

Mr. Thornburg Physical Geology

Blizzard Bag 1

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Concept #2 Quiz

Choose the best possible answer to the following questions about Key Concept 2 "Detrital sedimentary rocks."



breccia

This activity contains 10 questions.

1. What minerals are most common in detrital sedimentary rocks and why? Choose all that apply.

[Hint]

- clay - it is the most abundant product of chemical weathering of feldspar
- halite - it is a common product of evaporation of lake water
- calcite - it is the most abundant product of precipitation from warm ocean water
- quartz - it is extremely durable and resistant to chemical weathering

2. Match the following detrital sediment types with the primary mode of lithification into sedimentary rock:

Using the pull-down menus, match each item in the left column to the corresponding item in the right column.

2.1 mud (mudstone)



A

compaction and water expulsion

2.2 sand (sandstone)



B

cementation and compaction

3. What is the primary basis for distinguishing among various detrital sedimentary rocks? Why?

- mineral composition - an indicator of the source of the sediment
- particle shape - a useful observation indicating the amount of mechanical weathering
- particle size - a useful observation indicating the environment of deposition
- rock size - a useful observation indicating the amount of mechanical weathering

4. Detrital grains of some mineral(s) are extremely rare in detrital sediments. Which minerals and why?

- calcite - it is soft and relatively soluble in water

- feldspars – they occur only in granite
- quartz – it is very hard and insoluble in water
- clays – they are rare in soils and regolith layers

5.

Match the detrital rock with the appropriate description:

Using the pull-down menus, match each item in the left column to the corresponding item in the right column.

5.1 breccia [hint]	<input type="text"/>	A	well-sorted, medium-size (up to 2 mm) particles, large pore spaces, accounts for about 20% of sedimentary rocks
5.2 conglomerate [hint]	<input type="text"/>	B	silt- and clay-size particles, small pore spaces, accounts for > 50% of sedimentary rocks
5.3 graywacke [hint]	<input type="text"/>	C	quartz, feldspar and rock fragments dominate, poorly sorted, angular grains
5.4 quartz sandstone [hint]	<input type="text"/>	D	angular large particles that are poorly sorted, few pore spaces
5.5 shale [hint]	<input type="text"/>	E	gravel- and sometimes boulder-sized particles that are poorly sorted and rounded, few pore spaces

6.

[Hint]

If shale is such a common rock in the sedimentary rock world, why isn't it as prominently exposed at the surface as sandstone?

- Shale crumbles easily, causing increased mechanical weathering, whereas sandstone resists weathering more effectively.
- Shale resists weathering more effectively, whereas sandstone crumbles easily, causing increased mechanical weathering.
- Shale has easily broken, highly reactive minerals, whereas sandstone has harder-to-break minerals.
- Shale dissolves in water, whereas sandstone dissolves only if enough carbonic acid is present in the water.

