

# AIM | What are sedimentary 8 | rocks?

KEY

The tallest mountain in the world is Mount Everest, in Asia. People have risked their lives trying to climb it. But someday, Mount Everest will be completely worn away. It is wearing away right now, a little bit at a time. It will take millions of years for Mount Everest to wear away, but it will happen.

There are forces in nature that keep breaking rocks into smaller and smaller pieces. These broken pieces are called fragments. Pebbles, gravel, sand, and clay are some kinds of rock fragments.

Fragments are moved about by water, wind, and frozen water called *glaciers* [GLAY sherz]. The fragments settle in a new place and begin to pile up. The settled fragments are called *sediment* [SED uh ment]. Sediment is always laid down in flat layers. *Sediment can harden into solid rock.*

Rock that is formed from hardened sediment is called *sedimentary* (sed uh MENT ree) *rock*. Sediment can harden into sedimentary rock in two ways:

1. from the pressure of its own weight, or
2. by cementing. Minerals dissolved in water "glue" the sediment together.

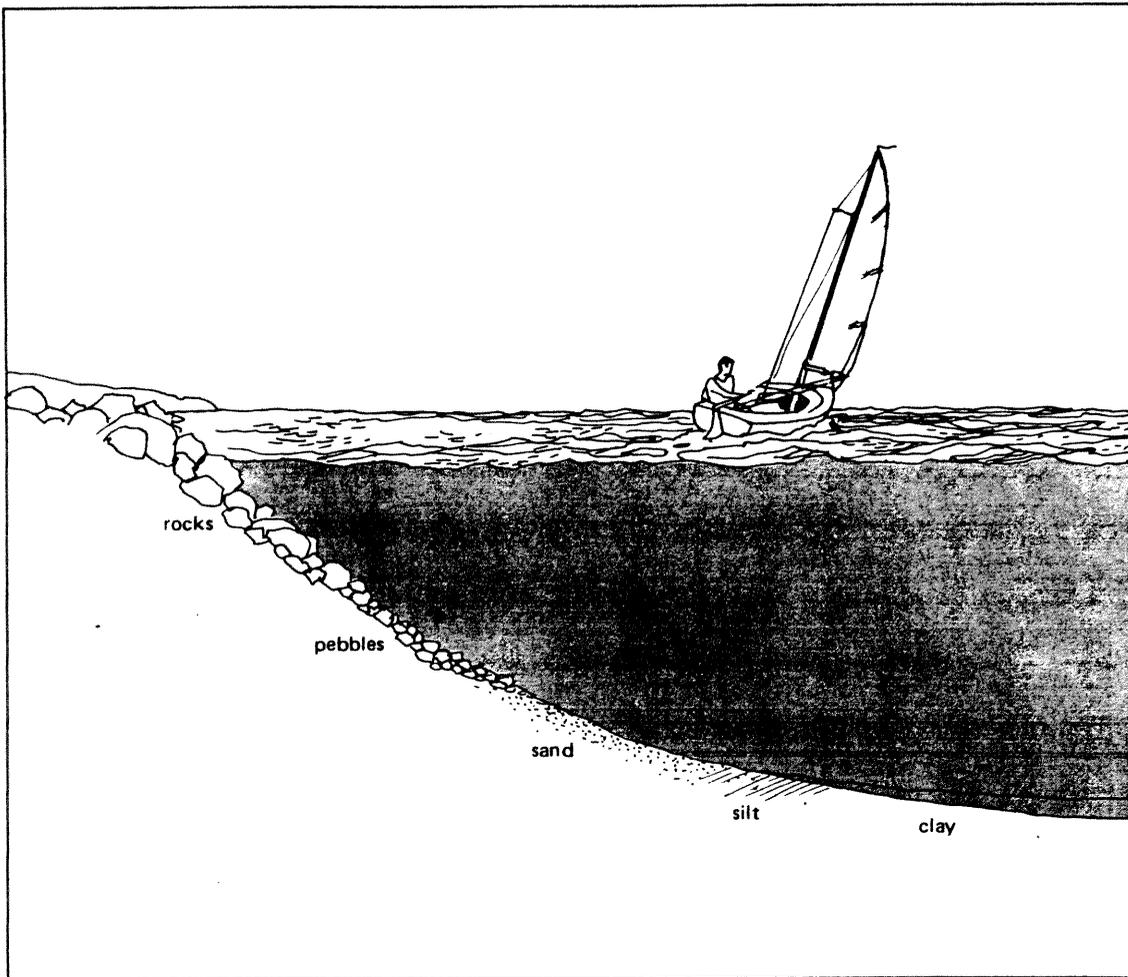
Most sediment builds up under water. The thickest sediment is found where rivers empty out into shallow oceans. Some sediment comes from living matter, such as coal that has hardened from dead trees.

