

Water, rocks, and soil make up the earth's natural surface.

This surface is changed by the way these things interact.

Change of the earth's surface can occur at any pace, from rapid to glacial.

MASTER BEDTIME TALE: DEEP SIX THE OPALS OR MUTINY

Common Core Format Questions alpl

STANDARD KNOWLEDGE - EARTH SCIENCE, EARTH'S SURFACE

Water, rocks, and soil make up the earth's natural surface. [define each]

This surface is changed by the way these things interact.

Change of the earth's surface can occur at any pace, from rapid to glacial.

Please answer the question, below, in no more than three succinct, full sentences.

*Compose a coherent [interesting] essay properly using textual evidence in support
create and label a sketch*

STANDARD KNOWLEDGE: EARTH'S NATURAL SURFACE HAS 3 MAIN COMPONENTS

In the photograph below, which of these is the least visible?

- A. water
- B. rocks
- C. soil
- D. living things



E.

Please answer the question, below, in no more than three succinct, full sentences.

In the photograph, above, there is evidence of water having made a significant, recent change to this landscape. Please describe what this is and how it happened.

Using the internet, research the the following, and provide answers to the questions posed.

How many differing definitions of "rock" or "rocks" can you find in 10 minutes on the web?
Paste and reference them below.

Please answer the question, below, in no more than three succinct, full sentences.

What do these definitions have in common?

Please answer the question, below, in no more than three succinct, full sentences.

What makes these definitions different?

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STANDARD KNOWLEDGE: EARTH'S NATURAL SURFACE HAS 3 MAIN COMPONENTS

Please answer the question, below, in no more than three succinct, full sentences.
Derive your own definition of rock/rocks as best you can. Feel free to include phrases from your selections (**bold them**) and be sure to use your own distinctive thinking and voice.

Now, read the essay, below, "What is a Rock," by Andrew Alden, writing as an approved expert [explain*] on about.com.
Please answer the question, below, in no more than three succinct, full sentences.
Look at your definition of rock. What are the differences?

Using Mr. Alden's pages on rock, research the the following, and provide answers to questions posed.
Can you find Mr. Alden's own definition of a rock? Paste it here.
continued, below

Consider this image ["Rock" from Walden]
Using the essay, "What is a Rock," below, what is the most likely category in which Alden would have placed it?
A. Rocks are Solid
B. Rocks are Natural (y)
C. Rocks are Made of Minerals
D. Rocks are Hard

Consider Alden's definition of Opal: Opal is a delicate [mineraloid](#), hydrated silica or amorphous quartz. [They] include a fairly large amount of water molecules, and opals should not be left in direct sunlight or high temperatures.
Using the essay, "What is a Rock," below, what is the only category that does characterizes an opal?
A. Rocks are Solid
B. Rocks are Natural (y)
C. Rocks are Made of Minerals
D. Rocks are Hard

(philosophy/aesthetics, ELA, Arts)
Please answer the question, below, in no more than three succinct, full sentences.
Look at several images of opals. Do you find them beautiful? Why or why not?

Please answer the question, below, in no more than three succinct, full sentences.
Opals have had a long history throughout the world of being adored or reviled. Sailors under Amos Chase had enough of those reviling them to constitute a large enough force to make him jettison his retirement savings. From the images of opals you looked at, can you imagine what might make opals reviled? A clue might be embedded in why some people find them less than beautiful.

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<http://geology.about.com/od/rocks/a/whatisarock.htm>

What Is a Rock?

By [Andrew Alden](#), About.com Guide

Everyone knows what a rock is, until you ask what it is exactly. After some thought and discussion, most people will agree that rocks are more or less hard solids, of natural origin, made of minerals. But all of those criteria have exceptions.

Rocks Are Hard

Not necessarily. Some common rocks can be scratched with your fingernail: shale, soapstone, gypsum rock, peat. Others may be soft in the ground, but they harden once they spend time in the air (and vice versa). And there is an imperceptible gradation between consolidated rocks and unconsolidated sediments. Indeed, geologists name and map many formations that don't consist of rock at all. This is why geologists refer to work with igneous and metamorphic rocks as "hard-rock geology," opposed to "sedimentary petrology."

Rocks Are Solid

Well, some are far from completely solid. Many rocks include water in their pore spaces. Many [geodes](#)—hollow objects found in limestone country—hold water inside them like coconuts. And the fine lava threads called [Pele's hair](#), and the fine open meshwork of exploded lava called [reticulite](#), are barely solids.

Then there's the matter of temperature. Mercury is a liquid metal at room temperature (and down to 40 below zero), and petroleum is a fluid unless it's [asphalt](#) erupted into cold ocean water. And good old ice meets all the criteria of rockhood too, in permafrost and in glaciers.

Rocks Are Natural

Not entirely. The longer humans stay on this planet, the more that concrete accumulates. [Concrete](#) is a mixture of sand and pebbles (aggregate) and a mineral glue (cement) of calcium silicate compounds. It is a synthetic [conglomerate](#), and it acts just like the natural rock, turning up in riverbeds and on beaches. Some of it has entered the [rock cycle](#) to be discovered by future geologists. [Brick](#), too, is an artificial rock—in this case, an artificial form of massive slate. (See the [Artificial Rocks Gallery](#) for more examples.)

Another human product that closely resembles rock is [slag](#), the byproduct of metal smelting. Slag is a complex mixture of oxides that has many uses, such as in road building and concrete aggregate. It too has surely found its way into sedimentary rocks already.

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Rocks Are Made of Minerals

Many are not. Minerals are inorganic compounds with chemical formulas and mineral names, like quartz or pyrite (see "[What Is a Mineral?](#)"). But what about coal? Coal is made of organic material, not minerals. The various [types of stuff in coal](#) are instead called macerals. Similarly, what about [coquina](#), a rock made entirely of seashells? Shells are made of mineral matter, but they aren't minerals any more than teeth are.

Rocks like these are not controversial, but they have their own category: biogenic rocks. Perhaps concrete and slag could be added to that category too. Concrete would fit in with the others, being essentially sedimentary, but slag would probably be a biogenic igneous rock.

Finally we have the exception of [obsidian](#). Obsidian is a rock glass, in which little or none of its material has gathered into crystals. It is an undifferentiated mass of geological material, rather like slag but not as colorful. While obsidian has no minerals in it per se, it is unquestionably a rock.