Name: _____ Period: _____ Date: _____

Fossil Station Rotation

7.2.8 Compare and contrast fossils with living organisms in a given location to explain how earth processes have changed environments over time.

☆BIG IDEA☆

Earth's immense history is recorded in the rocks.

DIRECTIONS:

- ☐ There are ten stations. At some stations, there is a sign with a SWBAT and a focus question. You need to record the focus question in the "thought bubble" at the beginning of each station's investigation.

- ☐ In order to reach a conclusion and answer the focus questions, you will need to complete a task. This will include: reading, analyzing text, defining words, modeling a process, examining specimens, Internet research, etc.

- ☐ There will be multiple texts at each station. Be sure to read and analyze ALL of the texts provided. Each text has slightly different information so be sure to include it in your investigation notes.

Station 1: General Fossil Specimens

a) There are three boxes at this station. Observe the different types of fossils in each box.
b) Take a closer look at least 3 fossil specimens of your choice.
    i. Take only ONE fossil out a time.
c) Be sure to put it back in the correct location.
d) Take a picture of that fossil. Insert it in the data table where you recorded the other information.

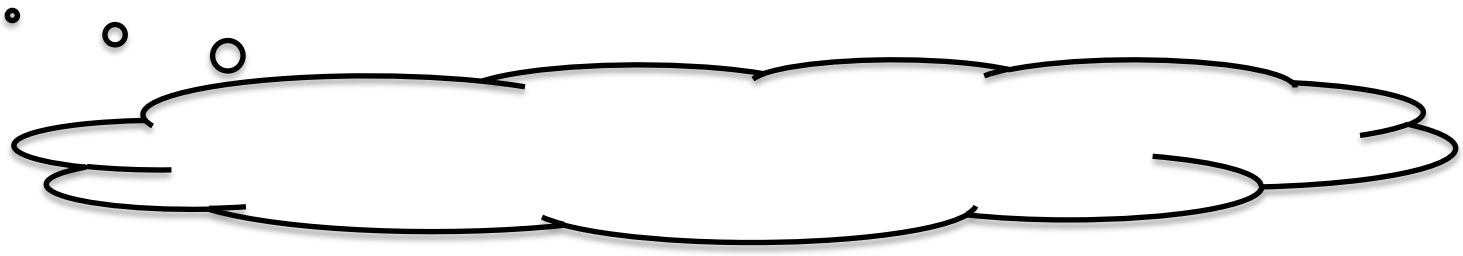
USE THE SHEETS THAT GO WITH EACH BOX TO IDENTIFY AND RECORD THE FOLLOWING IN THE DATA TABLE:

e) Each specimen is marked with a letter and/or number. Use this number to find the name of the fossil you picked. (Kingdom, phylum, genus, species, etc. are scientific names.)
f) Use the same sheet to identify time periods in which each fossil lived.
g) To find out how many millions of years ago (MYA) these organisms lived, use the time period listed on the sheet and compare it to the time period on the poster. The years are listed on the poster.

Fossil Name:	**Fossil Name:**	**Fossil Name:**
Time Period:	**Time Period:**	**Time Period:**
MYA:	**MYA:**	**MYA:**
Picture:	**Picture:**	**Picture:**

Station 2: Stuck in Time

FOCUS QUESTION



1. Read and analyze both texts to define and describe the term **FOSSIL**:

   _____

   _____

2. Fossils are often preserved in what type of rock? (circle one)

   igneous metamorphic sedimentary

3. Examine the rock sample (it's a type of sandstone). Use the grain size chart to determine the texture of this rock. (REMEMBER: The texture of sedimentary rock is determined by the size of the grains or sediments that make up the rock.)

   GRAIN SIZE: _____ (this is a measurement/quantitative observation)

4. Most fossils form from _____ or _____ that once lived

   _____ or _____ quiet _____ such as

   _____, _____ or shallow seas where _____

   builds up.