Different kinds of sediment form different kinds of sedimentary rocks.

NAME \_\_\_\_\_

# WHAT DOES THE PICTURE SHOW?

Look at the picture. Then answer the questions.

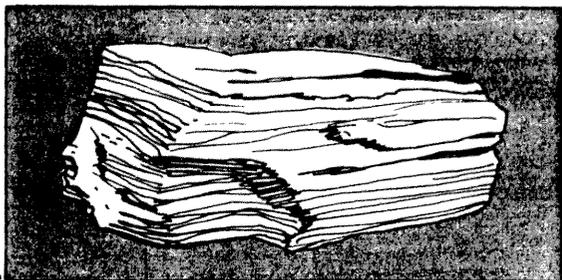


A.

Rivers carry much sediment. When a river empties into a lake or ocean, it drops its sediment. The heaviest sediment settles first. Then the lighter sediment settles.

1. List the kinds of sediment this diagram shows. rocks, pebbles,  
sand, silt, clay
2. a) Which sediment is the heaviest? rocks  
b) Which is the lightest? clay  
c) Which was laid down first? rocks  
d) Which was laid down last? clay
3. Choose one. Put a check (✓) on the line before the correct statement.  
 a) Oceans supply water to rivers.  
 b) Rivers supply water to oceans.

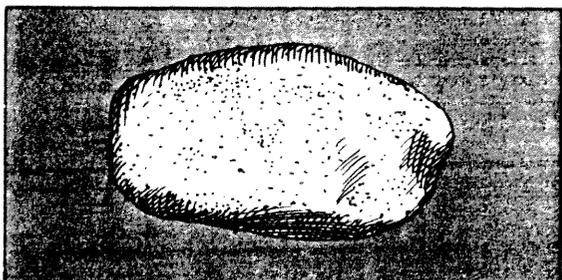
## EXAMPLES OF SEDIMENTARY ROCKS



B.

*Shale* is a sedimentary rock. It was formed from mud and clay pressed together by nature.

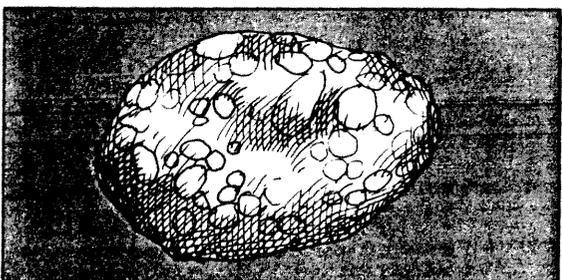
Shale is a very soft rock. It breaks easily.



C.

*Sandstone* was formed in water from sand grains. Minerals dissolved in the water cemented the grains together.

Sandstone grains are held together loosely. They can be rubbed off easily.

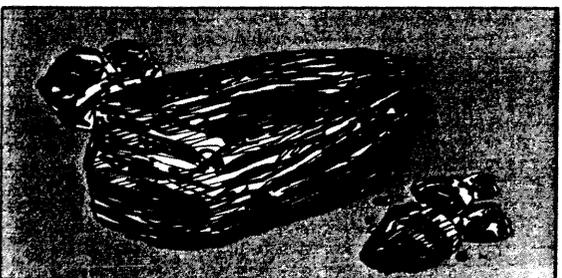


D.

A *conglomerate* is a sedimentary rock. It is made of grains of sand and pebbles.

The grains were cemented together by minerals dissolved in water.

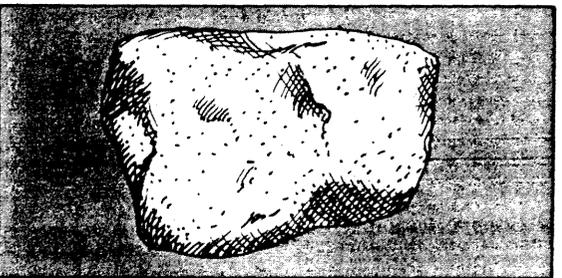
Conglomerate is also called *puddingstone*.



E.

*Soft coal* is considered a sedimentary rock.

Soft coal was formed from layers of dead plants.



F.

*Limestone* is a sedimentary rock formed from the shells of dead sea animals.

