

Famous Rock Groups

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Lesson Overview: Students will become familiar with the definitions of igneous, metamorphic, and sedimentary rock. Then, using rock identification books, students will work cooperatively to identify familiar rocks as igneous, metamorphic, or sedimentary. Additionally, students will use their knowledge of the three rock types to discover the rocks that early man would have found useful for tool creation.

Objectives: Students will

- Know the structures and functions of Earth systems
- Summarize the rock cycle
- Know that a system is a collection of cycles, structures, and processes that interact
- Work cooperatively and share information resources

Texas Essential Knowledge and Skills (TEKS):

Science, Grade 5

- Science 112.7 (2C), analyze and interpret information to construct reasonable explanations from direct and indirect evidence
- Science 112.7 (5A), describe some cycles, structures, and processes that are found in a simple system
- Science 112.7 (11B), draw conclusions about "what happened before" using data such as from tree-growth rings and sedimentary rock sequences
- Science 112.7 (12B), describe processes responsible for the formation of coal, oil, gas, and minerals

Science, Grade 6

- Science 112.22 (2C), analyze and interpret information to construct reasonable explanations from direct and indirect evidence
- Science 112.22 (14A), summarize the rock cycle

Materials: A variety of different types of rocks (several for each small group of students), rock cycle drawing (can be reproduced for student handout or made into an overhead transparency), Rock Solid Evidence chart, Teacher information sheet, Student rock type handout, rock identification book for each group of students

Activity:

Step 1. The teacher divides the class into groups (number of groups will depend on how many rock identification books are available). The teacher gives each group several rocks to examine.

Step 2. Students carefully handle rocks and fill out the Rock Solid Evidence chart. Briefly hold a whole class discussion about what they found.

Step 3. The teacher shows students a drawing of the rock cycle. The teacher discusses the different rock types - igneous, metamorphic, and sedimentary - as she follows the information on the rock cycle drawing.

Step 4. Students use the Rock type handout and a rock identification book to identify each common rock as igneous, metamorphic, or sedimentary. The teacher allows the students to come up with appropriate definitions for each of the rock types as they refer to the rock cycle. The teacher needs to also refer to the teacher information sheet to help the students include additional facts that may be helpful for the activity.

Step 5: After all groups are finished, the teacher reviews the answers.

Closure: The teacher asks students to identify which rock type - igneous, metamorphic, or sedimentary - is most likely to be the same composition as glass. Students should answer igneous. The teacher then lets the students know that igneous rock was one type of rock used by early man to create arrow points, dart points, and other tools for hunting. However, some types of chert (a sedimentary rock) are very fine-grained and were also used in making stone tools, especially in Texas. Then, the teacher asks the students to look back over the rocks that they labeled as igneous. The teacher allows the students time to review those rocks and to look them up again to read the information about them and to look at their pictures. The teacher asks the students why igneous rock (the type most like glass) was the best type for making projectile points (dart, arrow, and spear points). Students should respond that igneous rock, because it is like glass, breaks with a very sharp, razor-like edge, is the most elastic, is pure in composition, and breaks equally well in all directions, so it can be easily chipped into shapes.

Extension: Have students research where igneous rock can be found in the United States. Then, have them discuss how early man would have obtained igneous rock from these locations.

Names of all group members _____

Date _____

Rock Solid Evidence

For each rock, describe the color and texture in the appropriate columns. As a group, decide whether the rock is igneous, sedimentary, or metamorphic. Check your guess in a rock identification book.

<u>Rock</u> <u>right?</u>	Color	Texture	Our Guess	Are	we
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1. _____

2. _____

3. _____

4. _____

Name _____

Date _____

ROCK GROUP IDENTIFICATION

Define each of the following rock types:

Igneous: _____

Metamorphic: _____

Sedimentary: _____

Using a rock identification book, identify each rock as igneous (I), metamorphic (M), or sedimentary (S) by placing the correct letter on the line beside each rock name.

_____ 1. Limestone

_____ 11. Chert

_____ 2. Obsidian

_____ 12. Rhyolite

_____ 3. Conglomerate

_____ 13. Slate

_____ 4. Scoria

_____ 14. Shale

_____ 5. Rock Salt (Halite)

_____ 15. Basalt

_____ 6. Pumice

_____ 16. Amphibolite

_____ 7. Schist

_____ 17. Peridotite

_____ 8. Granite

_____ 18. Coquina

_____ 9. Sandstone

_____ 19. Gneiss

_____ 10. Marble

_____ 20. Breccia

Which Rock Type?

Teacher Information Sheet

Background Information on the three types of rock:

The word **igneous** means "made by heat." Igneous rock is formed when melted rock, called magma, pushes through cracks in the earth's crust in the form of lava and then cools and solidifies.

The word **metamorphic** comes from the Greek words meta and morphe, and means "change of form." Metamorphic rocks are formed when igneous or sedimentary rocks are changed by heat or pressure or both.

The word **sedimentary** comes from a word that means "to settle." Sedimentary rocks are layered rocks. They are formed when weathered and eroded rock pieces, called sediment, are deposited in layers that become buried and compressed. Over time, the different rock particles become cemented together, forming new sedimentary rocks.

Background Information on the Rock Types used as Tools:

Igneous rocks, such as obsidian, basalt, and thuyolite, have a pure composition that makes them natural candidates for flintknapping (the ancient craft of making flaked stone tools, like spear points and blades). Early man sought igneous rock because of its brittle nature, its elasticity, its strength and hard edge, and its ability to break equally well in all directions. **Sedimentary and metamorphic rocks** would have been used for other tools, such as hammerstones and whetstones.

Key

<u>S</u>	1. Limestone	<u>S</u>	11. Chert
<u>I</u>	2. Obsidian	<u>I</u>	12. Rhyolite
<u>S</u>	3. Conglomerate	<u>M</u>	13. Slate
<u>I</u>	4. Scoria	<u>S</u>	14. Shale
<u>S</u>	5. Rock Salt (Halite)	<u>I</u>	15. Basalt
<u>I</u>	6. Pumice	<u>M</u>	16. Amphibolite
<u>M</u>	7. Schist	<u>I</u>	17. Peridotite
<u>I</u>	8. Granite	<u>S</u>	18. Coquina
<u>S</u>	9. Sandstone	<u>M</u>	19. Gneiss
<u>M</u>	10. Marble	<u>S</u>	20. Breccia



