



# myFOSSIL

## Education Series

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### **LESSON TITLE:**

myFOSSIL Educational Series: Fossils in the Making

### **GRADE LEVEL:**

3th - 5th grade

### **TIME FRAME:**

One 45-60 minute class period

Video length: 5 minutes

### **DRIVING QUESTION:**

What constitutes a fossil and how do they form from prehistoric organisms?

### **LEARNING GOALS:**

To engage and teach students the primary understanding of how fossils form through comprehension of rock layers and evolutionary theory.

Develop the foundation for how paleontologists discover species that lived thousands to millions of years ago.

### **LEARNING OBJECTIVES:**

Students will be able to define foundational terms such as paleontologist, fossilization and rock formation to build on the understanding of how an entire species of an organism can go extinct and be preserved as fossils.

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### STANDARDS AND COMMON CORE:

#### NEXT GENERATION SCIENCE STANDARDS (NGSS)

List relevant NGSS standards for the intended grade level.

<http://www.nextgenscience.org/search-standards>

#### COMMON CORE STATE STANDARDS

<http://www.corestandards.org/>

### Next Generation Science Standards:

#### 3-LS4-1 Biological Evolution: Unity and Diversity

- 3-LS4 - 1. - Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

#### 4-ESS1-1 Earth's Place in the Universe

- 4-ESS1 - 1. - Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

### ELA Common Core State Standards:

#### CCSS.ELA-LITERACY.W.3.2

*Write informative/explanatory texts to examine a topic and convey ideas and information clearly.*

- W.3.2. A - Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.
- W.3.2. B - Develop the topic with facts, definitions, and details.

#### CCSS.ELA-LITERACY.W.3.3

*Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.*

- W.3.3. A - Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.
- W.3.3. B - Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.

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### ELA Common Core State Standards:

#### CCSS.ELA-LITERACY.W.4.2

*Write informative/explanatory texts to examine a topic and convey ideas and information clearly.*

- W.4.2. A - Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
- W.4.2. B - Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

#### CCSS.ELA-LITERACY.W.4.3

*Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.*

- W.4.3. A - Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.
- W.4.3. B - Use dialogue and description to develop experiences and events or show the responses of characters to situations.

#### CCSS.ELA-LITERACY.W.5.2

*Write informative/explanatory texts to examine a topic and convey ideas and information clearly.*

- W.5.2. A - Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
- W.5.2. B - Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

### ELA Common Core State Standards:

#### CCSS.ELA-LITERACY.W.5.3

*Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.*

- W.5.3. A - Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.
- W.5.3. B - Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations.

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### RESOURCES AND MATERIALS:

- LCD projector
- Colored pencils/ Crayons
- Computer
- Copies of the myFOSSIL Activity Sheet

### KEY ACADEMIC AND/OR SCIENTIFIC LANGUAGE:

**Ammonoid:** Extinct group of marine mollusc animals.

**Mollusc:** An invertebrate of a large phylum that includes snails, slugs, mussels, and octopuses.

**Extinct:** The death of an entire species of an organism.

**Fossil:** Trace or remains of animals that are no longer alive today.

**Fossilization:** The process by which a plant or organism becomes a fossil.

**Geology:** An earth science concerned with the solid Earth, the rocks of which it is composed, and the processes by which they change over time.

**Organism:** An individual animal, plant, or single-celled life form.

**Mammoth:** An extinct relative of the elephant of the Pleistocene Epoch.

**Permineralization:** The filling of empty space in a deceased organism's structural components with minerals.

**Paleontologist:** A scientist who studies fossils.

**Rock Formations:** An isolated, scenic, or spectacular surface Rock Outcrop that is usually the result of weathering and erosion sculpting the existing rock.

