

How do waves change the earth's surface?



KEY TERMS

sea cliff: steep rock face caused by wave erosion

sea cave: hollowed out part of a sea cliff

sea arch: gap formed when waves cut completely through a section of rock

sea stack: column of rock remaining after the collapse of a sea arch

LESSON 19 | How do waves change the earth's surface?

Have you ever gone swimming in an ocean? If you have been in the ocean, you probably remember the waves. A wave can knock you down.

The waves in the ocean are very powerful. Even small waves can be very strong, stronger than they look.

Most waves are formed by wind blowing across the water. The stronger the wind, the larger the waves.

Waves change the shoreline. Day and night, waves pound against the shore. Little by little, they break up rocks into small pieces. The pieces are abrasives. They grind away and cut into the shoreline. This wears down the rocks more and particles of sand are formed. The sand is then carried away by waves.

As you have probably guessed, waves not only wear away and erode, they also build. Material carried away from one place is deposited somewhere else.

Waves carry rock particles and other materials away from a shoreline. This material may be deposited at another place. A beach is formed when sand and rock particles are deposited on a shoreline by waves.

Waves move in from the ocean to the shore. However, some ocean water moves along the shore. The water that follows the shoreline is called a longshore current.

Longshore currents can carry sand away from the beach. In addition, shore currents also build up parts of the shoreline.

Waves are always changing the shorelines. They are always causing erosion in some places and building up other places.

WEARING-AWAY ACTIONS BY WAVES

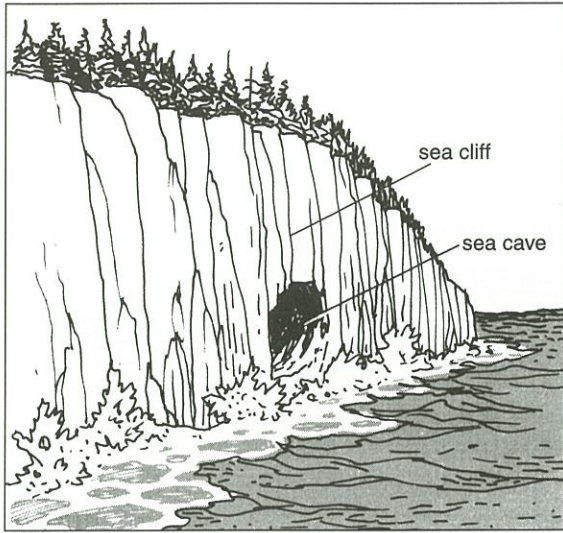


Figure A

Waves pound against the bottom of the rocks on a rocky shoreline. A **sea cliff** is formed. A sea cliff is a steep rock face caused by wind erosion. When waves erode the softer rock in a sea cliff, a **sea cave** is formed.

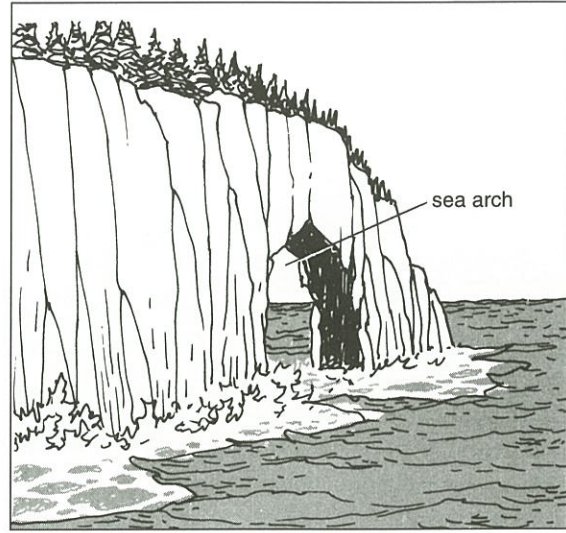


Figure B

Sometimes a sea cave is worn away all the way through the cliff. This "hole" in a cliff forms a **sea arch**. A sea arch looks like a natural bridge.

