

WHAT IS A FOSSIL?

A fossil is the remains or traces of a prehistoric organism.

1. An organism is _____
2. How old is prehistoric? _____
3. Examine each fossil and classify as a trace or remain (check box):

	TRACK	DINOSAUR BONE	SHELL	TOOTH	COPROLITE
REMAIN					
TRACE					

HOW DO FOSSILS FORM?

1. Fossil Formation: Fill in the blanks.

1. A fish dies and falls to the bottom of a swamp

2. It is _____ covered with mud.

3. The flesh rots leaving the _____ behind.

4. More mud piles up as _____ from the water harden the bones into stone.

5. Millions of years later, the rock layers are worn away by wind and rain.

2. Examine the specimens and circle the animals that are most likely to become fossils:



jellyfish shell sponge worm

3. Do fossils give us a complete picture of what lived in the past? _____ Why or why not? _____

PALEONTOLOGY

1. Scientists who study fossils are called: _____

2. List 2 things scientists can learn by studying fossils:

a.

b.

3. Scientists study _____ animals today to understand _____ animals from the past.



ARIZONA'S PREHISTORIC PAST

Arizona's ancient history is like a book. Each chapter tells a story! We will study ROCKS and FOSSILS to discover:

- what Arizona looked like in the past
- how we know it looked that way
- who lived there (plants and animals)

CHAPTER 1: ARIZONA'S ALL WET!

WHEN DID IT HAPPEN? _____ (Paleozoic Era)

WHAT DID IT LOOK LIKE?

1. Examine limestone. What do you see? _____
2. Study a collection of fossils to understand the ancient environment:
 - a. These fossils tell us it was LAND or WATER?
 - b. Crinoids tell us it was SALT or FRESH water?
 - c. Corals tell us it was WARM or COLD water
 - d. Animals that did not burrow tell us it was QUIET WATER or STRONG WAVES?
 - e. Microscopic fossils tell us it was SHALLOW or DEEP water?
3. Using this evidence, describe Arizona's ancient environment during this time: _____

WHO LIVED HERE?

1. Examine a fossil CRINOID:
 - a. Name a living relative of crinoids _____.
 - b. What part of a crinoid is usually preserved? _____.

2. Examine a fossil BRACHIOPOD:

a. List 2 ways brachiopods differ from clams: _____

3. Examine a fossil HORN CORAL:

a. What did horn corals eat? _____
b. Why did so many filter feeders live in Arizona's ancient ocean? ____

4. Examine a fossil TRILOBITE:

a. Do modern horseshoe crabs look the same as trilobites? _____
b. Why are extinct animals a problem for paleontologists? _____

CHAPTER 2: STOMP IN ARIZONA'S SWAMP

WHEN DID IT HAPPEN? _____ (Mesozoic era)

WHAT DID IT LOOK LIKE?

1. Examine mud stone and fossils.

a. Using this evidence, describe Arizona's ancient environment during this time:

b. In this environment, what trace fossils might you find?

WHO LIVED THERE?

1. List 3 animals that were alive during this era:

2. Compare the skulls of *Brachiosaurus* and *Acrocanthosaurus*.
- What do you think *Acrocanthosaurus* ate? _____
 - What do you think *Brachiosaurus* ate? _____
 - What are gastroliths? _____
3. *Sonorasaurus* is a new species of dinosaur being excavated by the Desert Museum. It was found in the _____ Region.
- Compare the metacarpal bones of three groups of sauropods. Which type of sauropod is *Sonorasaurus*? _____
- Sonorasaurus* is the second smallest brachiopod species found.
- Was *Sonorasaurus* an adult or a juvenile? _____
How do we know? _____
 - Examine the marks on the replica of the leg bone.
What could have caused these? _____
4. Dinosaurs became extinct about 65 m.y.a.
List 2 possible causes along with evidence to support each theory:

POSSIBLE CAUSE	EVIDENCE
a.	
b.	

How could these "events" have caused the extinction of dinosaurs?

CHAPTER 3: ARIZONA BLOWS UP!

