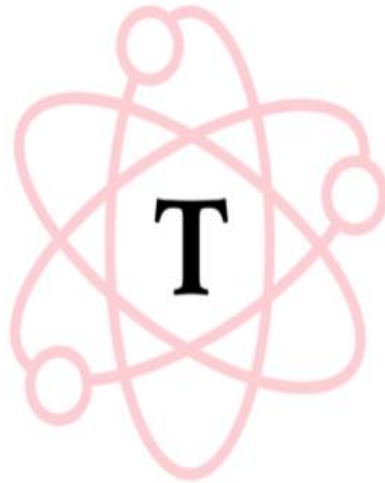


F



S

Foundations in Teaching Science

Roger Gomez M.Ed.

Reporting Category 3:

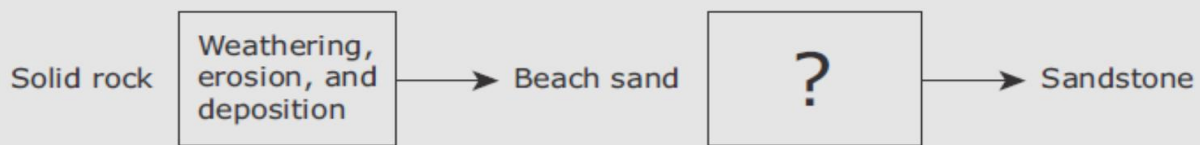
Earth and Space

The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.

STUDENT EXPECTATION: 5.7A explore the processes that led to the formation of sedimentary rocks and fossil fuels;

SE ASSESSED

The diagram below shows the sequence of the processes that turn solid rock into sandstone.



Which two processes best complete this diagram?

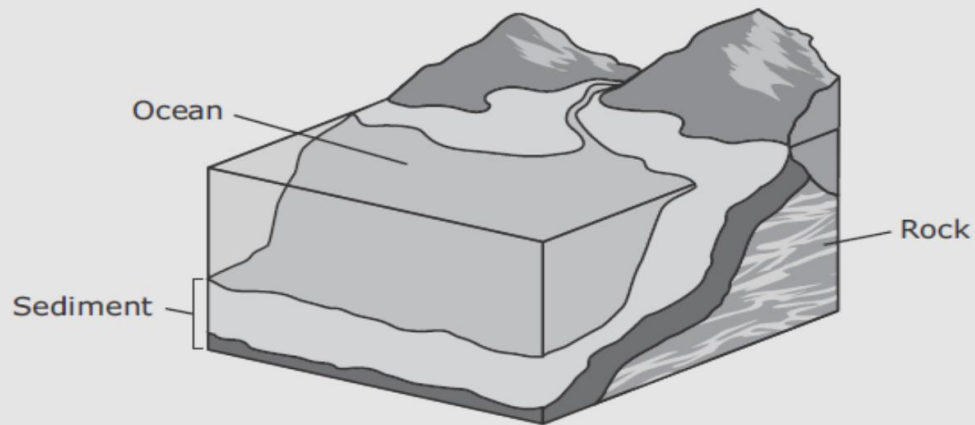
- A Melting and cooling
- B Erosion and compaction
- C Compaction and cementation
- D Evaporation and dissolving

All of these are related to the formation of oil or natural gas **EXCEPT** —

- F decomposed animals
- G decayed plants
- H sedimentary rocks
- J active volcanoes

(all images referenced from TEA STAAR released TESTS)

The model below shows layers of sediment on the floor of an ocean.



Which of the following best explains how these layers can become rock over many years?

- F** Sand in the sediment melts and turns into rock.
- G** The weight of the water compacts the sediment into rock.
- H** Changing water temperatures turn sand in the sediment into rock.
- J** Pollution caused by humans turns the sediment into rock.

Fossil fuels formed over long periods of time after particles in water settled to the sea floor and formed marine mud. What kinds of particles needed to be present in the marine mud in order for fossil fuels to form?

- F** Mostly sand and a few small bits of wood
- G** Mostly decaying organisms
- H** Mostly lava and a few sedimentary rocks
- J** Mostly metal minerals

(all images referenced from TEA STAAR released TESTS)

Some students make a model to show one of the first steps in the formation of sedimentary rock. The students pour 2 centimeters of light-colored sand into a clear plastic box. Then they add 1 centimeter of gravel. Finally they pour 2 centimeters of dark-colored sand on top of the gravel. Which characteristic of sedimentary rock does this model best show?

