Weekly Question

How was the Grand Canyon formed?

One of Earth's most spectacular natural features is the mile-deep Grand Canyon in northern Arizona. It is also one of the best examples of erosion, where rock or earth is carried away, and of weathering, where rock is worn away or broken down. Looking from the rim of the canyon to the Colorado River below, visitors can see many layers of different kinds of rock. Some of the rocks are as much as two billion years old!

A. Look at the drawing above. Write the letter of the layer that answers each question.

1. Which layer of rock was probably formed 2 billion years ago? ________

2. Which layer of rock was formed most recently? ________

B. Write whether each feature described below is due to weathering or erosion.

1. a river's bank becomes wider

2. canyon walls made wider by windblown sand

3. jagged rocks that have become smooth

4. a rock found a long way from others like it

Vocabulary

erosion
  ee-ROH-zhun
  the moving of rocks and soil by water, wind, ice, or gravity

weathering
  WETH-er-ing
  the breaking down or wearing away of rocks by water or wind
The Grand Canyon began forming five or six million years ago, after forces within Earth uplifted land and formed the Rocky Mountains. When rain fell, water ran down the sloping land and began to erode the soil, making **channels**. These channels eventually became the path for the Colorado River. Over millions of years, the Colorado River kept eroding the soil and carving out the canyon.

A. Number in order the events that formed the Grand Canyon.
   - Uplift began forming mountains.
   - As the channels got bigger and deeper, a river formed.
   - Eventually, a deep canyon was formed with a river at the bottom.
   - Water running off the land cut channels in the ground.

B. Check the box next to the thing in each pair that formed first.
   1. □ Rocky Mountains or □ Colorado River
   2. □ Colorado River or □ channels in the ground

C. Use the vocabulary words to complete the sentences.
   1. Mountains are formed when land is _________________.
   2. Canyons start out as ________________ carved by water.

Vocabulary:
- **channels**: CHAN-ulz
cuts in the ground made by moving water, such as a river or stream
- **uplifted**: UP-lift-id
pushed up

5 million years ago

Today
Weekly Question
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You know that erosion from the Colorado River was the major force that formed the Grand Canyon. But water also played a role in forming the canyon. Water seeped into cracks in the rocks and froze in the winter. When the water froze, it expanded and pushed the rocks apart. Then the pull of gravity caused sections of the canyon wall to collapse, making the canyon wider. Wind also shaped the canyon. Bits of sand, blown by wind, chipped away at the canyon walls and weathered the rock. All these forces are at work even today, continually changing the canyon.

A. Study the drawings. Underline the sentences in the passage that describe what the pictures show.

B. List the forces of erosion and weathering mentioned in the passage.

1. ____________________  3. ____________________
   ____________________  4. ____________________

Talk
What have you seen in nature that is the result of erosion or weathering? Think about places you have been or have seen in books or on television.
Weekly Question

How was the Grand Canyon formed?

The Colorado River has always been important to the Grand Canyon ecosystem. When the river flooded, it helped native fish by carrying away rocks and sand that blocked parts of the river. Floodwaters deposited sand along riverbanks, building sandbars that became plant and animal habitats.

In 1963, water from the Colorado River was dammed up to create the Glen Canyon Dam. This meant that the natural flooding stopped. Scientists later realized that without flooding, the plants and animals living in the Grand Canyon suffered. Now the dam is occasionally opened to release a lot of water. This is done to preserve the ecosystem in the Grand Canyon.

Below are two problems created by the Glen Canyon Dam. Explain how flooding might solve each problem.

1. The saltcedar is a shrub that, if left undisturbed, grows so thick that it stops other plants from growing. Saltcedar also traps salts from the soil and water, making the area around the shrub too salty for freshwater fish and amphibians to live.

2. The razorback sucker is a fish that lays its eggs in sandbars. It gets most of its food from riverbeds that have been churned up by a lot of flowing water. This fish is currently endangered because it cannot find enough food or places to reproduce.