NAME \_\_\_\_\_

## COMPLETING SENTENCES

Complete the sentences with the choices below.

cementing  
sand  
fragments  
wind  
under water  
silt

moving water  
pebbles  
clay  
sizes  
shale  
glaciers

limestone  
sedimentary  
breaks up  
gravel  
pressure

1. Nature breaks up big rocks into smaller and smaller pieces.
2. Broken pieces of rock are called fragments.
3. Rock fragments make up the sediment for a group of rocks called sedimentary rocks.
4. Sediment comes in different sizes.
5. Examples of sediment are: sand, silt, mud, clay, and gravel.
6. Sediment is moved by wind, glaciers, and moving water.
7. Fragments harden into sedimentary rocks in two ways. The two ways are from pressure and by compaction.
8. The sedimentary rock made from mud and clay is called shale.
9. The sedimentary rock made from the shells of sea animals is called limestone.
10. Most sedimentary rocks were formed under water.

## MATCHING

Match the two lists. Write the correct letter on the line next to each number.

1. c sedimentary rocks
2. e limestone
3. d shale
4. b in water
5. a sediment

- a) anything that settles
- b) where most sediment builds up
- c) group of rocks formed from rock fragments
- d) formed from mud and clay
- e) formed from shells of sea animals

**TRUE OR FALSE** Write T on the line next to the number if the sentence is true.  
Write F if the sentence is false.

1.  F  All rocks are sedimentary rocks.
2.  F  Sedimentary rocks came before igneous rocks.
3.  T  Sedimentary rocks are made of rock fragments.
4.  T  Most sedimentary rocks were formed under water.
5.  F  All sedimentary rocks were hardened by natural cement.
6.  F  Nature only wears things down. *(Think about this one carefully.)*
7.  T  Sedimentary rocks can come from other sedimentary rocks.
8.  F  Sand fragments settle faster than pebbles do.
9.  T  Most fragments are carried away by moving water.
10.  F  Sediment is laid down in slanted layers.

**WORD SCRAMBLE** Unscramble each of the following to form a word or term that you have read in this Aim.

1. GENTSFRAM
2. MESTDINE
3. SEENOTMIL
4. VAGLER
5. HALES

fragments  
sediment  
limestone  
gravel  
shale

**REACHING OUT** What are some of the forces in nature that wear down rocks?

weathering, water, wind, ice, etc.

NAME \_\_\_\_\_

Key

# AIM | What are metamorphic 9 | rocks?

Many things we use are changed over from what they were to begin with. Glass, plastic and synthetic fabrics do not look like the raw materials they came from. Many of the things we use were changed. Some things were changed by heat and pressure.

Heat and pressure can change many things. They can even change rocks. The name for changed-over rocks is *metamorphic* [met uh MOR fik] rocks. Metamorphic comes from Greek words meaning "change" and "form."

Metamorphic rocks are formed deep in the earth where there is high temperature and great pressure. The heat and pressure change one kind of rock into another kind of rock. The new rocks become harder than the old rocks. They also look different. Sometimes the minerals in the rocks change too.

The pressure that changes rocks can also tilt and fold them. Folding can lift rocks and make them into high mountains.

There are many kinds of metamorphic rocks. *Slate* is a metamorphic rock. Slate is changed-over shale. *Marble* is another metamorphic rock. Marble is changed-over limestone.

NAME \_\_\_\_\_

**COMPLETING SENTENCES** Complete the sentences with the choices below.

slate ✓  
great pressure ✓  
look ✓  
sedimentary ✓

marble ✓  
harder ✓  
mountains ✓  
great heat ✓

igneous ✓  
fold ✓  
metamorphic ✓

1. Rocks formed from melted minerals are called igneous rocks.
2. Rocks formed from sediment are called sedimentary rocks.
3. Changed-over rocks are called metamorphic rocks.
4. Two things that can change rocks to other kinds of rocks are great heat and great pressure.
5. Pressure makes rocks become harder than they were.
6. Heat and pressure can change the way rocks look.
7. Pressure on rocks can make rocks tilt or fold.
8. Folded rocks can become mountains.
9. Heat and pressure change shale to slate.
10. Heat and pressure change limestone to marble.

**MATCHING** Match the two lists. Write the correct letter on the line next to each number.

1. c metamorphic rocks
  2. e heat and pressure
  3. a slate
  4. d marble
  5. b deep in the earth
- a) was once shale
  - b) place where metamorphic rocks form
  - c) changed-over rocks
  - d) was once limestone
  - e) change rocks

NAME \_\_\_\_\_

**WHICH CAME  
FIRST?**

In each of the pairs below, one of the things came from the other. On the line next to each pair, write the name of the thing that came *before* the other.

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1. sand or sandstone? sand
2. quartzite or sandstone? sandstone
3. shale or mud? mud
4. slate or shale? shale
5. granite or gneiss? granite
6. marble or limestone? limestone
7. plants or soft coal? plants
8. hard coal or soft coal? soft coal
9. diamond or coal? coal
10. limestone or tiny sea animals? tiny sea animals
11. sedimentary rocks or sediment? sediment

NAME \_\_\_\_\_