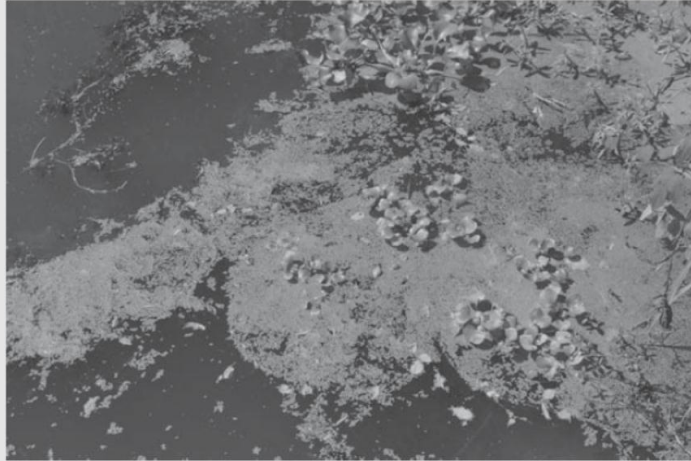
- F** Sedimentary rock is made of layers.
- G** Sedimentary rock is cemented bits of rock.
- H** Sedimentary rock is often limestone.
- J** Sedimentary rock is common in Texas.

Erosion is one of the processes involved in the formation of sedimentary rock. Which of these best describes the process of erosion?

- F** Rocks are broken into smaller pieces that remain in the same location.
- G** Pressure compacts layers of sediment and turns them into rock.
- H** Pieces of rock or soil are carried from one place to another.
- J** Sediment grains fall to the bottom of a lake to form sedimentary layers.

(all images referenced from TEA STAAR released TESTS)

This photograph shows plants growing on the surface of a pond.



How do plants like these form fossil fuels?

- F** The dead plants sink to the bottom of the pond and get buried by sediment for millions of years.
- G** The dead plants get buried for millions of years and form fossils that attract carbon.
- H** The dead plants sink to the bottom of the pond and are consumed by decomposers.
- J** The dead plants produce carbon that is consumed by fish, which form fossils.

(all images referenced from TEA STAAR released TESTS)

CONTENT FOCUS

PROCESS of FORMATION of SEDIMENTARY ROCKS

- The breakdown of igneous rock (lava rock), or sedimentary rock, or metamorphic rock into smaller pieces is called WEATHERING.
- The small pieces of broken down rock are called Sediments.
- The carrying away of sediments by air, wind, water, or gravity is called EROSION.
- The depositing of sediments to a certain location is DEPOSITION.
- Layers and Layers of deposition of sediments cause pressure to build on previous layers of sediments called COMPACTION.
- Different layers of sediment are evident during compaction.
- Compaction can be caused by gravity or weight of the ocean or pressure of other rocks.
- The sticking together of sediments after deposition and compaction by clay and minerals in the ground is called CEMENTATION.
- After the completion of cementation, the sediments become SEDIMENTARY ROCK.
- The process of formation of Sedimentary Rock is: Weathering, Erosion, Deposition, Compaction, and Cementation.
- Examples of Sedimentary Rock are: Sandstone, Limestone, Shale, Conglomerate, Coal, and Rock Salt (Halite)

PROCESS of FORMATION of FOSSIL FUELS

- Plants, animals, or other organisms die and begin to decay and decompose in areas near water or swamp regions.
- Sediments buries these organisms under pressure of different layers of sedimentary rock and the weight of water.
- Over millions of years and with the sedimentary rock formation, decomposed and decayed Plant organisms near swamps eventually become COAL.
- Plants, animals, or other organisms die and begin to decay and decompose in land areas.
- Sediments buries these organisms under pressure of different layers of sedimentary rock.
- Over millions of years and with the sedimentary rock formation, decomposed and decayed animals, micro-organisms, and some aquatic plants in the ocean or near bodies of water eventually become OIL or NATURAL GAS.
- The decayed organisms, over millions of years with the sedimentary rock process, become fossil fuels, such as Coal, Oil, and Natural gas (nonrenewable resources).

KEY VOCABULARY

Academic Vocabulary: Weathering, Erosion, Deposition, Compaction, Cementation, Sediments, Sedimentary Rock, Fossil Fuels, Coal, Oil, Natural Gas

Nonacademic Vocabulary: Formation, Process, Sequence, Related, Layers, Weight, Periods, Particles

TEACHING FOCUS

EXPLORE: the processes that led to the formation of sedimentary rocks and fossil fuels

SE VERB: EXPLORE -- to look closely or examine for the purpose of discovery

TEACHING IDEA: Student conducts an investigation with showing rock going through WEATHERING into SEDIMENTS. The student allows the SEDIMENTS to fall onto the desk and then the student wipes the SEDIMENTS into a cup to show EROSION and DEPOSITION into the cup. The student then gets different colored sand (sediments) and pours sand of one color, a layer at a time, into the plastic cup. Layers of different colored sand should be evident. The student then presses down on the different layers to show COMPACTION. The student then pours Elmer's glue into the cup and starts the layered process of sediments again along with COMPACTION. The layers of sediment dry overnight and the different layers of SEDIMENTS are stuck together showing CEMENTATION. The student describes the process of sedimentary rock formation the next day. The student explores different types of Sedimentary rock to describe the Sedimentary rock formation process.

Object	Process	Process	Process	Process	Formation
Rocks	Weathering	Erosion of Sediments	Compaction and Cementation of Sediments	Layers over time	Sedimentary Rock
Organisms	Death	Erosion of Sediments	Compaction and Cementation of Sediments	Layers over time	Fossil Fuels
Coal					
Oil and Natural Gas					