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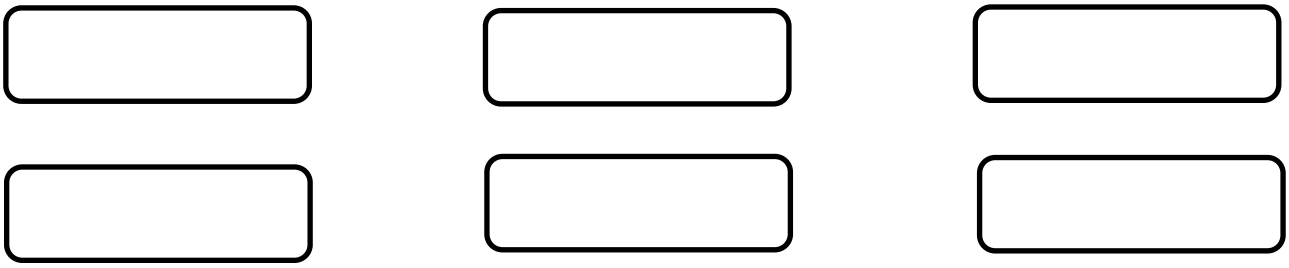
5. According to the text, what are SIX examples of things that can become fossils?



6. Analyze the text and diagrams to determine the sequence of steps that forms fossils. You will infer some of the steps. Internet research is helpful as well….

_____ layers sediment are heavy and put pressure on the organism

_____ organism dies

_____ minerals dissolved in water preserve the bones and other hard parts

_____ many, many years (millions or more) pass

_____ organism is covered by sediment

_____ soft parts decay or quickly eaten by other animals

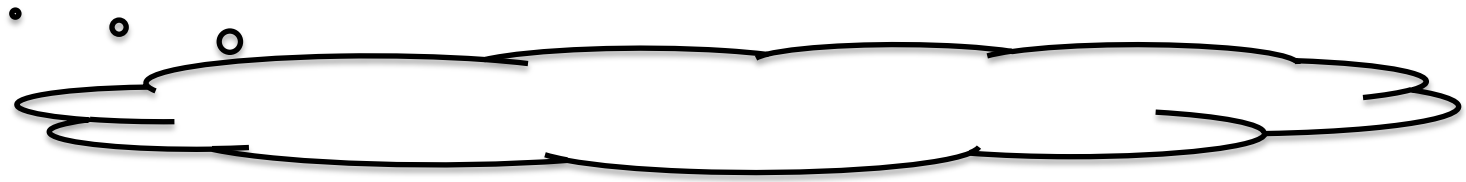
_____ hard parts are left behind

_____ organism sinks to the bottom of a body of water

Search for an image that shows these steps (or similar steps). Add it below:

Station 3: Trapped in Amber

FOCUS QUESTION:



1. Analyze the text to determine the sequence of steps of the formation of amber.

_____

_____

_____

_____

2. Examine ONE of the amber specimens using a microscope or magnifying lens. Pay special attention to the insect parts preserved inside the amber.
   - Record your observations in the box below. (Take a picture through the microscope.)
   - Your records should include both a picture and a written description.

PICTURE	DESCRIPTION

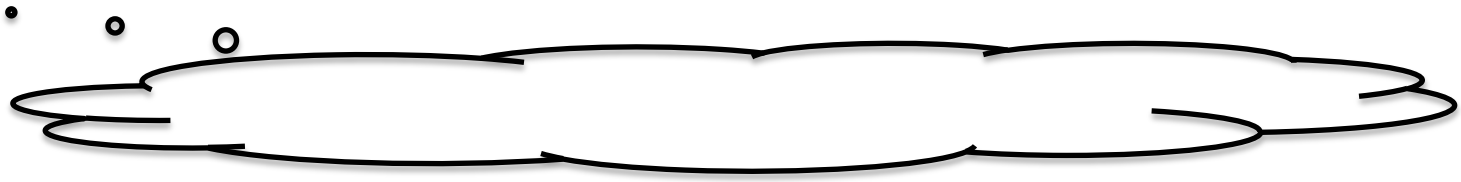
(continued on the next page ➔)

3. Find an interesting or useful picture of "**fossil amber**" on the Internet. (Remember, insects are not the only things that can be preserved in amber…) Insert it below.

