

Starburst® Rock Cycle

LESSON SUMMARY

In this lab, students will model the rock cycle using Starburst® to represent rocks. This can be done in small groups or individually. Possible reading passage before the lab

<https://schools.scsk12.org/cms/lib/TN50000520/Centricity/Domain/119/Quarter%203%20Rock%20Cycle%20Process%20Recovery%20Project%20text%20.pdf>

LESSON OBJECTIVE(S)

- Students model the processes that form the three different types of rocks.
- Students will experience how models help scientists understand phenomena that happen on long timescales.

FOCUS QUESTION

What are the three types of rocks, and how are each formed?

LEARNING TARGET (I CAN STATEMENT)

I can identify the three types of rocks and how each is formed.

STANDARDS ADDRESSED

AR: 7-ESS2-1

MS: E.8.7.2/ E.3.7A(adjust lesson for age)

TN: 8.ESS2.3

MATERIALS

- Hot plate
- Per person or group:
 - Aluminum foil in about 4x4 squares or aluminum foil baking cups
 - Starbursts® (3 different colors/flavors)
 - Plastic knife or scalpel or scissors
 - Textbooks or brick (something heavy)
 - Potholder
 - Wax paper or paper plate
 - Student lab sheet

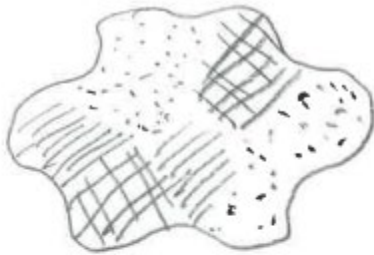
Procedure

- Decide if you want to have students do this individually or 1 per group.
- Each person or group gets aluminum foil cut into a 4x4 square or use the aluminum foil baking cups (personally find to be time saving), 3 different color Starbursts®, wax paper or paper plate for students to work on, something to cut the Starbursts® with (plastic knife, scissors, scalpel), something heavy like a textbook, a potholder or some sort of cloth to protect student's hands from heat, and a lab sheet.
- The procedure for the students is on their lab sheet.
- Monitor the students while they cut the Starbursts® to make sediments.
- During the metamorphic and igneous rocks sections, have a table set up for you with the hot plate. An electric griddle also works well for this since you can do multiple at a time. **Have students use the potholder to carry their "rock" back to their table/desk.**



Starburst® Rock Cycle

- For the metamorphic rock, leave their aluminum foil packet containing their “rock” on the heat for 30 seconds. Remind them to go straight back and put the heavy object on the packet.
- For the igneous rock, they should bring their “rock” on the aluminum foil, not wrapped up. If it is, unwrap it so you watch the rock melting. Give it a stir when it melts. You want to make sure it doesn’t have banding or layering like a sedimentary or metamorphic rocks. Remind them to not touch it till it cools (repeatedly because they are middle schoolers).
- For the sections that has students draw their “rocks” you can use colored pencil or show them to make a key for each color. Ex:



Key

•••• = yellow

/// = red

▣ = pink



Closure

You can use the lesson question as an exit ticket or lead a classroom discussion about the lab.

Starburst® Rock Cycle Lab

FOCUS QUESTION

What are the three types of rocks, and how are each formed?

Materials

- Aluminum foil in about 4x4 squares or aluminum foil baking cups
- Starbursts® (3 different colors)
- Plastic knife or scalpel or scissors
- Textbooks or brick (something heavy)
- Potholder
- Wax paper or paper plate

Procedure

1. Unwrap all the Starbursts®. Use the cutting tool to cut (weather) each of the different Starbursts® s on the wax paper or paper plate. Keep each color pieces (sediment) separate.

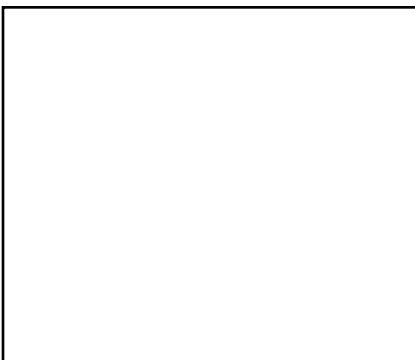
2. Layer your sediment keeping each color separate onto aluminum foil.

3. Carefully fold the aluminum foil around the pile. Compact and cement the layers by placing (NOT

PRESSING/PUSHING) the stack of textbooks (or other heavy object) from your table on top of the folded aluminum foil for about 1 minute. Then remove the textbooks and unwrap the aluminum foil. Break off a small piece of the

Starbursts® rock and set it aside.

Draw the small piece.



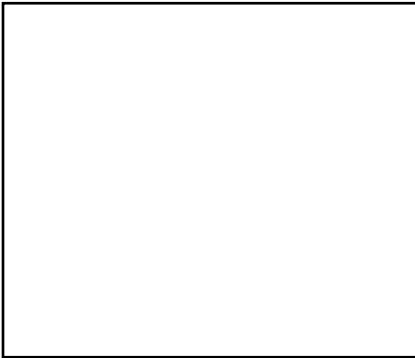
What kind of rock does it represent?

