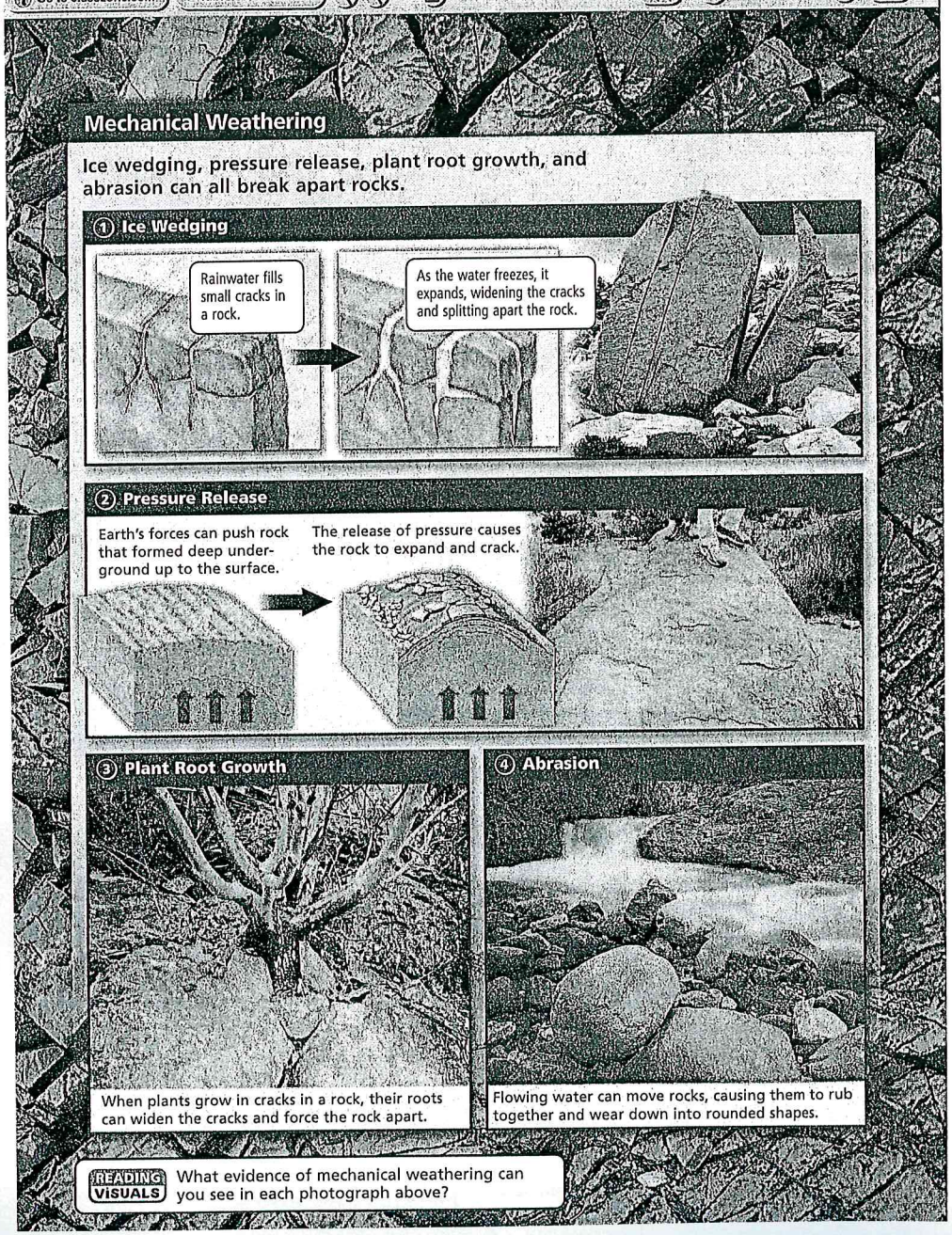


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## Mechanical weathering produces physical changes in rocks.

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Learn more about weathering.

If you smash a walnut with a hammer, you will break it into a lot of small pieces, but you will not change what it is. Even though the pieces of the walnut are no longer connected together, they are still composed of the same materials. **Mechanical weathering**—the breaking up of rocks by physical forces—works in much the same way. In this natural process, physical forces split rocks apart but do not change their composition—what they are made of. Ice wedging, pressure release, plant root growth, and abrasion can all cause mechanical weathering.

READING TIP
The word *expand* means "to increase in size or volume."

1. **Ice Wedging** When water freezes, it expands. When water freezes in the cracks and pores of rocks, the force of its expansion is strong enough to split the rocks apart. This process, which is called ice wedging, can break up huge boulders. Ice wedging is common in places where temperatures rise above and fall below the freezing point for water, which is 0°C (32°F).

2. **Pressure Release** Rock deep within Earth is under great pressure from surrounding rocks. Over time, Earth's forces can push the rock up to the surface, or the overlying rocks and sediment can wear away. In either case, the pressure inside the rock is still high, but the pressure on the surface of the rock is released. This release of pressure causes the rock to expand. As the rock expands, cracks form in it, leading to exfoliation. **Exfoliation** (ehks-FOH-lee-AY-shuhn) is a process in which layers or sheets of rock gradually break off. This process is sometimes called onion-skin weathering, because the rock surface breaks off in thin layers similar to the layers of an onion.

3. **Plant Root Growth** Trees, bushes, and other plants may take root in cracks in rocks. As the roots of these plants grow, they wedge open the cracks. The rock—even if it is large—can be split completely apart.

4. **Abrasion** Water can wear down rocks on riverbeds and along shorelines by abrasion. **Abrasion** (uh-BRAY-zhuhn) is the process of wearing down by friction, the rubbing of one object or surface against another. The force of moving water alone can wear away particles of rock. Water also causes rocks to tumble downstream. The tumbling rocks wear down as they grind against the riverbed and against each other. Ocean waves beating against a rocky shore also wear down rocks by abrasion.

CHECK YOUR READING
How does moving water weather rocks?