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Fossils

We've all heard of fossils. Have you ever seen dinosaur fossils at a museum? Studying fossils is a useful way to learn about our history. From them, we can figure out what animals and plants lived in the past. But what exactly are fossils and how did they form? What makes one dead animal or plant become a fossil while millions of others do not?



What Are Fossils?

Fossils are the remains of things that were once alive a long time ago. Fossils can be made in rock, amber, tar, or ice. Fossils fall into two categories, **body fossils** and **trace fossils**. Body fossils include hard parts of organisms such as bones, teeth, shells, and seeds. Sometimes we get the whole (or nearly whole) organism! Trace fossils are much smaller and include small parts of organisms, including burrows, footprints, or feces as well as impressions left behind in rock beds. Fossils are generally defined as being older than 10,000 years.

Did you know that the largest dinosaur fossil discovered so far is of the huge *Argentinosaurus huinculensis*, which is estimated to have been 30–39.7 m (98–130 ft) long!

How Are Fossils Formed?

Reading Sample



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1) Petrification is when organic material (e.g., wood, bone, shell) changes into another substance, usually stone. In this type of fossilization, the soft parts of an organism's remains have broken down, leaving behind only the hard parts. When petrification

happens, most or all of the organism's organic material is removed and replaced by minerals from the surrounding area. These minerals fill in all the gaps and harden leaving behind a solid structure.

2) Compression fossils are made when organic remains are flattened. Plants are often preserved in this way. Compression happens when remains break down under heat and high pressure from the rock above. All the hydrogen, oxygen, and nitrogen are removed from the remains, leaving only carbon behind. This creates a dark, two-dimensional impression in rock in the shape of the original organism.



Compression fossils are two-dimensional imprints.



Casts fill cavities called molds.

3) Molds and casts are formed when an organism leaves behind a three-dimensional impression. This could be a footprint or a hardened rock layer in the shape of the organism.

4) Mummification keeps both the soft and hard parts. When an organism dies in a dry location protected from

Reading Sample



Mummification occurs when desiccation prevents bacterial colonization.

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5) Complete preservation is when the entire organism is preserved. Examples of complete preservation includes when an organism is trapped in ice, amber, or tar. When an organism dies and is covered by water or tree sap, these substances harden into ice or amber. This completely covers the organism inside and protects it from bacteria, other animals, and the elements. Like mummification, complete preservation allows the soft tissues to remain. However, when an organism dies and is covered with tar, the soft parts are removed and only the hard parts are preserved.



Amber completely preserves remains.



Reading Sample



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Reading Comprehension Questions – Answer Key

1. What are fossils?
2. What
3. What
4. What are the five types of fossilization?
5. How do
6. Describe mummification.
7. How can
8. Summarize what information can be learned from fossils.

Extension Questions

9. Have you ever seen a fossil? If so, where? What kind of fossil was it? If not, what type of fossil would you most like to see and why?

Watch the following video. Use information from the video **AND** from the article above to answer questions 10-13. You can watch the video from this link or via the QR code below.

Reading Sample



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10. What kind of rock do you need to find dinosaur fossils?
11. How long ago must this rock layer have formed?
12. When comparing rocks and fossils, what's one thing inside a fossil that tells you it isn't a rock?
13. Digging up fossils is very expensive. Companies that do usually need money from outside sources to pay for the dig. Your job is to write a letter to a local government official explaining a) What you need the money for b) Why what you are doing is important.

Reading Sample



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TWFSAMPLE

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