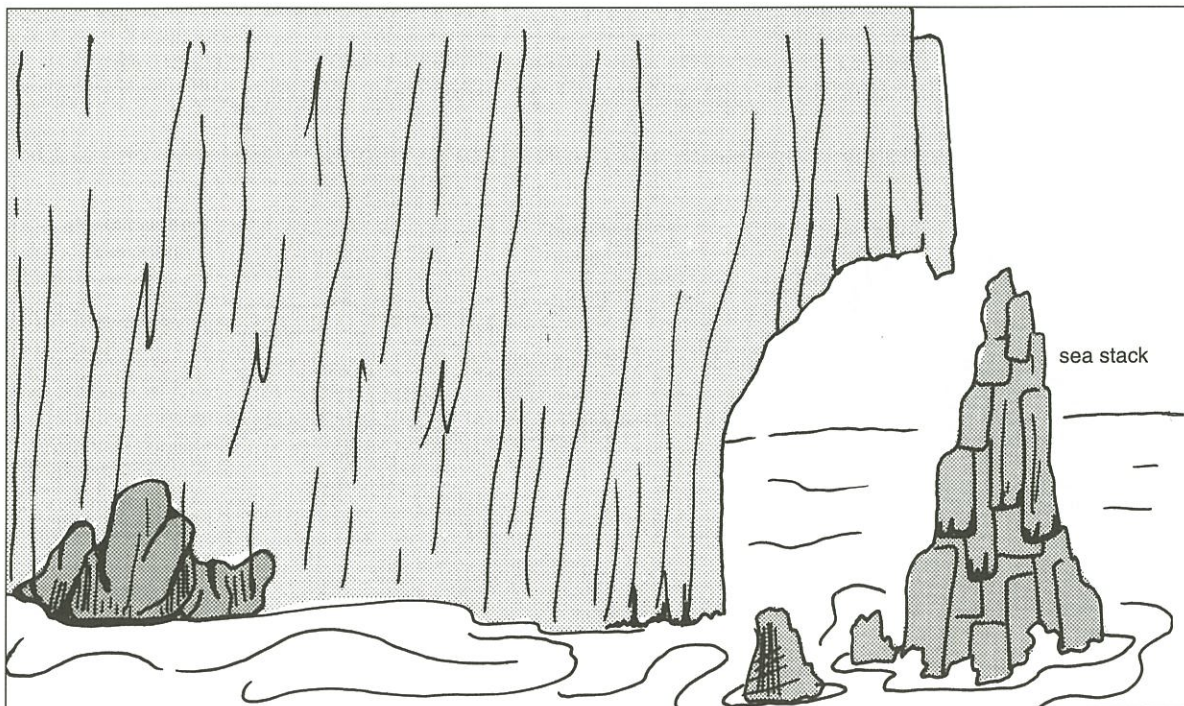


Figure C

In time, the top of a sea arch may fall into the water. The remaining columns of rock are called **sea stacks**.

FILL IN THE BLANK

Complete each statement using a term or terms from the list below. Write your answers in the spaces provided.

towards
sand bars
wind
beaches

along
sea stack
sea arch

lagoon
spits
sea cave

1. Most waves are caused by _____ .
2. Waves can carve out part of a cliff and form a _____ .
3. A sea cave that wears through a cliff is called a _____ .
4. When the top of a sea arch collapses, a _____ is left.
5. Waves move _____ the shore.
6. Longshore currents move _____ the shore.
7. Sediment laid down by waves on shore build _____ .
8. Waves build ridges of sand called _____ .
9. Long shore currents build up _____ .
10. The quiet water between a sand bar and the shore is called a _____ .

MATCHING

Match each term in Column A with its description in Column B. Write the correct letter in the space provided.

	Column A	Column B
_____	1. lagoon	a) caused by wind
_____	2. waves	b) built by waves
_____	3. long shore currents	c) quiet water between the shore and a sand bar
_____	4. beaches	d) spit
_____	5. finger-like land form	e) move along the shore

WHICH CAME FIRST?