4. Rewrap the aluminum foil and place ONE textbook back on top of it. This time push down on the textbook with as much pressure as you can.

5. Then see the teacher to heat your rock. BRING YOUR POTHOLDER WITH YOU. You will place your foil on the hot plate for 30 seconds.

Name: _____ Period: _____

6. After heating, use the potholder to carry the foil packet back to your table, set the foil packet down, and place a textbook on it and let the foil packet cool under the textbook.
7. After it is cool remove the textbook, unwrap the foil, break off a piece of the Starburst® rock and set it aside
Draw the small piece.



What kind of rock does it represent?

8. Take the rest of your rock and place it back into the aluminum foil. DO NOT CLOSE/WRAP THE FOIL.
9. Take it to your teacher to be heated again. Watch your rock in the foil on the hot plate until it melts. This could take a few minutes.
10. After heating, return to your table, and allow the Starburst® rock to cool. DO NOT TOUCH THE STARBURST®.

What does the melted Starburst® rock represent? _____

Draw the rock.



What kind of rock does it represent?

Name: _____ Period: _____

Conclusion: What are the three types of rocks, and how are each formed?

Claim

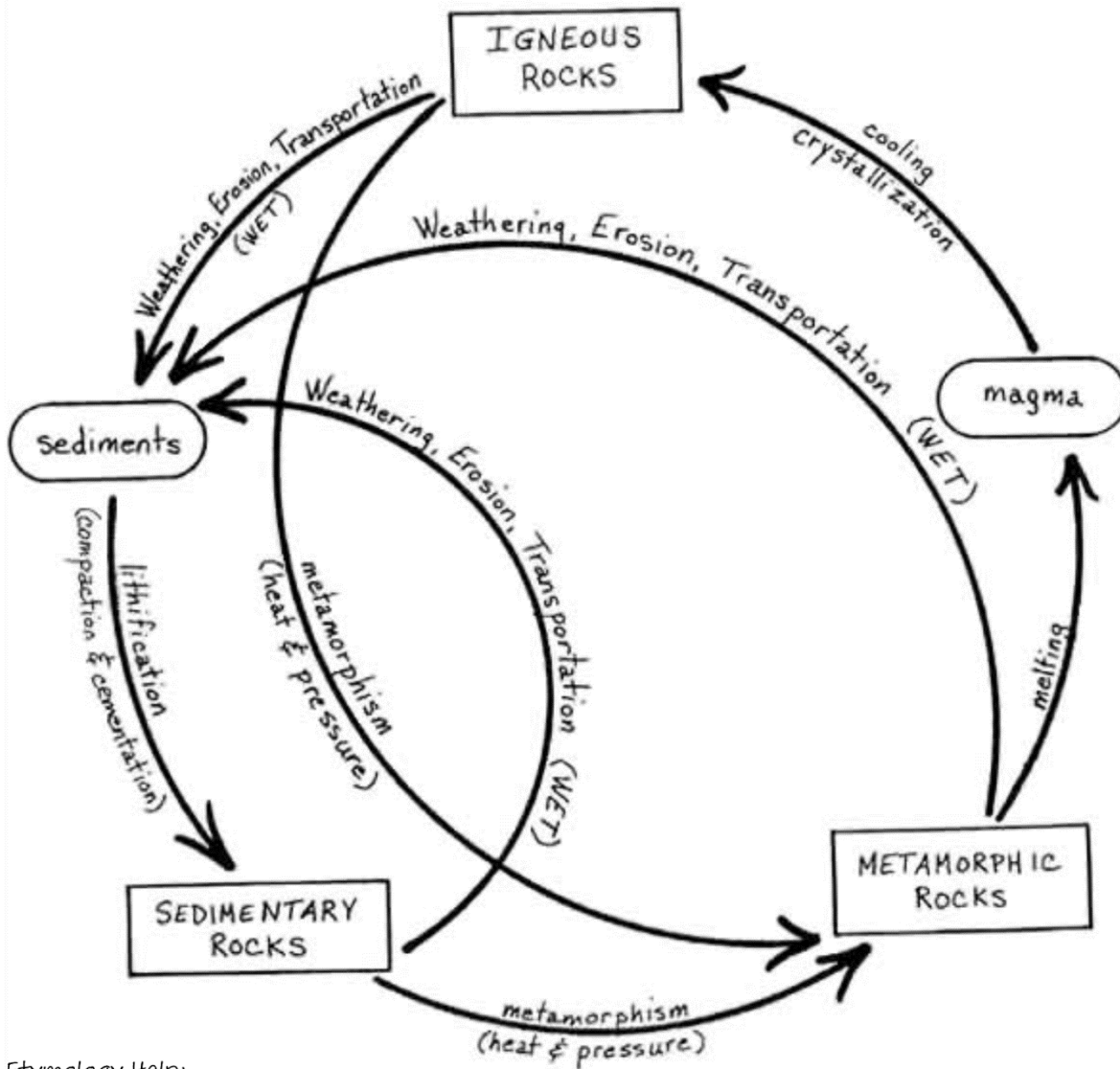
Evidence

Reasoning

Reflection

1. What are 2 different ways rocks are weathered in nature?
2. What was the difference between making a sedimentary rock and making a metamorphic rock?
3. Besides using Starbursts® to represent minerals, how is this model of the rock cycle different than the real rock cycle in nature?

