

# Practical work: Investigate cliff steepness

You will need some very dry sand, a little water and a tray for this work.  
You are going to explain why headlands look different.

1. Make the dry sand into as steep a pile as possible. Why can't you get it to form a steep slope?



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2. Make the sand damp (not wet) and start again. Can you now make a headland with a vertical cliff? Explain what the water is doing.



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3. Very carefully pull away the sand from the base of the 'cliff'. You are imitating the action of waves. What happens eventually?



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## Answers

1. **Because weak materials like sand always collapse to the same angle of rest. Cliffs with soft rocks will often have a low angle of rest.**
2. **The water acts like a cement, holding the sand together.**
3. **At first children will find they can undercut the cliff, but eventually the face will collapse.**

## Notes

*The objective is to ensure that children begin to see the real world in terms of models. They can choose between soft rock (dry sand) that collapses or rock that is cemented together (in this case by water).*

*You could extend the practical to investigate how cliffs of different heights behave, and whether a low cliff can be undercut more than a tall one. You could also demonstrate that the material that collapses in front of a tall cliff has a greater volume than the amount that collapses in front of a low cliff. It would take similar waves longer to remove the large quantity of debris that falls, and so tall cliffs should retreat more slowly than low ones.*