

# Caves & Karst *Natural Inquirer* • Reflection Section Answer Guide

## A Tale of Two Caves

### Introduction

Following the discovery of Hurricane Crawl Cave, scientists mapped the cave and its passages. Why is this an important first step when studying caves? *Students may have individual answers to this question. Mapping the cave and its passages is an important first step for numerous reasons. First, mapping the cave enables the scientists to navigate the cave carefully and safely, and to document important features. Once scientists know how to safely travel in the cave, and where important cave features are located, they can then plan research.*

Explain in your own words the question the scientists wanted to answer in this research. *The students may have individual answers to this question. However, students should be able to rephrase the scientists' question stated at the end of the Introduction.*

### Methods

The scientists repeated a dye trace. How can scientists benefit from confirming the results of a previous study? What did they do to gather new information?

*Students may have individual answers to this question. Scientists often repeat scientific methods to confirm that previous studies were correct. This is especially important if scientists feel that previous research, or research methods, somehow differs from what they are doing in their own research. For example, repeating methods with new technologies could provide new insight. The scientists in this research gathered new information by conducting a dye trace on other nearby streams to see if they went through the cave.*

Review Figure 9, focusing specifically on the four transects. What do you notice about these transects? How are they similar or different? Why would the scientists choose these areas for transects to collect data?

*Students may have individual answers to these questions. Students may notice that the transects go through various features of the cave, but each one passes through the wide, upper level and narrow, lower level. The transects are somewhat evenly spaced across the length of the cave. The similarities and differences between the four transects are one reason the scientists chose them for transect locations. The scientists also likely chose the transect locations based on the ability of the scientists to reasonably access the location. Students may realize that caves can be difficult to access, so transects needed to be areas the scientists could reliably study.*

### Findings

The scientists found additional streams that began inside the cave. How do you think streams form inside the cave? Do you think these streams contributed to the cave development? Why? (Hint: Think about the water cycle.)

*Students may have individual answers to these questions. However, students should realize that the water cycle includes groundwater. Groundwater is very important in the formation of caves, and some cave streams, which are beneath the surface of the earth, are groundwater. As students learned in "Thinking About the Environment," water is essential in the formation of caves. It's likely these cave streams, as well as other cave streams, contributed to the formation of Hurricane Crawl Cave.*

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Are you surprised that the direction of water flow is similar between the past and present? Why or why not?

*Students may have individual answers to these questions. Students should realize, however, that caves and the water that flows through caves, is a part of the wider water cycle. As water flows, it flows downhill under the influence of gravity. Students may assume that the land has had similar topography for many years, and therefore has flowed in the same direction (downhill) for some time.*

### Discussion

The scientists determined that sediment was a major factor in differences between Hurricane Crawl and Crystal Caves. Do you think sediment has a role in the formation of caves? If so, why? *Students may have individual answers to this question. Students may realize that sediment could cause blockages in the passages of coves. Alternatively, students may remember that sediment could be carried through the cave with water and cause erosion as the sediment comes into contact with the cave passages.*

Why do you believe it is important to know about how caves formed?

*Students may have individual answers to this question. Students may note that information about cave formation could provide insights about the history of a location, especially related to geology. Cave formation is also closely related to the water cycle, and therefore, could provide new information about the water cycle in a location.*