

BENCHMARK SC.5.N.2.1

Reporting Category	Nature of Science
Standard	Big Idea 2 The Characteristics of Scientific Knowledge
Benchmark	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. (Also assesses SC.3.N.1.7, SC.4.N.1.3, SC.4.N.1.7, SC.5.N.1.5, and SC.5.N.1.6.)
Also Assesses	<p>SC.3.N.1.7 Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena.</p> <p>SC.4.N.1.3 Explain that science does not always follow a rigidly defined method (“the scientific method”) but that science does involve the use of observations and empirical evidence.</p> <p>SC.4.N.1.7 Recognize and explain that scientists base their explanations on evidence.</p> <p>SC.5.N.1.5 Recognize and explain that authentic scientific investigation frequently does not parallel the steps of “the scientific method.”</p> <p>SC.5.N.1.6 Recognize and explain the difference between personal opinion/interpretation and verified observation.</p>
Benchmark Clarifications	<p>Students will identify and/or explain that science is grounded in verifiable observations (empirical) that are testable.</p> <p>Students will distinguish between personal interpretation and verified observation.</p> <p>Students will distinguish between examples of evidence or observations (empirical) and personal opinions.</p>
Content Limit	Items will not assess steps or order of scientific method.
Stimulus Attributes	<p>The term <i>observations</i> should be used rather than the phrase <i>empirical observations</i> or <i>verified observations</i>.</p> <p>The term <i>evidence</i> should be used rather than the phrase <i>empirical evidence</i>.</p>
Response Attributes	None specified
Prior Knowledge	Items may require the student to apply science knowledge described in the NGSSS from lower grades. This benchmark requires prerequisite knowledge from SC.2.N.1.5, SC.2.N.1.6, SC.4.N.1.8, and SC.4.N.2.1.

Sample Item 2**SC.5.N.1.6**

Rashan is performing an investigation using several earthworms. He places a rectangular box under a bright lamp and covers one-half of the box so that it is shaded. Then, he puts the earthworms into the box on the side that is still brightly lit. Later, Rashan notices that all of the earthworms have crawled over to the shaded side of the box. Based on his investigation, which of the following is an observation and NOT a personal opinion?

- A. Earthworms are afraid of light.
- B. Earthworms like staying together.
- ★ C. Earthworms move away from light.
- D. Earthworms like living in the ground.