In each of the pairs below, one of the things came before the other. On the line next to each pair, write the name of the thing that came before the other.

1. rocks or sand? _____
2. sand or pebbles? _____
3. sea arch or sea cave? _____
4. wind or waves? _____
5. spit or sand? _____
6. beaches or waves? _____
7. sea cliff or sea cave? _____
8. sea cliff or sea stack? _____
9. erosion or fragments? _____
10. sea stack or sea cave? _____

TRUE OR FALSE

In the space provided, write "true" if the sentence is true. Write "false" if the sentence is false.

- _____ 1. Waves only erode.
- _____ 2. Longshore currents only erode.
- _____ 3. Longshore currents move along the shoreline.
- _____ 4. Waves move along the shoreline.
- _____ 5. Beaches are built from material eroded by waves.
- _____ 6. Sea arches are carved by waves.
- _____ 7. All beaches have white sand.
- _____ 8. A lagoon is a body of land.
- _____ 9. Water in a lagoon is very choppy.
- _____ 10. Most waves are caused by wind.

WHAT DOES THE PICTURE SHOW?

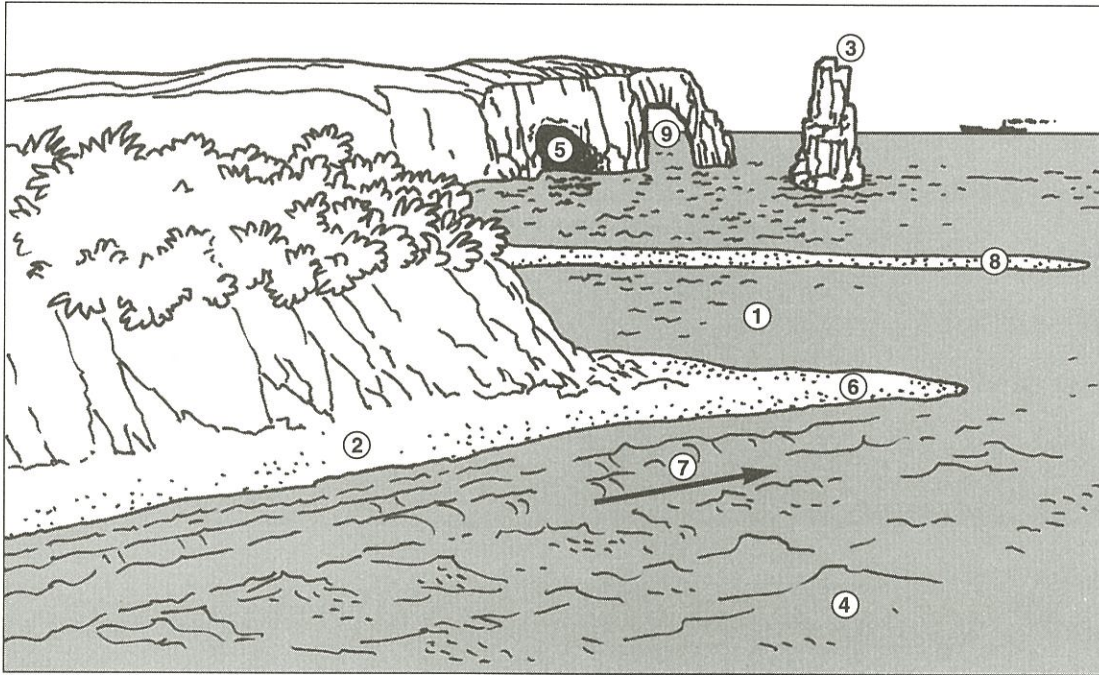


Figure G

Name the features shown above. Search back in the Lesson if necessary.

1. _____
2. _____
3. _____
4. _____
5. _____

6. _____
7. _____
8. _____
9. _____

REACHING OUT

Most waves are caused by wind. What else do you think causes waves?
