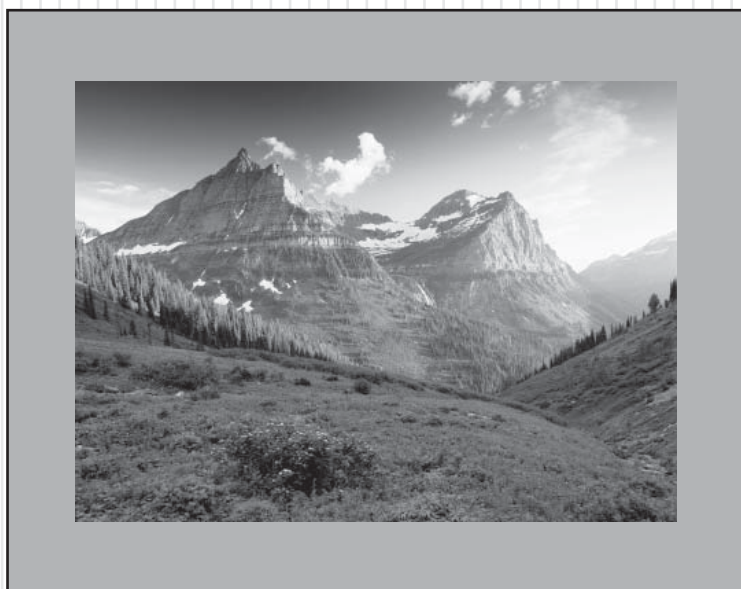


Montana
Comprehensive Assessment
System (MontCAS, Phase 2)
Criterion-Referenced Test (CRT)

COMMON CONSTRUCTED-RESPONSE ITEM RELEASE
READING, GRADE 6

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Reading Session 1

Read this passage about field science. Then answer the questions that follow.

The Art of Counting Caribou

April Pulley Sayre

What kind of insects live on Miami beaches? How many lions are there in Africa? How long can a python grow? To answer these and other questions, field scientists must identify, measure, and count wild animals. These activities may sound simple; but they're not. Just try identifying a beetle, weighing an elephant, or counting all the ants in your backyard. You'll quickly discover what a challenge field studies can be!

What Is That?: The Problem of Identification

Sometimes the problem isn't finding a wild animal. It's figuring out what animal you've found! Young bald eagles, for instance, don't have the white heads and white tails of adult bald eagles. Finch species in the Galápagos Islands may differ only slightly, most often in the size of their beaks. Some birds, such as flycatchers, look so much alike, they're best told apart by their calls. In many cases, scientists use a variety of clues to piece together an animal's identity.

A Key Point To identify an organism, some scientists use a taxonomic key. The word *taxonomic* comes from *taxonomy*, the science of naming things. A taxonomic key is a list of questions scientists ask themselves about an organism they have found. Answering each question narrows the possibilities for the organism's identity. Step-by-step, the questions lead the scientist to the organism's proper name and classification, or category. By using a key, a scientist can most accurately identify an animal. But it takes a lot of time. Once scientists are familiar with the basics of a key, they may skip some of the question steps.

Field Marks and Field Guides Another tool for identifying animals is a field guide. Field guides are books that contain drawings, photos, and descriptions of animals. They present much of the same information that is in a taxonomic key, but in a different form. Unlike taxonomic keys, field guides focus on features that can be seen from observation in the wild. (Taxonomic keys may rely on characteristics that are only obvious close-up, when animals are observed or measured under laboratory conditions.) Field guides list field marks, characteristics that can be seen in the field and that distinguish one animal from similar species, or kinds, of animals. For a bird, that may be the color of the head, the shape of the tail, or other features.

The Name Game Woodchuck and whistle pig are two of the many names for the furry mammal that pokes its nose out of its hole on Groundhog Day. Like many other animals, groundhogs have several different common names. Common names can vary from region to region and language to



Field guides are essential tools for identifying animals such as the bird seen in this photograph.

language. That causes problems for scientists. For example, the bird that Americans call a “robin” is not the same bird species the British call a “robin.” And in the western United States, someone who mentions a “groundhog” may be talking about a prairie dog, instead!

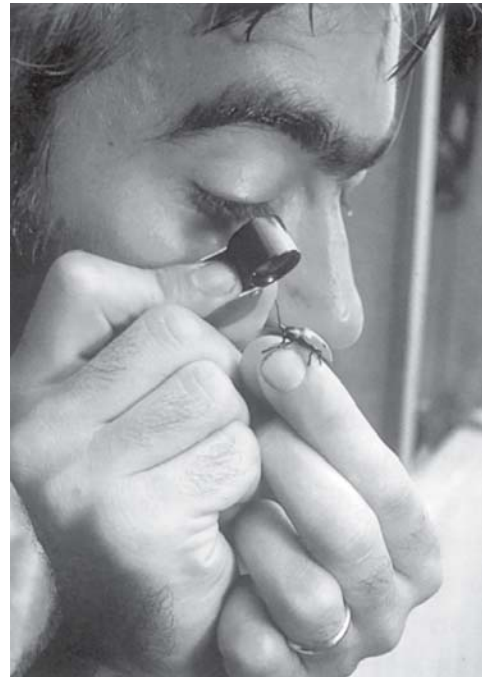
To avoid such confusion, scientists give organisms scientific names. These names are used by scientists worldwide, no matter what language they speak. By using scientific names, scientists can be sure that they’re talking about the same animal or plant or fungus.

