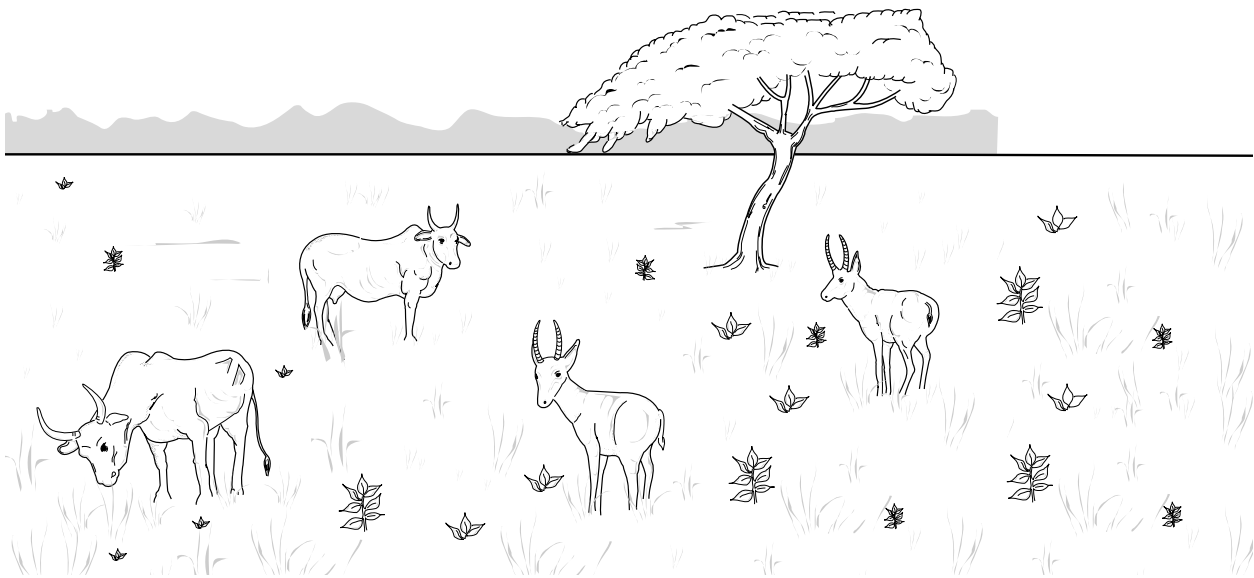


SKILLS INTRODUCTION

Inferring

Have you ever come home, smelled fish cooking, and thought, “We’re having fish for dinner”? You made an observation using your sense of smell and used past experience to conclude what your next meal would be. Such a conclusion is called an inference.

Making an inference, or **inferring**, is explaining or interpreting an observation or statement. Inferences can be reasonable (logical) or unreasonable. A reasonable inference is one that makes sense, given what a person knows about the topic. One way to make an unreasonable inference is to conclude too much from the evidence.



For example, suppose you are on a photo safari in Africa. In a region bordering some small farms, you see some domestic cattle sharing space with some wild antelope. Some people in your group make the following observations and inferences.

Observation: The cattle and the antelope are standing quietly together.

Inference 1: The cattle and antelope do not attack each other. (reasonable)

Inference 2: None of the animals in this region attack each other.
(unreasonable, because you have no evidence about any other animals)

Observation: Some of the cattle are eating grass.

Inference 3: The grass is food for the cattle and antelope. (reasonable)

Inference 4: Most of the grass in this area is eaten by the cattle. (unreasonable, because you have no evidence about the amounts eaten)

Inferring (*continued*)

Often you can make more than one logical inference from the same observation. Remember: A logical inference must make sense in terms of everything else you know.

Observation: The antelope are looking around.

Inference 5: The antelope are watching for predators. (reasonable)

Inference 6: The antelope are watching for potential mates. (reasonable)


Inference 7: The antelope heard you coming through the brush. (reasonable)

When you first make a logical inference, you may not know whether it's true or false. What's important is to make sure the inference is reasonable and based on accurate evidence. Then you can obtain additional evidence to find out whether the inference is correct. For example, if you talked to the farmers who own the cattle in the illustration, you would find out that the cattle eat grass, but the antelope do not.