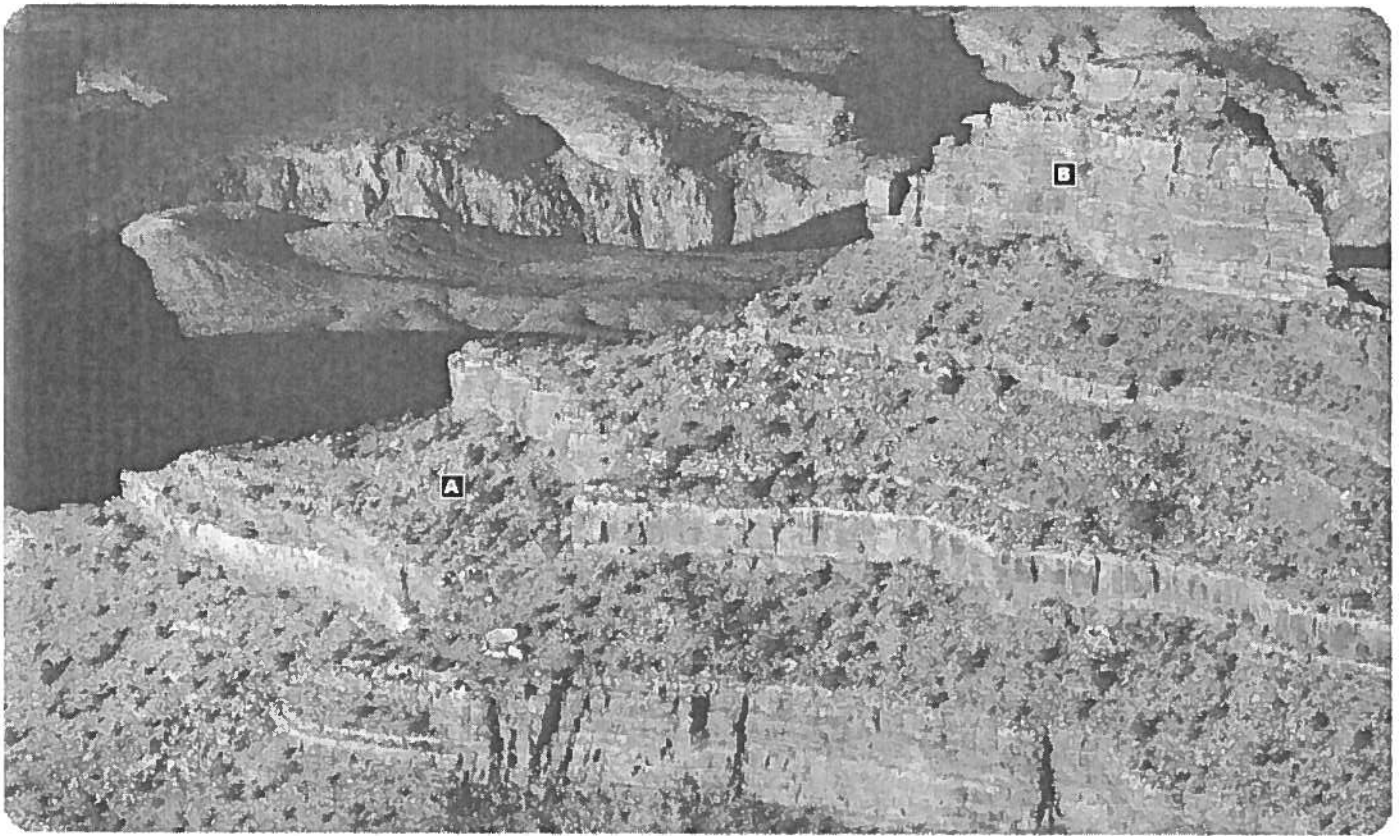
7.

Select the answer that lists the common detrital sedimentary rocks in order of increasing particle size.

- sandstone, shale, conglomerate
- conglomerate, sandstone, shale
- shale, conglomerate, sandstone
- shale, sandstone, conglomerate
- sandstone, conglomerate, shale

8.

Label the layer with the appropriate rock type based on how the layer has weathered and mass-wasted:



For each item below, use the pull-down menu to select the letter that labels the correct part of the image.

8.1 sandstone [hint] ⌵

8.2 shale [hint] ⌵

9.
[Hint]

Using the figure below of eolian dunes, found at Great Sand Dunes National Monument in Colorado, indicate the direction the wind is blowing using the shape/symmetry of the dunes.



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- to the left
- to the right
- toward you
- away from you

10.

Which of the following is a feasible explanation as to why quartz sandstone is an excellent use of "uniformitarianism" (presented in Chapter 1)?

- Layers of sand-size quartz-rich sediment found in a 10-million-year-old sandstone are virtually identical to layers at a modern beach, so in about 10 million years from now, the sandstone will weather into a beach environment.
- Layers of sand-size quartz-rich sediment found today at the beach are virtually identical to layers in a 10 million-year-old sandstone, thus suggesting the location of the sandstone was the location of a beach 10 million years ago.
- Layers of sand-size quartz-rich sediment found on a beach 10 million years ago implies that sediment on a beach today should be identical to those 10 million-year-old layers, thus suggesting the location of the beach will have an outcrop of sandstone in about 10 million years.

Clear Answers / Start Over

Submit Answers for Grading

Some questions in this exercise may have more than one correct answer. To answer such questions correctly, you must select all the correct answers. Also note that answer choices in this exercise appear in a different order each time the page is loaded.

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