Scientific names reflect scientific classifications—the categories into which scientists group organisms, based on their similarities. The largest category is a kingdom. Kingdoms include the plant kingdom and the animal kingdom. Within a kingdom there are subgroupings: phylum, class, order, family, genus, species, and subspecies. An animal’s scientific name is made up of its genus name plus its species name. For instance, a red-tailed hawk is called *Buteo jamaicensis* because *buteo* is the genus and *jamaicensis* is the species. (These names are always italicized or underlined, and the genus name is always capitalized.) Some animals also have a third name added, to indicate their subspecies. For example, *Buteo jamaicensis harlani* is the Harlan’s subspecies of the red-tailed hawk.

Aha! It’s New! Every year, field scientists find animals they think may be “new” species—species never before identified, scientifically. (That doesn’t mean, of course, that no one has ever seen or named the animals. Often, native people have known about these animals for years.) In 1990 scientists found a new species of primate, called the black-faced lion tamarin, on an island near São Paulo, Brazil. And in 1996 a new kind of sunbird was found in the Philippines. When scientists find an animal they believe is new to science, they must go through a long process before the animal is officially recognized and named. They take notes about where and when the animal was found and what color it is. They also photograph, tape record, and videotape the animal and its calls if possible. In most, but not all cases, a few individuals of the

species are collected, killed, and preserved. These are called specimens.

The specimens will be studied carefully by scientists in labs. They take many measurements of the animal’s body, such as the length of its legs, arms, wings, feathers, fins, or toes. They compare the specimens with similar specimens from museums and universities worldwide. Months or even years may pass before field scientists can prove they have discovered a new species. When they do, they can give it a name, which must be approved by other scientists in their specialty.



A researcher examines a beetle with a magnifying lens in order to identify it. Could it be a new species?

DNA Developments In recent years, scientists have added another step to their taxonomic studies. They now take skin samples from the animals. From these samples, scientists extract deoxyribonucleic acid (DNA), which is genetic material. By comparing one animal’s DNA to another animal’s DNA, scientists can tell how closely the animals are related. When animals are very rare, DNA studies may be used instead of capturing and killing the animals for specimens.

27. Explain the important qualities needed to be a field scientist. Use details from the passage to support your answer.

Scoring Guide

Score	Description
4	Response contains a thorough explanation of the important qualities needed to be a field scientist. Explanation includes specific, relevant information from the passage.
3	Response contains an explanation of the important qualities needed to be a field scientist. Explanation includes supporting information from the passage, but lacks specificity, relevance, and/or development.
2	Response contains a partial explanation of the important qualities needed to be a field scientist. Explanation includes limited information from the passage and/or is partially correct.
1	Response contains a vague or minimal statement about the important qualities needed to be a field scientist.
0	Response is totally incorrect or irrelevant.
Blank	No response.

Scoring Notes

A thorough response will include an explanation of the important qualities and/or skills needed to be a field scientist. Information to support this idea may include but is not limited to the following:

A field scientist must be

- Patient—It may take a lot of time and effort to locate, identify, and verify the presence of a new species, for example.
- Observant—Many species have similar features, so one must be able to carefully observe the characteristics of the specimen and come to sound conclusions.
- Curious—A sense of wonder and unanswered questions may lead someone to study in this field.
- Careful—Specimens are studied carefully, recorded, and compared to others.
- Methodical/organized—Scientists answer questions and follow procedures step-by-step.
- Cooperative/a good communicator—Must work with and exchange information with other scientists.
- A hard worker—Observation and data collecting takes a lot of time and effort, both outdoors and in the lab.

Other explanations are acceptable if they are supported by the text.

Important qualities needed to be a field scientist is, being able to observe very closely. You would need to do that because some animals may differ from each other only slightly, such as the Finch species. Their call or beak is an example of a slight difference between some species. A field scientist needs to be patient also. They need to be patient because on tests like the taxonomic key, you have to go through many steps and questions to accurately identify an animal. Scientists must go through a long process before the animal is officially recognized and named. Another reason why a field scientist must be observant is because they take specific notes on where the animal was found, and its color. They also photograph, videotape, and record its calls. These are a few qualities you would need to be a field scientist.

A field scientist needs to be perceptive. He or she must be able to recognize very small differences, such as the shape of a bird's tail. They also have to be patient. After a field scientist thinks they have discovered a new species, the organism will need to be studied for months, or even years, before it will be classified as a new species. The scientists must be certain the organism has not already been discovered.

Score Point 2

Sample 1

The important qualities you need to be a field scientists is patients because in the passage it talking about sitting someplace & counting animals not all people have enough patients to do that. Other qualities like good eye sight would help you to see & identify species better. There are a lot more but I won't have enough time.

Score Point 2

Sample 2

Some of the important qualitys needed to be a field scientist are. First you need to be able very hard working and have perseverance. Next you have to be a good learner so you know what your doing. Also you have to know about subgroups and the taxonomic key. Lastly you should know how to use a field guide. Those are some of the important qualitys needed to be a field scientist.

Score Point 1

To explain the qualities needed to be a field scientist I would say, that you would have to be smart, have patience, and love animals

Score Point 0

Scientist Look and get into
about old old old things.

Acknowledgments

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“The Art of Counting Caribou” (pp. 2–3) from *Put on Some Antlers and Walk Like a Moose* by April Pulley Sayre. Copyright © 1997 by April Pulley Sayre. Published by Twenty-First Century Books.