathering rocks, others originate from tissues and bones of plants and animals. It is within the depositional environment that plants and animals may become fossilized.

There are three prerequisites that must be met before organic material can be preserved: (1) Organisms must contain hard parts such as bones, teeth, cartilage, or shells. (2) The organic material must be buried quickly in an oxygen-free environment protected from scavengers. (3) Conditions after burial must be favorable as the effects of heat and pressure that produce sedimentary rock may alter the composition and appearance of a potential fossil.

There are several types of fossils.

1. **Petrification** occurs when parts of the organism are saturated with minerals. Highly porous materials such as wood and bone are often petrified.
2. **Carbonization** occurs when the weight of surrounding sediments squeezes out the water and gas and leaves a residue of carbon (imprint).
3. **Trace Fossils** – These are the most common fossils. They are impressions left in the sediment. A trace fossil is preserved when mud or dirt that was disturbed by an organism hardens and keeps its shape. There are two main kinds of trace fossils:

**Mold**: forms when something is pressed into soft mud and then removed by decomposition or pulled out, leaving an impression of the object.

**Cast**: created when a mold fills up with sediment like mud, sand or volcanic ash .

The rocks of Central New York began as sediments in a shallow tropical sea. Today, fossils of marine shell life are abundant, and the remains of bryozoans, brachiopods, trilobites, pelecypod (clams), gastropods (snails), and crinoids (sea lilies) are easily found.

A fossil that is always found in the same rock layer is called an index fossil. The New York State index fossil is Eurypterus remipes. By finding this fossil the paleontologist can date the rock strata to the Silurian period.

 After completing the Fossil Lab, you should …

1. Understand what a fossil is, how fossils form, and how they are important.

2. Be able to use a Geologic Time Scale chart to determine events from our geologic past.

**Part 1 – Make a fossil**

Materials:

• Small object

• Plastic spoon

• Paper bowl

• Plaster of Paris

• Petroleum jelly

Procedure:

Day 1:

1. Write your name on a bowl

2. Add 2 Tablespoons of water to 4 tablespoons of Plaster of Paris in your bowl and stir until it is smooth. Set aside to begin hardening.

3. Rub a coat of petroleum jelly over the object being used as a mold.

4. Gently press the object into the partially hardened plaster of Paris so that it is not more than half way covered.

Day 2:

5. Carefully remove the objects from the plaster and place on a paper towel. You should be able to see the imprint of your object.

6. Coat the entire surface of the plaster of paris with petroleum jelly. Use a cotton swab to get down into deeper areas.

7. Mix another bowl of plaster of paris. Pour it on top of the hardened plaster of paris so that it fills in the holes. Place your bowl at your lab station to dry overnight.

Day 3:

8. Tear the paper bowl away from the plaster and gently separate the2 layers of plaster. You will then have a mold and a cast of your object

What could be the name of the creature that you made your fossil of?(look on page 8 &9 of the reference table)

Which of these organisms – a clam, a jellyfish, a crab, and a mushroom –

a. Would make good fossils? Why?

b. Would not make good fossils? Why?

Which fossil family does the fossil you created represent?

**Part 2 – Why are fossils found in Sedimentary Rocks?**

Procedure:

1. Make a pancake out of the Silly Putty
2. Make an impression in the Silly putty with one of the plastic “fossils” to create a trace fossil.
3. Put the Silly putty on the table, impression side up and put a book on top of it.
4. Press down hard on the book for 15 seconds.
5. Lift the book and observe the fossil

Describe your trace fossil before putting the book on top of it.

Describe your trace fossil after being pushed on by the book.

What type of rock is formed by pressure and heat that changes other rocks?

Why don’t these types of rocks usually have fossils in them?

Would you expect to find fossils in igneous rocks? Why? Or Why not?

**Part 3 – Identify the creature from the fossil**

Use the photos on the Smart Board to complete the chart below

|  |  |  |  |
| --- | --- | --- | --- |
| **Fossil number** | **Name of creature** | **Period when this creature alive** | **Where in NYS could this fossil be found** |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |

Why are there very few fossils found in the Adirondack Mountains?

What type of environment could most of these creatures be found when they were living?

What impact does their environment have the chance that they could become a fossil?