The ROCK CYCLE



Etymology Help:

Meta: to change

Morph: form/shape

Lith: stone/rock

-ization: word-forming element making nouns into action, process, or state

Image courtesy of the US Geological Survey

Starburst® Rock Cycle Lab – ANSWER KEY

FOCUS QUESTION

What are the three types of rocks, and how are each formed?

Materials

- Aluminum foil in about 4x4 squares or aluminum foil baking cups
- Starbursts® (3 different colors)
- Plastic knife or scalpel or scissors
- Textbooks or brick (something heavy)
- Potholder
- Wax paper or paper plate

Procedure

1. Unwrap all the Starbursts®. Use the cutting tool to cut (weather) each of the different Starbursts® s on the wax paper or paper plate. Keep each color pieces (sediment) separate.

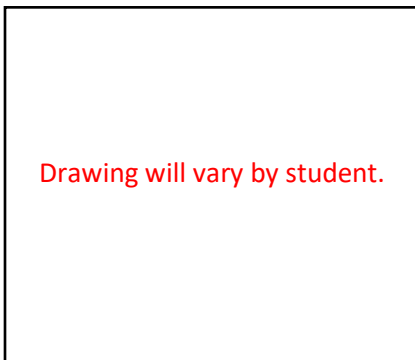
2. Layer your sediment keeping each color separate onto aluminum foil.

3. Carefully fold the aluminum foil around the pile. Compact and cement the layers by placing (NOT

PRESSING/PUSHING) the stack of textbooks (or other heavy object) from your table on top of the folded aluminum foil for about 1 minute. Then remove the textbooks and unwrap the aluminum foil. Break off a small piece of the

Starbursts® rock and set it aside.

Draw the small piece.



What kind of rock does it represent?

Sedimentary Rock

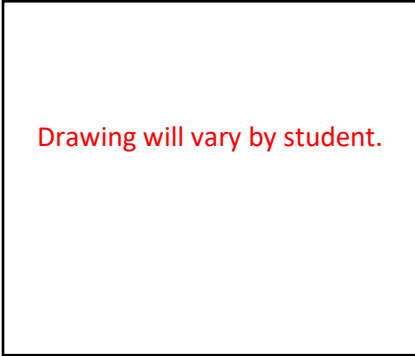
4. Rewrap the aluminum foil and place ONE textbook back on top of it. This time push down on the textbook with as much pressure as you can.

5. Then see the teacher to heat your rock. BRING YOUR POTHOLDER WITH YOU. You will place your foil on the hot plate for 30 seconds.

6. After heating, use the potholder to carry the foil packet back to your table, set the foil packet down, and place a textbook on it and let the foil packet cool under the textbook.

7. After it is cool remove the textbook, unwrap the foil, break off a piece of the Starburst® rock and set it aside

Draw the small piece.



What kind of rock does it represent?

Metamorphic Rock

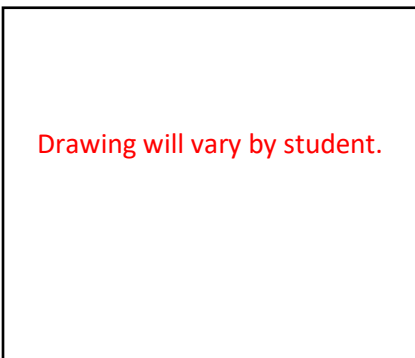
8. Take the rest of your rock and place it back into the aluminum foil. DO NOT CLOSE/WRAP THE FOIL.

9. Take it to your teacher to be heated again. Watch your rock in the foil on the hot plate until it melts. This could take a few minutes.

10. After heating, return to your table, and allow the Starburst® rock to cool. DO NOT TOUCH THE STARBURST®.

What does the melted Starburst® rock represent? lava or magma

Draw the rock.



What kind of rock does it represent?

Igneous Rock

Conclusion: What are the three types of rocks, and how are each formed? (Example answer)

Claim

The three types of rock are sedimentary, metamorphic, and igneous. The type is determined based on how they are formed.

Evidence

Sedimentary rocks are made of sediments (smaller pieces) and are compacted and cemented together. Metamorphic rock is a rock (usually sedimentary or igneous) that has a lot of heat and pressure applied to it so that it changes into a different type of rock. Igneous rock is formed from molten rock either under the ground (magma) or on the surface (lava).

Reasoning

The type of material and how a rock is formed determines what kind of rock it is.

Reflection

1. What are 2 different ways rocks are weathered in nature?

Rocks are weathered by water and wind.

2. What was the difference between making a sedimentary rock and making a metamorphic rock?

Sedimentary rock did not have heat or pressure applied to it like metamorphic rock.

3. Besides using Starbursts® to represent minerals, how is this model of the rock cycle different than the real rock cycle in nature?

This model only showed rocks going from sedimentary to metamorphic to igneous, but in real life the rock cycle can go between the different types of rock in multiple ways.