Name _____ Date _____



**SC.5.N.2.1** Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.

# Scientific Investigations

## What All Scientists Do

Science is the study of the natural world. As a result, scientists try to explain how and why things happen in the natural world. Scientists use a variety of skills, including as observing, information collecting, comparing similarities and differences, and conducting investigations.

## Observations and Investigations

A scientist's task begins with observing an unknown that needs more information to be explained. In order to answer this unknown, a scientist poses a question that can be answered through an investigation. An investigation is a procedure is carried out to carefully observe, study, or test something in order to find out more about it. A procedure is a set of steps a scientist follows during an investigation. The purpose of the investigation is to gather information, called **evidence**. Scientists think about what the evidence means, or what they can infer from the evidence.

## Conclusions Based on Evidence

An **opinion** is a belief or judgment. It doesn't have to be proved or backed up with evidence. Opinions should not affect how scientists do investigations or how they draw conclusions.

A scientist should draw conclusions from the results of their investigations. Any conclusion must be backed up with evidence. It is important for there to be enough evidence to support a conclusion.

There are many ways to communicate, or share, the results of their investigations. It is important to communicate clearly so that others can repeat the investigation. Also, scientists can compare their results with those of others. They can expand on one another's ideas. In these ways, scientific knowledge can grow.

Name _____ Date _____

Benchmark Review
SC.5.N.2.1

# Student-Response Activity

❶ Define the following terms:

opinion _____

_____

investigation _____

_____

observation _____

_____

evidence _____

_____

conclusion _____

_____

❷ Describe how an incorrect conclusion might be drawn from incomplete or premature evidence.

_____

_____

_____

❸ A student makes a hypothesis that the water on the outside of the pan evaporates faster than on the inside. Describe an investigation the student could use to test this hypothesis.

_____

_____

_____

_____

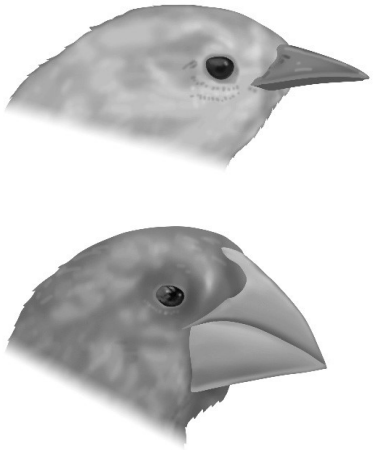
_____

_____

# Benchmark Assessment SC.5.N.2.1

## Fill in the letter of the best choice.

**1** If an investigation was done using these birds, which is the **best** possible conclusion?



Ⓐ Since the bird on the top weighs more, it flies faster.

Ⓑ The bird on the bottom is more attractive.

Ⓒ The bird on the bottom flew from perch A to perch B faster over 10 trials, so it flies faster.

Ⓓ The bird on the top flew from perch A to perch B faster one time, so it flies faster.

**2** Which is an opinion?

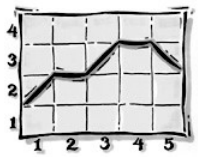
Ⓕ The boiling point of water is 100 °C.

Ⓖ Blue is the best color for parrot fish.

Ⓗ Bats use sonar to fly at night.

Ⓘ The ball rolled 10.2 feet over four tries.

**3** For what can scientists use the data in the graph?




Ⓐ evidence

Ⓑ opinion

Ⓒ conclusion

Ⓓ investigation

**4** What is **not** a possible observation of salmon swim upstream to spawn?

Ⓕ Salmon start their spawning season in the fall.

Ⓖ Bears easily prey on salmon as they swim upriver.

Ⓗ The average weight of a spawning salmon is 7.2 pounds.

Ⓘ Most of the salmon seem to be of adult size.

**5** Why do scientists publish the results of their investigation in science journals?

Ⓐ They want to show other scientists what they are doing wrong.

Ⓑ It is a requirement for being a scientist.

Ⓒ The want others to support their opinions.

Ⓓ They communicate and share their findings so that scientific knowledge grows.