4. Amber is classified as _____ _____ because the _____ organism is _____.

Station 4: Buried in Rock

FOCUS QUESTION



5. Describe TWO ways that **being quickly buried in sediment** helps the body of an organism to become a fossil.

   a. _____

   _____

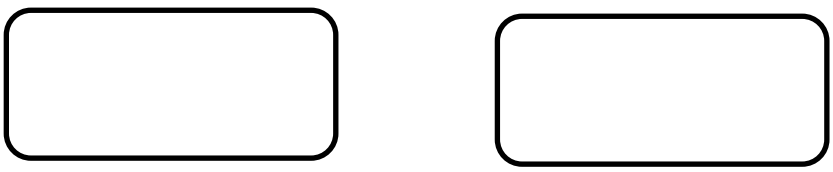
   b. _____

   _____

6. Circle the **bold** word that makes the following sentence true:

   The **hard/soft** parts of organisms become preserved as part of the rock.

7. Two examples of these parts are:



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8. Below are four more fossilization processes. Pick TWO you would like to learn more about.

☐ trapped asphalt ☐ petrified

☐ preserved in ice ☐ carbon film

- ✓ Summarize FOUR important/main ideas about those fossilization processes.
- ✓ Use the text first. The headings/subheadings will be helpful in finding information.
- ✓ If needed, do an Internet search for other information or examples. Insert any useful pictures you find.

Type of Preservation:	**Type of Preservation:**
a.	**a.**
b.	**b.**
c.	**c.**
d.	**d.**

Station 5: Molds and Casts

PART A: What is the difference???

Analyze the text. Organize information in the data table below.

MOLD	CAST
1. Define and describe mold (in terms of fossils)	**2.** Define and describe cast (in terms of fossils)
3. How are molds and casts similar? 4. How are molds and casts different?	

(continued on the next page ➔)

PART B: Modeling the Process of Molds and Casts:

- ✓ Do the following on TOP of the WAX PAPER!!!
- ✓ This model works best with a scallop shell.

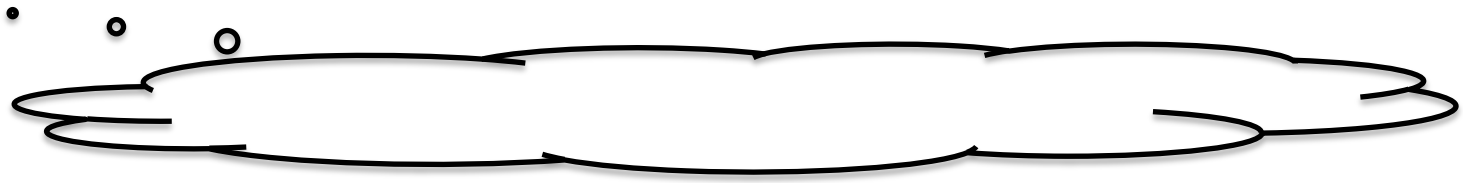
PROCEDURE:

1. Pick a color of clay. Spend ***no more*** than ***one minute*** kneading it until the clay becomes softer.
2. Split the clay into two parts.
3. Place one part on the wax paper and flatten it.
4. This represents the sediment at the bottom of a body of water.
5. Pick a shell. Place it on the clay and press down.
6. The shell represents (and is an example of) the hard parts of an organism.
7. Place the other part of the clay on top of the shell.
8. This represents sediments quickly burying the organism.
9. Pretend that water with minerals dissolved in it (such as calcite or silica) flows through the sediment (clay) and shell.
10. Wait 30 seconds. This represents millions of years passing by.
11. Peel off the top part of the clay and remove the shell.
12. This represents weathering and erosion, or a geologist finding the fossil.
13. Examine the imprints left behind. Observe how detailed they are in comparison to the shell.
14. Determine which one is a fossil mold and which one is a fossil cast.
15. Take a picture of your results and put it in correct boxes below.

