

Name \_\_\_\_\_

### LAB: INTRODUCTION TO FOSSILS

GOALS: To learn to recognize several common fossils, learn their distinctive features, and when they lived.

1. **PRESERVATION:** Note the various ways organisms are "fossilized".

a. Which fossils are preserved as original UNALTERED material? \_\_\_\_\_

b. Shark tooth: Composed of calcium phosphate. Why are the vast majority of shark fossils only teeth?

c. CARBONIZATION - a thin, black film of residual carbon

Which specimens are preserved in this manner? \_\_\_\_\_

d. Which samples have been PETRIFIED (mineral matter fills in pore spaces)? \_\_\_\_\_

e. All of the rest of the fossils in the set were preserved by \_\_\_\_\_

**FOSSIL SETS: USE YOUR HANDOUT!!**

Compare your specimens with the sketches.  
**READ** the information in the handout.

2. **TRILOBITES - Phylum Arthropoda**

(Specimen #22 and fossils in back of classroom)

Trilobites are segmented arthropods (insects, lobsters, crabs) Their shells are made of chitin (a complex organic substance similar to fingernails).

a. Why are they called trilobites? \_\_\_\_\_

b. Which geologic **ERA** did they live in? \_\_\_\_\_ Are they still alive or extinct? \_\_\_\_\_

Which **Period(s)** of that era were trilobites most widespread? (see **Table B**)

\_\_\_\_\_

c. What is the scientific name for each part of a trilobite's body:

head: \_\_\_\_\_ body: \_\_\_\_\_ tail: \_\_\_\_\_

Label these parts on a **sketch** of a trilobite:

d. The number of trilobite fossils present in a rock is greater than the number of trilobites that lived in the area.

Explain why this is true: \_\_\_\_\_

Hint: (Think about other modern animals that belong to this phylum, such as crabs, lobsters, and shrimp. What happens when they outgrow their shells?)

- e. Look at the trilobite fossils from Rochester Shale, NY, preserved in rock (back table of classroom):  
Look at the rock: the trilobites were preserved in the sediment they lived in, which later was changed into rock.

What environment did they live in? \_\_\_\_\_  
(Was it sandy, rocky, muddy?)

Is the entire body of the trilobite preserved? \_\_\_\_\_

What part of the body is preserved? (cephalon, thorax, or pygidium) \_\_\_\_\_

### 3. Phylum Brachiopoda (Specimens #13,14)

**Phylum Mollusca (mollusks), Class Pelecypoda (Bivalves)** see fossils on back table of classroom.

a. Which 3 modern "shellfish" belong to Class Pelecypoda? \_\_\_\_\_

b. Compare the symmetry of the shells of brachiopods with clams:

How are they similar?

How are they different?

c. In which geologic **ERAs** were brachiopods abundant? \_\_\_\_\_

d. In which geologic **ERAs** were pelecypods (bivalves) abundant? \_\_\_\_\_

e. What is the difference in appearance between clams and pectens (scallops) and oysters?  
(describe or sketch them so YOU can distinguish them when you see them again).

### 4. Phylum Mollusca (Mollusks)

**Class Cephalopoda** – Nautiloid (#18), Ammonite (#19 and back table of the classroom)

**Class Gastropoda** - Gastropods (**marine** snails) (Specimen #16, and back table of classroom)

a. How are nautiloids and ammonites different than gastropods in their **internal structure**?

b. Using fossils on the back table, Compare the ammonite with the gastropod: Both have coiling shells,  
BUT they do not have the same kind of symmetry.  
(Hold them so the aperture or hole is facing you) Do they coil in the same way? \_\_\_\_\_

Explain how their symmetry is different:

c. What is the time range of ammonites? (use table B): \_\_\_\_\_

Were they widespread on Earth? \_\_\_\_\_

Why? \_\_\_\_\_  
(hint: think about how animals physically spread around the planet)

d. What is the time range of gastropods? (use table B): \_\_\_\_\_

When did gastropods become widespread on Earth? \_\_\_\_\_

Why did it take them so much longer than ammonites to disperse? \_\_\_\_\_

e. Examine the large ammonite specimens in the back of the classroom.

Notice the beautiful patterns of their sutures.

What exactly are the sutures? \_\_\_\_\_  
(hint: it relates to question 4a above)

**Suture patterns** are used to identify and date different species of ammonites.  
Identify the type of suture pattern for each ammonite (goniatite, ceratite, or ammonite).

*Geisonoceras*: \_\_\_\_\_ age (Periods): \_\_\_\_\_

*mammites*: \_\_\_\_\_ age: \_\_\_\_\_

*Bacculites*: \_\_\_\_\_ age: \_\_\_\_\_

What happened to ammonites that caused their suture patterns to change over time?

\_\_\_\_\_

f. Identify the gastropod **genus** for #16 in our fossil sets: \_\_\_\_\_

g. What kind of gastropod is Specimen #34? \_\_\_\_\_

These are very common fossils in Ventura County and are still alive today.

#### 5. Phylum Echinodermata (Specimens #26,27,29)

Echinoderms are characterized by having a 5-ray pattern. Starfish belong to this group.

Draw a sketch of a **crinoid** and label its body parts: arms, calyx, stem, columnals.

Which part of the blastoid is preserved? \_\_\_\_\_  
(compare fossil with handout)

Which part of the crinoid is preserved? \_\_\_\_\_

What common modern shelled animal belongs to this group? \_\_\_\_\_

#### 6. CORALS - Phylum Cnidaria (Coelenterata) (Specimens #6,8,10)

a. Look at the **modern** colonial coral.

Modern corals are colonies of individual coral polyps.  
Each hole in the coral housed an individual polyp and is called a corallite.

**Look closely in one of the holes and look for the internal structure of the corallite.**

Draw a sketch of this structure:

**\*\*** This structure is characteristic of corals and is used to distinguish corals from other tube-forming animals.

b. Is this structure also visible in the horn coral? \_\_\_\_\_

c. When were corals abundant? \_\_\_\_\_

7. PLANTS -

compare #33 to the plants on the last page of the fossil handout.

Which plant group (roses, conifers, ferns, cacti, grass, etc.) does #33 belong to? \_\_\_\_\_

Identify the genus of #33 \_\_\_\_\_

**Table B:** This table indicates the **geologic time range** of the major groups of marine organisms. It also shows how widespread they were geographically: local, regional, or worldwide.

