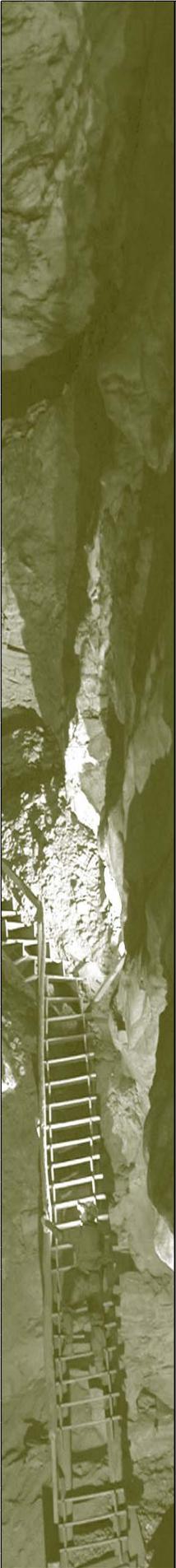


## How Caves Form

# Student Copy





# HOW CAVES FORM

## A CAVES AND KARST WEBQUEST

(To compliment the NPS Views: *Caves and Karst Knowledge Center*)

There are several processes that are at work forming caves and changing karstic landscapes. This activity will serve as an introduction to some common ways that caves and karst are forming all around us.

Enter the Views website by going to the following website:

<http://www2.nature.nps.gov/views/#>

Click on the “**Multimedia Version**” link.

Select the Knowledge Centers link, and then click on “**Explore Caves and Karst**”.

In the Introduction section, select the sidebar for “**Cave and Karst Formation**”.

Use the “**next ->**” link to see different ways that caves and karst form.

Use the information within each formation topic to answer the following questions.

### A. COLLAPSE

1. *Complete the following sentence:*

Collapse is part of cave \_\_\_\_\_ and \_\_\_\_\_.

2. When do the ceilings of cave rooms and passages collapse?
3. The ceilings of water-filled caves may be supported by the buoyant force of the water inside. If this water drains out, why is there a greater potential for the cave to collapse?

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## B. SOLUTION CAVES

1. *Finish the following paragraph.*

Earth movements cause cracks to form in the \_\_\_\_\_, which is the solid rock below the surface. These cracks, which are natural \_\_\_\_\_ for water to seep into the ground, are called \_\_\_\_\_ and \_\_\_\_\_. When the water mixes with the natural acids in the ground, rocks such as \_\_\_\_\_ are dissolved.

2. What remains after the dissolved particles are carried away with the water?

Follow the directions to get to the NOVA video <sup>1</sup>:

**WITHOUT CLOSING THE VIEWS WEBSITE,**

click on “File” and then “New Tab” or “New Window” to open a new window for the internet.

Go to the following website:

<http://www.pbs.org/wgbh/nova/caves/form.html>

Click on “**How Caves Form**”

(It is preferable to use the Flash version, but there is a Non-Flash text only version too.)

Watch the **RAINWATER** video and answer the following questions:

3. What type of cave is the most numerous? \_\_\_\_\_
4. What has created, or fashioned, most of these caves? \_\_\_\_\_
5. Water and carbon dioxide form \_\_\_\_\_ acid.
6. What is a water table?
7. What does the carbonic acid do to the limestone at the level directly below the water table?
8. When does the enlarging of the cave stop?

Return to the **Views Caves and Karst Knowledge Center**, leaving the NOVA site open.

9. Why is most cave formation and enlargement greatest at the water table?

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## C. LAVA CAVES

Return to the **NOVA** website

Click on “**How Caves Form**”

Watch the **LAVA** video and answer the following questions:

1. What is lava?
2. At the deep center of a flowing channel, lava is moving: (Circle one) FAST or SLOW
3. Along the sides of a flowing channel, lava is moving: (Circle one) FAST or SLOW

**Return to the Views Caves and Karst Knowledge Center**

4. What is another name for a lava cave? \_\_\_\_\_
5. *Finish the following paragraph:*

When molten, fluid \_\_\_\_\_ flows out of a volcano, it works its way downhill. In contact with \_\_\_\_\_, the surface of this lava stream cools and hardens into a \_\_\_\_\_. The lava inside remains \_\_\_\_\_, however, and continues to \_\_\_\_\_ downhill. When the molten lava eventually \_\_\_\_\_ out of the interior of the hard-crustled passage, a lava \_\_\_\_\_ or \_\_\_\_\_ remains.

**Without closing** the Views or NOVA websites, go to the **National Park Service** website:

<http://www2.nature.nps.gov/geology/tour/caves.cfm>

6. Name 2 national parks that primary cave features:
7. Name a national park that you could visit to see a lava tube:
8. What national park in California has sea caves?

## D. TALUS CAVES

1. Rockslides and rockfalls produce piles of irregular shaped rocks and boulders. The spaces between these rocks are sometimes big enough to produce a cave-like configuration.

What is the name for these piles of rocks? \_\_\_\_\_

2. Because these types of caves can be formed when rocks break off and fall or slide into narrow canyons, talus caves are also referred to as:

## E. SEA CAVES

1. What are sea caves?
2. *Finish the following sentence about the formation of sea caves:*

The actions of \_\_\_\_\_ pounding against rocks that line the shores of \_\_\_\_\_ and large \_\_\_\_\_ form sea caves.

**Return to the NOVA website**

Click on “**How Caves Form**”

Watch the **WAVES** video and answer the following questions:

3. Where is the abrasive action of the waves concentrated?
4. Sea caves are typically found in what type of rock:
5. Where are sea caves less likely to be formed?

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## F. ICE CAVES

1. Ice caves that form in ice are also called:
  2. Ice caves that are formed in rock that contain ice all year round are called:
- 

## G. SANDSTONE CAVES

1. Early people used sandstone caves for \_\_\_\_\_.  
Why?
2. Define *contact*.
3. Fluids, like groundwater, move through sandstone, easily. However, when the water reaches a layer of shale, it cannot pass through because the pore spaces are too small.

When this happens, what is groundwater forced to do?

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## H. TECTONIC CAVES

1. *Finish the following sentence about the formation of tectonic caves.*

The action of \_\_\_\_\_ form natural \_\_\_\_\_  
in rock that can be considered \_\_\_\_\_.

Return to the NOVA website

Click on “How Caves Form”

Watch the **BACTERIA** video and answer the following questions:

## I. CAVES FORMED BY BACTERIAL PROCESSES

1. Bacteria dissolve rock to form caves by producing a highly corrosive \_\_\_\_\_.
2. Why are these bacteria also referred to as *extremophiles*?
3. What do these bacteria feed off of?
4. As the bacteria feed, what type of gas do they produce?
5. Some bacteria, such as those living in Lechuguilla Cave of Carlsbad Canyons National Park, live within the caves themselves.

What are 2 things these cave dwelling bacteria feed on in the caves?

- 1.)
- 2.)

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<sup>1</sup> The NOVA video on **How Caves Form**, by Rick Groleau, was found on the NOVA website: <http://www.pbs.org/wgbh/nova/>. This Web site was produced for PBS Online by WGBH; Web site © 1996-2006 WGBH Educational Foundation. NOVA is a trademark of WGBH.