WHEN DID IT HAPPEN? _____ (Cenozoic Era)

WHAT DID IT LOOK LIKE?

1. Examine these volcanic rocks and complete the chart.

Rock	Color	Weight	Appearance	Type of volcano
Basalt	Dark/light	Heavier/lighter	Large/small grains	Oozes/Explodes
Rhyolite	Dark/light	Heavier/lighter	Large/small grains	Oozes/Explodes

2. Compare obsidian and pumice.

- a. Did they cool slowly or fast? _____
- b. How was obsidian used by native Americans? _____
- c. What causes the holes in pumice? _____

3. Using this evidence, describe Arizona's ancient environment during this time:

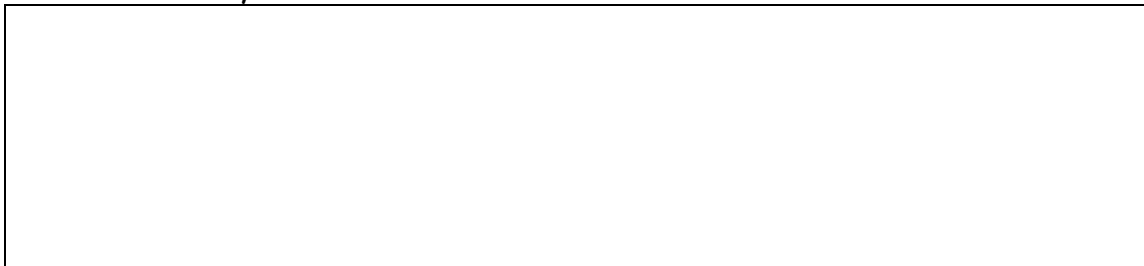
WHO LIVED THERE?

1. Do you think we would find many fossils from this time period? _____
Why or why not? _____

Formation of the Tucson Mountains 25 - 20 m.y.a.

1. Identify the rock samples found in the Tucson Mountains: _____.
What does it tell us about the formation of these mountains?

2. Study a map of the Tucson area. Thirty million years ago, scientists believe the Tucson Mountains were on top of the Catalina Mountains. Label these mountains as they are found today.



3. Observe the Tucson Mountain model demonstration. Describe what scientists think happened 20 m.y.a.

CHAPTER 4: ARIZONA CRACKS UP!

WHEN DID IT HAPPEN? _____ (Cenozoic Era)

WHAT DID IT LOOK LIKE?

1. Study maps of the southwestern United States.
 - a. What direction do the mountain ranges run? _____
 - b. Found only in the southwestern United States, this region is called _____ and _____.
2. Observe the Basin and Range model demonstration and answer these questions:
 - a. What caused the land to stretch and tear? _____
 - b. Describe how these mountains formed:

 - c. These blocks dropped over 15,000 - 20,000 feet. Why are the mountains not this high today? _____

CHAPTER 5: ARIZONA CHILLS OUT!

WHEN DID IT HAPPEN? _____ (Cenozoic Era)

WHAT DID IT LOOK LIKE?

1. Packrats gather things from the desert and make a trash pile. This is called a _____.
 - a. Compare modern plants with material from a 30,000 year old midden found near the Desert Museum. List the plants you identify:

 - b. Using this evidence, describe Arizona's ancient environment and climate in the Sonoran Desert during this time.

 - c. Where might you find a similar environment today? _____

WHO LIVED HERE?

1. Examine the fossils and artifacts found in several sites along the San Pedro River.

a. List 2 pieces of information these materials tell us:

b. Humans first appeared in the Southwest around _____ years ago.

2. Compare the mastodon and mammoth teeth with those of modern animals.

Circle correct answer:

	Teeth similar to:	Diet:
mammoth	deer horse	grass leaves/twigs
mastodon	Deer horse	grass leaves/twigs

3. Compare these ice age animals with their modern counterparts:

	SKULL LENGTH	BODY LENGTH
RECENT MOUNTAIN LION		
ICE AGE LION		

4. Why were ice age animals so much bigger than modern animals?