Tips for Making an Inference

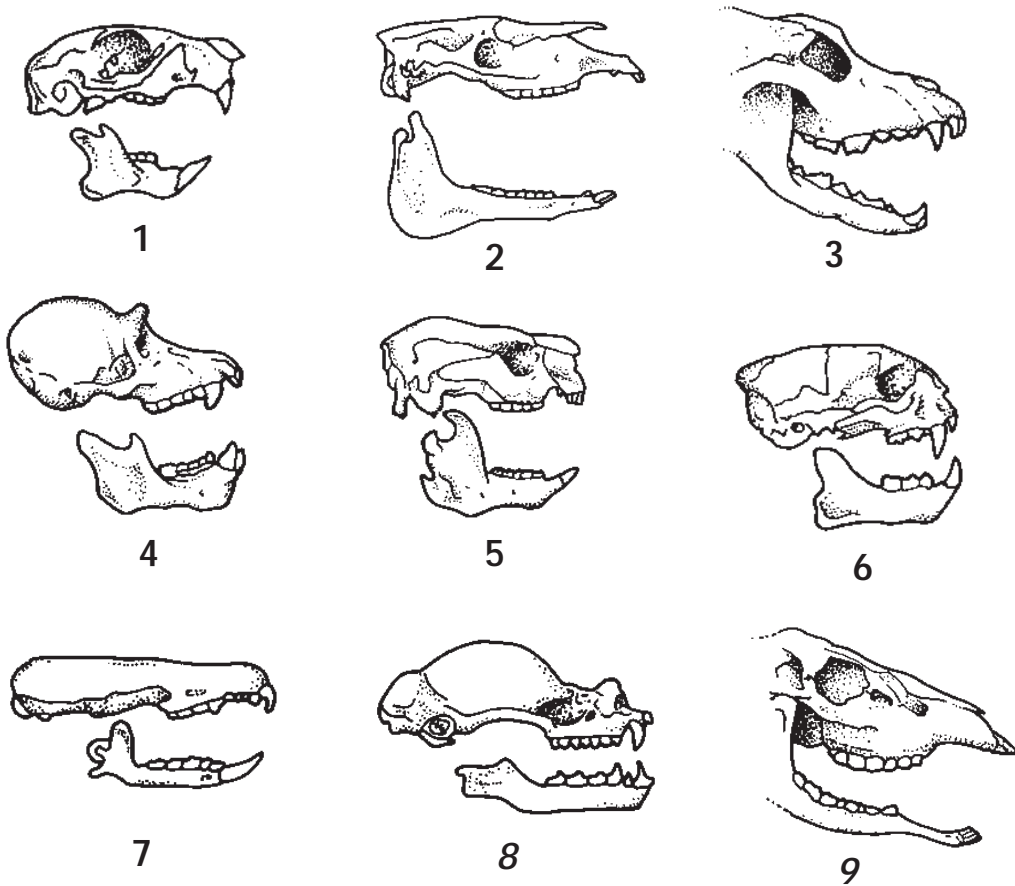
- ◆ Base your inference on accurate qualitative or quantitative observations.
 - ◆ Combine your observations with knowledge or experience to make an inference.
 - ◆ Try to make more than one logical inference from the same observation.
 - ◆ Evaluate the inferences. Decide what new information you need to show whether your inferences are true. If necessary, gather more information.
 - ◆ Be prepared to modify, reject, or revise your inferences.
-

 *Checkpoint* Write at least one additional observation from the illustration on page 8. Then write at least one logical inference you can make from that observation.

SKILLS PRACTICE

Inferring

The diagram below shows the skulls of nine different mammals. (The skulls are not drawn to scale.) Observe the diagram and then answer the questions that follow. Write your answers on the backs of these sheets or on a separate sheet of paper.



Not drawn to scale

1. A mammal's teeth are adapted to its diet. Some mammals eat only plants. Many of their teeth have flat surfaces that enable the animals to crush and grind the tough material in plant parts. Which of the animals in the diagram have numerous flat teeth? What can you infer about their diet?
2. Some mammals eat other animals. Many of their teeth have sharp points that pierce animal flesh and tear off sections to swallow. Which of the animals in the diagram have numerous sharp teeth? What can you infer about their diet?
3. Some mammals eat both animals and plants. What inference can you make about their teeth? Which animals in the diagram do you think eat both animals and plants?

Inferring (*continued*)

4. You can make other inferences from the skulls of mammals. Look for shadowy indentations and bone shapes that indicate the position and size of the eyes. Which mammals appear to have eyes side by side at the front of the head? Which mammals appear to have eyes on the sides of the head?
5. Mammals that capture other animals for food often have eyes at the front of the head. This position allows them to have excellent depth vision. Mammals that are hunted as food often have eyes on the sides of the head. These animals do not have depth vision, but they can see a larger area around them. Make inferences about the advantages and disadvantages that each type of vision might provide.
6. Which of the mammals in the diagram seems to have very small or no eyes? What might you infer about the mammal(s) based on these eyes?
7. Based on the animals' teeth and eyes, which one of these mammals, if any, might hunt other animals for food?
8. Based on the animals' teeth and eyes, which one of these mammals, if any, might eat only plant materials?
9. Based on the animals' teeth and eyes, which one of these mammals, if any, might eat both animals and plants?
10. Think About It Scientists sometimes find skulls or parts of skulls from extinct animals, ones that are no longer found alive anywhere on Earth. How might they use inferences to learn about these animals from past times?