Sciencea-z

CHANGING LANDFORMS
Erosion

Investigation File

Sea Stacks

Erosion of rocky cliffs by ocean waves formed these towering sea stacks along the coast of Victoria, Australia. They are called the Twelve Apostles.

a sea stack in Ireland

Sea Stacks by the Seashore

Do you like to visit the beach? Next time you do, don't just swim. Watch for evidence of erosion, such as sea stacks.

Ocean water is a natural force of erosion. It moves in waves that have energy. When they reach land, the waves hit the shore with great force. They pound like hammers against rocky cliffs, even more so during a storm. The waves break off pieces of rock and sediment from the cliffs. This process is an example of weathering. Next, erosion happens when the waves pick up and carry the broken, loose rocks away.

Gradually over time, erosion changes the shape of the land. Waves full of sediment act like sandpaper and carve steep cliffs. Then they blast sand and pebbles against the cliffs, which causes caves to form. With more erosion, the caves grow until they form arches. Eventually, the tops of the arches collapse, leaving behind rock columns called *sea stacks.*

If you see a sea stack near a beach, enjoy it. It might not be there much longer.

Wowser!

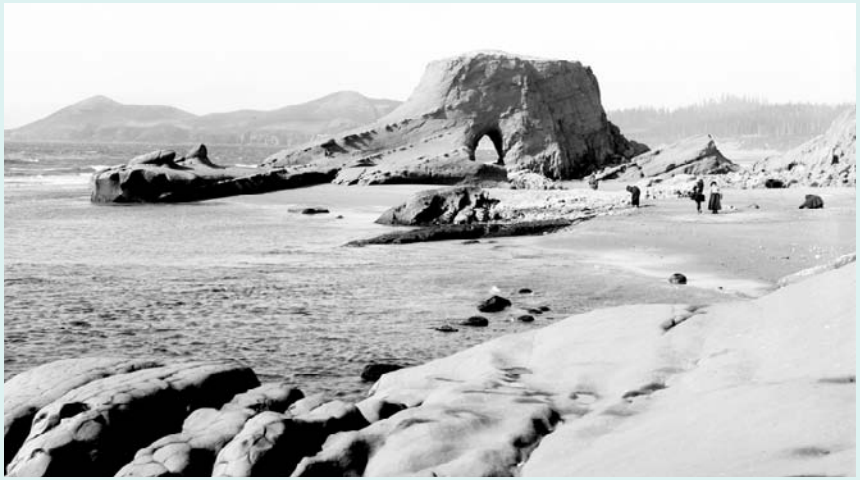
The world's tallest sea stack is Ball Pyramid, which is 562 meters (1,843 ft.) tall. It is located near Lord Howe Island, Australia.

Jump-Off Joe

Imagine you're walking along the shore. You catch sight of Joe up the beach. He's surrounded by water and getting battered by ocean waves. But don't call 911. Jump-off Joe is the name of a famous sea stack!

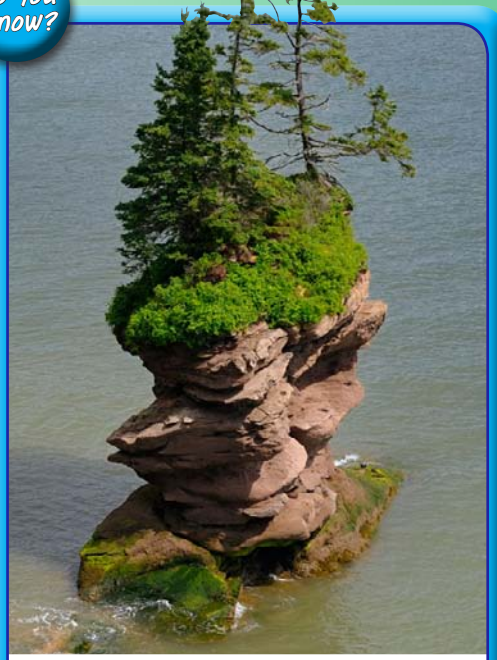
In the 1880s, Joe was part of a shoreline cliff near Newport, Oregon. At about 30 meters (98 ft.) in height, Joe blocked the way along the beach. Travelers were forced to climb the rock and jump off the other side. That's why people called it Jump-off Joe!

But waves stop for no one, and they battered Jump-off Joe. By 1890, erosion had removed much of the rock, changing Joe to an arch. Soon the arch collapsed. Today, the landform is gone. Jump-off Joe was a tough sea stack, but wave erosion was tougher!



Once the arch collapsed, the rest of Jump-off Joe wasn't far behind.

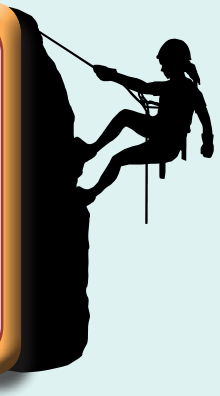
Do You Know?



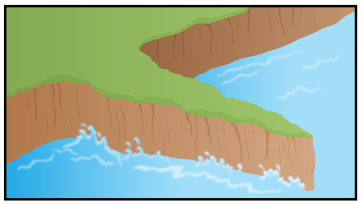
Some sea stacks are home to plants and animals.

Math Moment

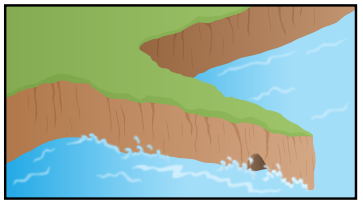
A rock climber can climb 50 meters in 1 hour. How long will it take her to climb a sea stack that is 525 meters tall? Give your answer in hours and minutes.



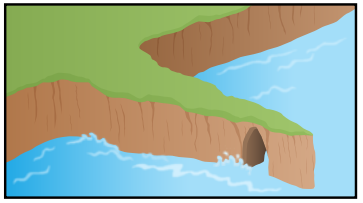
SEA STACK FORMATION



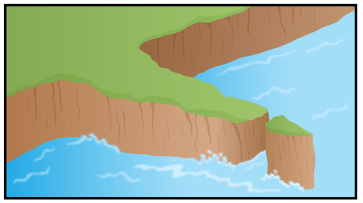
❶ Waves hit a rocky cliff.



❷ Erosion creates a cave in the base of the cliff.



❸ The cave grows and forms an arch.



❹ The top of the arch breaks and leaves behind a sea stack.