**Trilobite:** One of the earliest-known groups of marine arthropods that went extinct before dinosaurs.

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### CLASSROOM TIMELINE:

- 1. Begin class with the first set of discussion questions.** (approximately 5-10 minutes)
  - Pass out the Activity Sheet for the students to follow along with the video.
- 2. Start myFOSSIL video.**
  - Pause throughout the video to answer questions your students may have!
- 2. During Discussion Question #1 (1:52), pause the video to answer the question "What can fossils tell us?"**
  - Use your activity sheet to engage your students in describing what a fossil is to them.  
(approximately 8-12 minutes)
- 3. Continue the video once you have completed your discussion and part 'A' of your activity sheet.**
  - Refer to the 'Key Academic and/or Scientific Language' section of your lesson guide to define organisms and terms for the second half of the video. (approximately 5-8 minutes)
- 4. Pause for Discussion Question #2 (4:11) and answer the following question "What might cause a species to no longer exist?"**
  - Use your activity sheet to engage your students in describing what happens to an organism that may become a fossil. (approximately 8-12 minutes)
- 5. Continue the video once you have completed your discussion and part 'B' of your activity sheet.**
  - Prepare to pause the video one last time to answer the closing question. (approximately 5-8 minutes)
- 6. Pause for the final question and answer the following "What else do you think fossils could tell us?" (4:50)**
  - Use your activity sheet to engage your students in describing how fossil contribute to science and the world around them. (approximately 8-12 minutes)
- 7. Continue to the end of the video once you have completed your discussion and part 'C' of your activity sheet.**
  - After this, you can finish the remaining piece of your activity sheet. (approximately 5-8 minutes)
- 8. Have students complete the 'Check your Knowledge' portion of the activity sheet.**
  - A coloring activity will be placed on the back portion o the activity sheet. Complete if time allows.  
(approximately 10-15 minutes)

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### DISCUSSION QUESTIONS:

#### Before the video:

- What do you know about fossils?
- How do animals become fossils?
- What type of scientist researches for fossils?
- Have you ever seen a fossil?

#### During the video:

- *Pause video:* What can fossils tell us? (about the environment, species, things happening at that time)
- Where are some places do you think you can find fossils?
- *Pause video:* What might cause a species to no longer exist?
- Can you give an example of how a organism might have become a fossil?

#### After the video:

- Can you name other organisms that have gone extinct?
- What was your favorite part of the video while you were learning about fossils?
- Pop quiz, if a turtle is found at the bottom of a rock layer and a fish is found at the top of a the same rock layer, which species is older in age?
- Why is working as a paleontologist like being a detective?
- Would you like to become a paleontologist?



# content

covered in this video



FOSSILS



PALEONTOLOGY



GEOLOGY



FIELD WORK



SPECIES



DISCOVERY

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### CONCEPTS:

- Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed.
- Types of plants and animals that once lived on Earth are no longer found anywhere.
- Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.
- Fossils are evidence of past life. Sometimes fossils can be bones of animal, or maybe a mold/cast of an animal, or even traces of an animal doing something, like footprints or even poop!

### 5 E's OF LEARNING:

- Engage: Understand the process of fossilization and how the organism got there?
- Explore: The process of fossilization and permineralization.
- Explain: Different fossil types based on where and how they become fossilized.
- Elaborate: Discuss how organisms being fossilized can tell us about the past environment and extinction.
- Evaluate: Combine an active discussion during the video and incorporate the activity sheet.

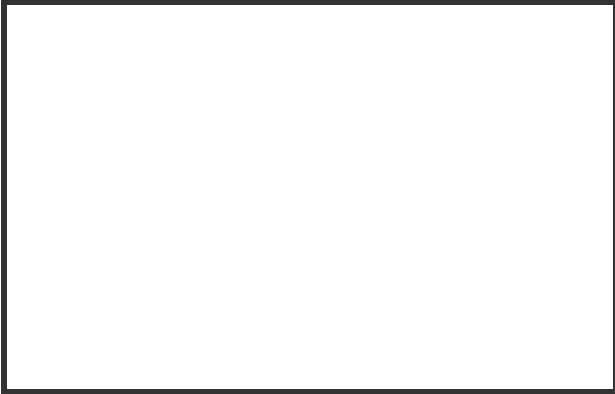




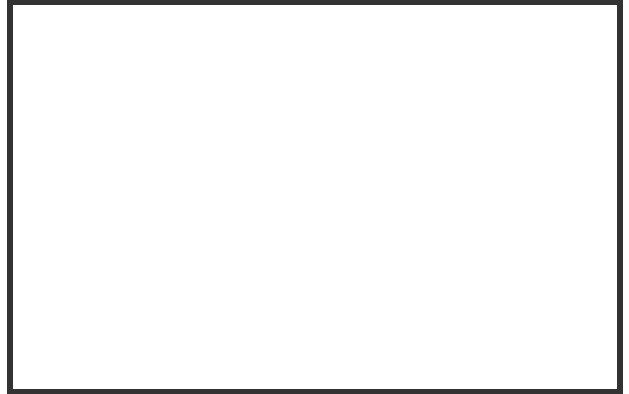
# myFOSSIL Activity Sheet

Draw what you have learned in the boxes below!