MOLD:	**CAST:**

Station 6: Without a Trace

FOCUS QUESTION



Analyze BOTH texts to answer the following:

1. Define and describe the term TRACE FOSSIL.

_____

_____

2. Why are trace fossils important?

_____

_____

(continued on the next page ➔)

3. Analyze the text called "Without a Trace."

   - ✓ List THREE types of trace fossils.
   - ✓ Describe what they show about the life and activities of the organism that left them behind.
   - ✓ Use the Internet to include an image as an example.

Type of trace fossil:	What they show about the organism that left them:	Image:

13. Use the "action figures" and the clay provided to **create your own scene the leaves behind trace fossils**. You need to put the clay on the wax paper to protect the table. Draw or take a picture of the results. Insert the picture below.

Station 7: Microfossils

1. Pick at least TWO slides of microfossils to examine.
2. Record the slide number. (This is highlighted in GREEN on the provided sheet.)
3. Record the type of organism the sand contains. (This is highlighted in YELLOW on the provided sheet.)
    a. Use the internet to look up what these organisms are and what they look like.
4. Record the location (City, State) and period/epoch each specimen.

Slide number: Organism (circle): foraminifera bryozoa mollusks enchinoderm parts conodonts	Slide number: Organism (circle): foraminifera bryozoa mollusks enchinoderm parts conodonts
Location:	Location:
Period/Epoch:	Period/Epoch:
Picture or diagram	Picture or diagram

Station 8: What do fossils show about Earth's changing environment??

Read and analyze BOTH texts at this station. Use the information in the text to interpret and infer about the ancient environments in the Rocky Mountains and Antarctica.

1. How are organisms found in the Rocky Mountain regions (today) different from those that lived there 320 million years ago?

    - Be specific and detailed.
    - Explain what types of organisms are found today and what organisms lived in that area in the past.

_____

_____

_____

_____

2. How does this difference in organisms give us evidence of a changing environment?

    - Be specific can detailed.
    - Include what you can infer about what the ancient environment was like based on the fossil evidence.
    - Include what the environment is like today.

_____

_____

_____

(continued on the next page ➔)

3. Coal has been found in Antarctica. Based on what you know about the formation of coal, what does this show about the **environment** and **climate** of Antarctica in the past?

_____

_____

_____

4. **(Infer…)** How do you think Antarctica could have once had this climate if it is currently at the South Pole???

_____

_____

_____

Station 9: Indiana Fossils

1. Examine the specimens that were collected in Indiana.
2. Pick at least two to **identify** using the information at the station.
3. Record the specimens' **names**.
4. Determine the type of environment they lived in.
    a. This might be in the resources included at the station.
    b. You may also need to infer by comparing the fossils to organisms that are alive today.
5. Describe the type of environment(s) Indiana has today.

Name:	Name:
Picture or diagram:	Picture or diagram:
Fossil Environment (past):	Fossil Environment (past):
Today's Environment in Indiana:	

6. Describe how Indiana's environment has changed Be sure to describe what the environment once was and compare to what the environment is now. Justify your answer with evidence from this station.

Station 10: Ammonite and Nautilus

a. Read the handouts.
b. Examine the pictures of the ammonite and nautilus. You can also search the Internet for additional pictures.
c. Examine the ammonite fossils.
d. Record what you learned from the text and what you observed below.

Record your observations about the ammonite fossil.	Record your observations about the nautilus.
Describe the animal characteristics of the ammonite.	Describe the animal characteristics of the nautilus.

Scientists use what they know about modern organisms and the environment they live in to make inferences about the characteristics and environment the fossilized organisms once lived in.

1. What characteristics do you think the ammonite and the nautilus would have in common?

2. Compare the environment the nautilus lives in with the environment the ammonite would have lived in.

3. Explain the changes to the ammonite's environment that could have affected its survival.