What are sedimentary rocks?

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. The fragments settle in a new place and begin to pile up. The settled fragments are called sediment. Sediment is always laid down in flat layers. Sediment can harden into solid rock.

Rock that is formed from hardened sediment is called sedimentary 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.
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.

2. a) Which sediment is the heaviest?
   b) Which is the lightest?
   c) Which was laid down first?
   d) Which was laid down last?

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

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.

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.

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.

Soft coal is considered a sedimentary rock.

Soft coal was formed from layers of dead plants.

Limestone is a sedimentary rock formed from the shells of dead sea animals.
Complete the sentences with the choices below.

**COMPLETING SENTENCES**

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**, **pebbles**, **clay**, **shale**, **sedimentary**, and **gravel**.
6. Sediment is moved by **wind**, **under water**, **silt**, **sand**, and **glaciers**.
7. Fragments harden into sedimentary rocks in two ways. The two ways are from **silt** and by **cementing**.
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. ______ sedimentary rocks  a) anything that settles
2. ______ limestone  b) where most sediment builds up
3. ______ shale  c) group of rocks formed from rock fragments
4. ______ in water  d) formed from mud and clay
5. ______ sediment  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.

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>✔</td>
<td>All rocks are sedimentary rocks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>❌</td>
<td>Sedimentary rocks came before igneous rocks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>✔</td>
<td>Sedimentary rocks are made of rock fragments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>✔</td>
<td>Most sedimentary rocks were formed under water.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>❌</td>
<td>All sedimentary rocks were hardened by natural cement.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>✔</td>
<td>Nature only wears things down. <em>(Think about this one carefully.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>✔</td>
<td>Sedimentary rocks can come from other sedimentary rocks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>✔</td>
<td>Sand fragments settle faster than pebbles do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>❌</td>
<td>Most fragments are carried away by moving water.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>✔</td>
<td>Sediment is laid down in slanted layers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>GENTSFRAM</td>
<td>fragment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>MESTDINE</td>
<td>sediment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>SEENOTMIL</td>
<td>limestone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>VAGLER</td>
<td>gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>HALES</td>
<td>shale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

weathering, water, wind, ice, etc.
AIM | What are metamorphic 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.
COMPLETING Complete the sentences with the choices below.

SENTENCES

slate □ marble □ igneous □
great pressure □ harder □ fold □
look □ mountains □ metamorphic □
sedimentary □

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

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

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

NAME
52
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.

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 ____________________________