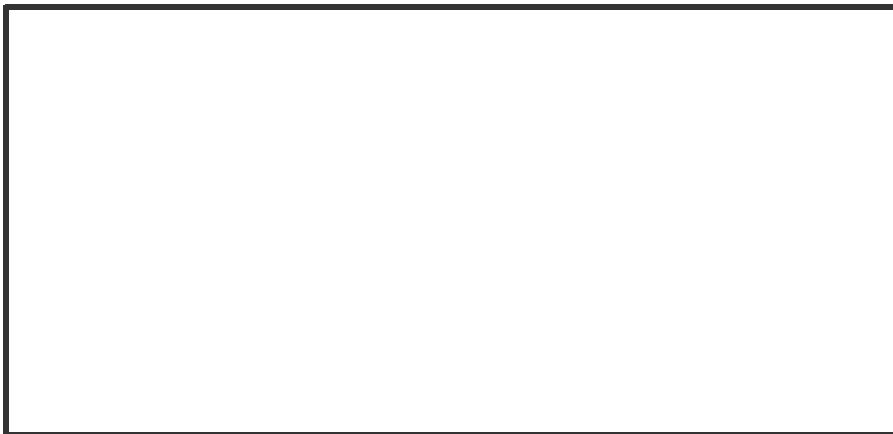
A



B



C



## Check your knowledge:

Using my own words, a fossil is a ...

An example of a fossil is:

**Species:**

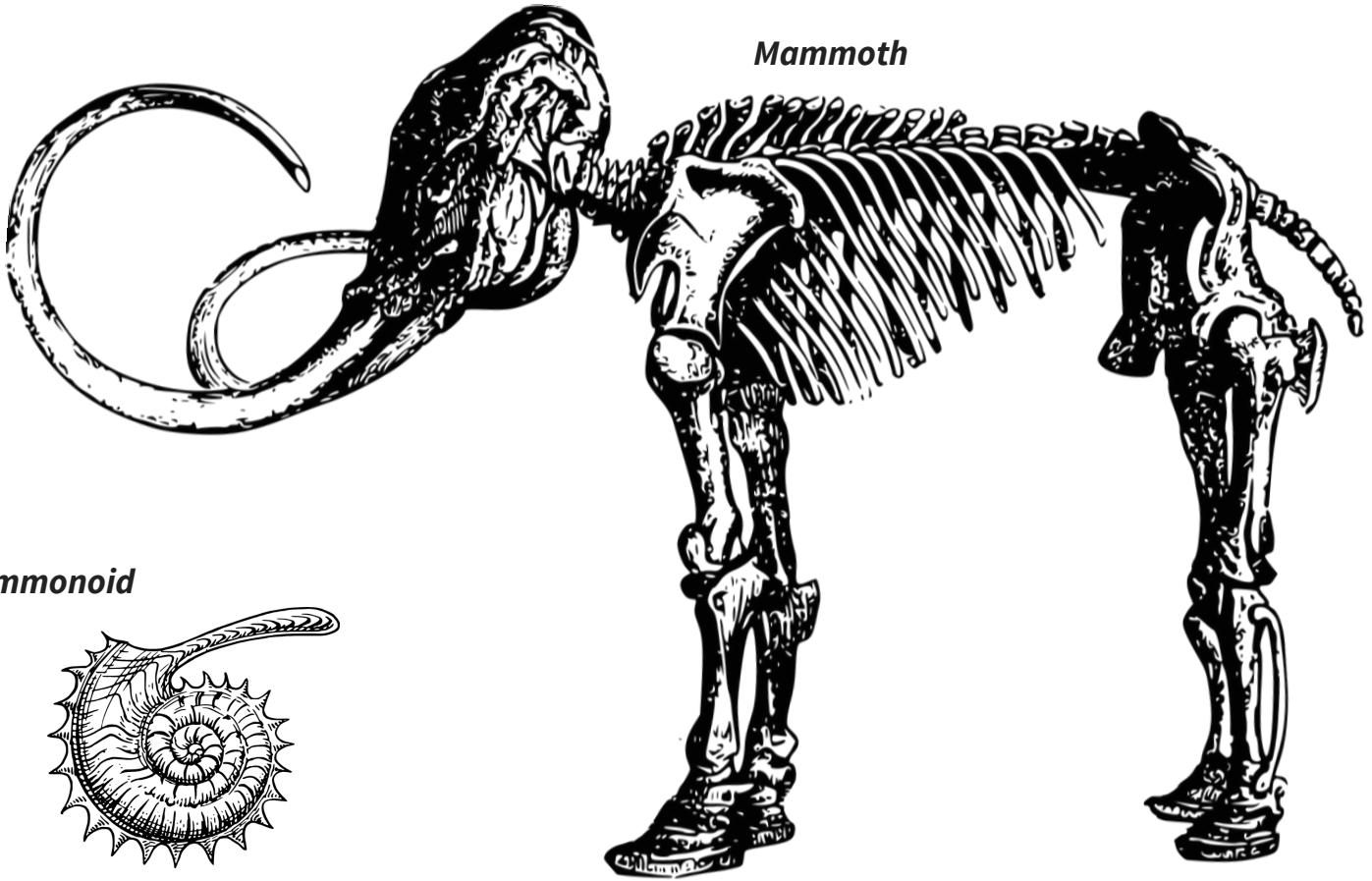
**Draw it!**

I learned....

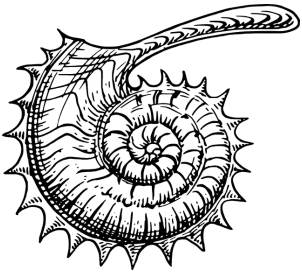
# myFOSSIL Activity Sheet

What do you think I looked like when I was alive?

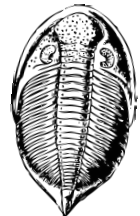
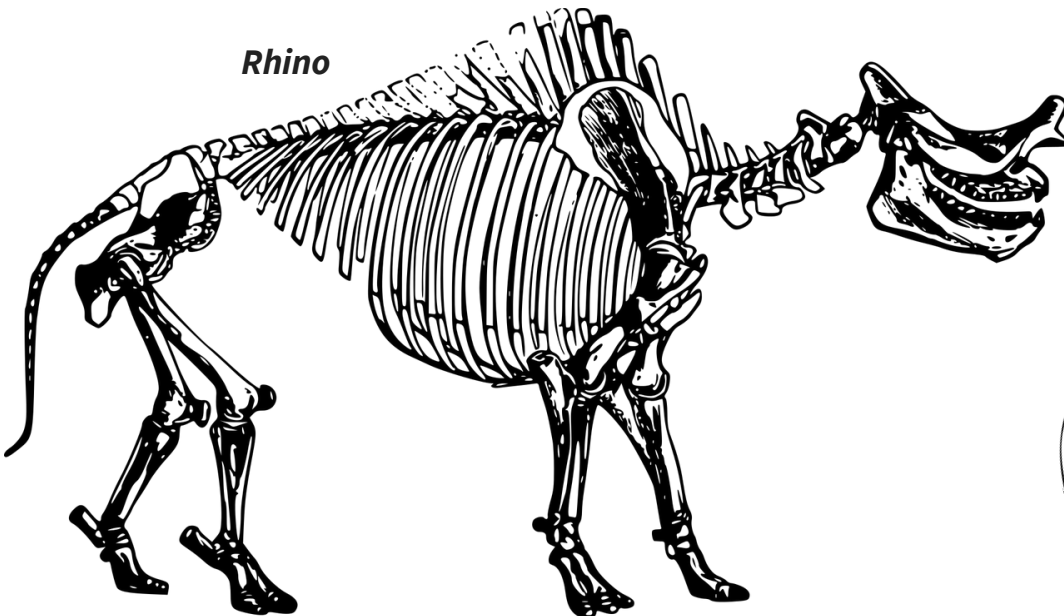
*Mammoth*



*Ammonoid*



*Rhino*



*Trilobite*

