

Why cliffs are different shapes

The shape of cliffs is often related to the hardness of the rocks.

Q1. In this diagram there are some thin, dark ledges of rock. Are they harder or softer than the other rock?



Q2. As the soft rock at A gradually wears away, what happens to the ledge at B?



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Q3. When rock falls from the cliff, where will it go and what will happen to it?



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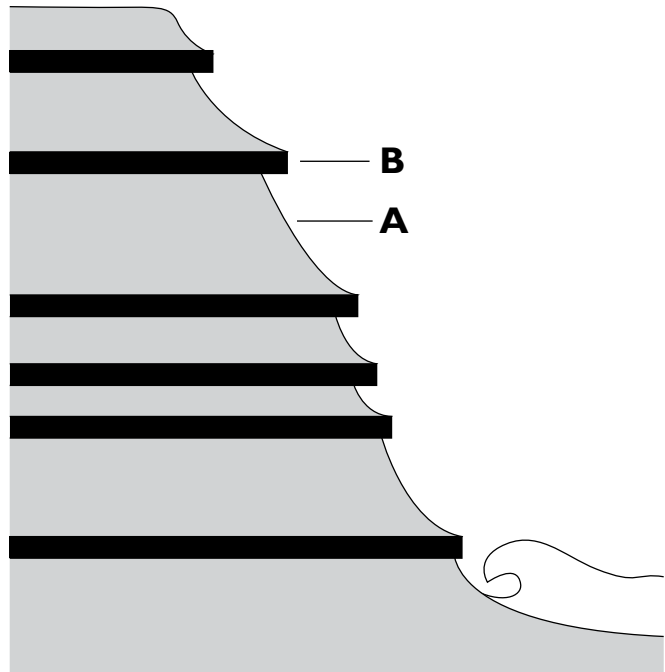
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Answers

1. They are harder.
2. It will collapse under its own weight and under the weight of the layer above it.
3. **When material falls from a cliff it will fall to the bottom of the cliff and make a jumble of rock. At first this rock will have sharp edges, but as the waves attack it, these edges will be rounded off until the rock becomes boulders. In time the boulders will be worn completely away.**

Notes

There are many differences in cliff shape, and they almost all relate to differences in rock hardness.

If rocks are made of large blocks, they behave like tall walls. Little will happen until the bottom of the cliff is undercut and then the whole slab of cliff will collapse. This is shown on Picture 1, page 16 of The Coast Book. If the material is very soft, the main influences on the cliff will include the wetness of the material. Saturated material has very little strength. Many soft cliffs fill with water in winter and then collapse.

The most interesting cliffs are those that have alternating bands of soft and hard rock. Here the soft materials tend to fall away, often due to the effects of strong winds. Frost shatters the rock higher up the cliffs while wave action erodes from below. The whole cliff is prevented from collapsing by the ledges of hard rock. These often have considerable strength and so can stand out from a cliff, which is what makes such cliffs look like natural staircases.