

Whale Watching Logic

OBJECTIVES

Students develop logic skills by classifying animals by attributes. They practice using logical arguments to reach a conclusion and explain their thinking in their own words.

MATERIALS

- ❑ examples of published field guides with color photos (optional)
- ❑ *Field Guide* on insert page in the center of this Guide. (Photocopy at 200% to fit 11-× 17-in. paper.)

BACKGROUND

Many animals share the same habitat. Scientists and wildlife watchers use books called *field guides* to help them identify animals in a particular area. A field guide lists animals found in the area, then describes the animals in terms of their characteristics. Wildlife watchers can look for identifying characteristics to be able to identify an animal.



ACTION

1. Discuss how scientists and wildlife watchers use field guides to help them identify animals. (*Optional: show various field guides.*)
2. Introduce the identifying characteristics of each animal as described in the short *Field Guide* included in this Guide (pull-out pages). If your students can read, use the chalkboard to jot down notes under each animal's name. For non-readers, review the animal information including colors.
3. Ask students to pretend they are out at sea on a whale-watching boat. Ask them to use their field guides to try to identify the animals they "see."
4. Read the *Whale Watching* scenario on page 12 to your students. Pause after each bullet point to help students reach conclusions.



Both harbor seals (*Phoca vitulina*, top) and common dolphins (*Delphinus* spp., bottom) live in the ocean and surface to breathe air.

Whale Watching

- ◆ You are out on a boat to observe wildlife. You are hoping to see a blue whale – the largest animal in the world. Your trip naturalist tells you that you may see other animals, too. You have a field guide that describes the animals living in the area.
- ◆ You see a head pop up and an animal take a breath of air. What might it be? (*Sea turtles, sea lions, harbor seals, dolphins, brown pelicans, and blue whales all breathe air.*) What do you know it isn't? (*Sharks don't breathe air.*)
- ◆ The head pops up for another breath of air, and this time you notice that the animal is a grayish color. What might it be? (*Harbor seals and common dolphins are both air-breathing animals that can be gray.*) What do you know it isn't? (*Sharks don't breathe air. Sea turtles, sea lions, brown pelicans, and blue whales aren't gray.*)
- ◆ The third time the animal lifts its head for a breath it dives down into the water and you spot tail flukes propelling it through the water. What do you think this animal is? (*Common dolphins have tail flukes.*)
- ◆ You see another head pop up, and this animal also takes a breath of air. What might it be? (*Sea turtles, sea lions, harbor seals, dolphins, brown pelicans, and blue whales all breathe air.*) What do you know it isn't? (*Sharks don't breathe air.*)
- ◆ You notice that this animal has a shell. What might it be? (*Sea turtles have shells.*) What do you know it isn't? (*Sharks, sea lions, harbor seals, common dolphins, brown pelicans, and blue whales don't have shells.*)
- ◆ Gazing at the ocean's surface, you see an animal that is gray. What might it be? (*Smoothhound sharks, harbor seals, and common dolphins can be gray.*) What do you know it isn't? (*Olive ridley sea turtles, sea lions, brown pelicans, and blue whales aren't gray.*)
- ◆ You notice that the animal doesn't seem to be breathing air, but it is swimming with fins just below the surface of the water. What might it be? (*Sharks don't breathe air. Sharks swim with fins.*) What do you know it isn't? (*Sea turtles, sea lions, harbor seals, dolphins, brown pelicans, and blue whales all breathe air.*)
- ◆ You see a brown animal resting on the surface of the water. What might it be? (*California sea lions, harbor seals, and brown pelicans can be brown.*) What do you know it isn't? (*Gray smoothhound sharks, olive ridley sea turtles, common dolphins, and blue whales aren't brown.*)
- ◆ Suddenly the animal flies away. What do you think the animal is? (*Brown pelicans can fly.*)
- ◆ Just off the boat a blow indicates that a huge animal has taken a breath. What might the animal be? (*Sea turtles, sea lions, harbor seals, dolphins, brown pelicans, and blue whales all breathe air. The breath of a common dolphin or a blue whale can look like a "blow."*)
- ◆ As you watch, the animal takes another breath, and you see that the "blow" is much, much taller than you are, and the animal is longer than your whale-watching boat. What do you think it is? (*Blue whales can be as long as 26 meters and can have a "blow" as high as 9 meters.*)

FIELD GUIDE

gray smoothhound shark
Mustelus californicus

A shark with a slender gray body. It stays in the water, swims with fins and breathes water—not air.



common dolphin
Delphinus spp.

A gray and beige dolphin that swims in the ocean and breathes air. A common dolphin's exhale can look like a "blow" in the air. It has flippers, a dorsal fin, and tail flukes.



California sea lion
Zalophus californianus

A brown, furry animal that swims in the ocean and walks on land. It breathes air and has small ear flaps—one on each side of its head.



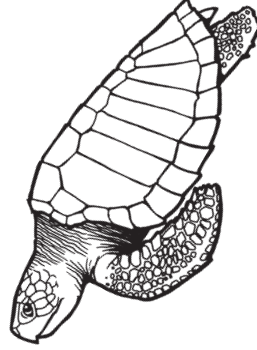
harbor seal
Phoca vitulina

A grayish or brownish furry animal that swims in the ocean and can come on land. Harbor seals have tiny holes that lead to their ears—no ear flaps.



olive ridley sea turtle
Lepidochelys olivacea

A yellow-green ocean turtle with flippers for swimming and a protective shell. It breathes air.



blue whale
Balaenoptera musculus

The largest animal in the world—a whale that can be as long as 26 meters. It creates a "blow" of air and water as high as 9 meters when it breathes. It swims in the water with flippers and an immense tail flukes. It breathes air.



brown pelican
Pelecanus occidentalis

A large brown bird that swims through the air. A large pouch under the beak expands to catch fish.

