SCIENCE 3D

SHARK WORLD

In this packet, sample student answers are provided in red and notes to teachers are in blue.

During this **Mission Research**, students will use information from the **Mission Reader** to reinforce and expand their understanding of body systems, sensory systems, and structure and function.

The body systems of animals are similar in many ways, but very different in other ways. Let's compare sharks to other animals.

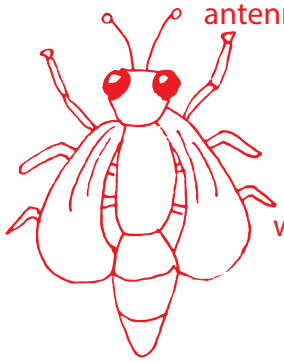
ACTIVITY I: COMPARING EXTERNAL STRUCTURES

Use books, magazines and online resources to complete the following activity.

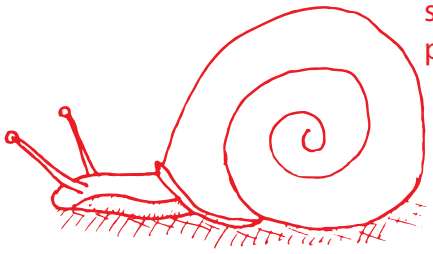
1. Below each general taxon, pick a species that you are familiar with or can research.

2. **Draw** a picture of that organism and label the structures that help it:
   - sense the environment
   - move
   - eat
   - stay safe from predators

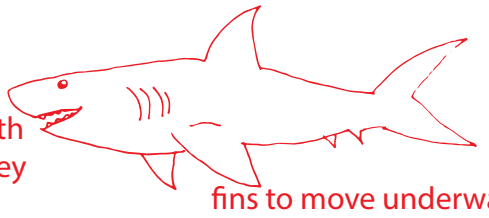
Insect
My species is a _____fly_____.



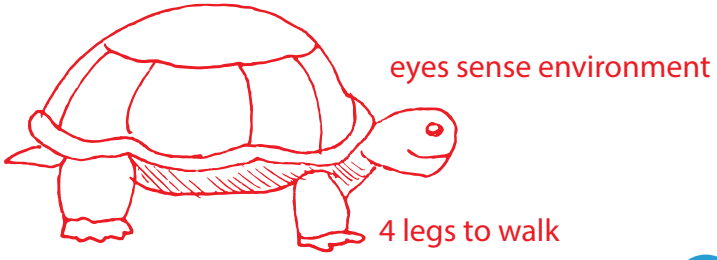
Invertebrate
My species is a _____snail_____.



Fish
My species is a _____great white shark_____.

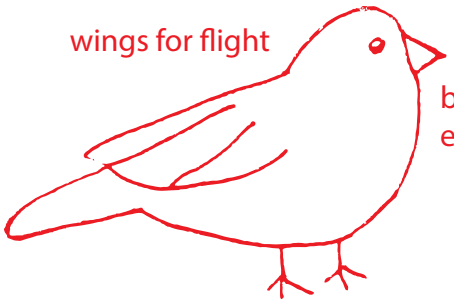


Reptile
My species is a _____turtle_____.



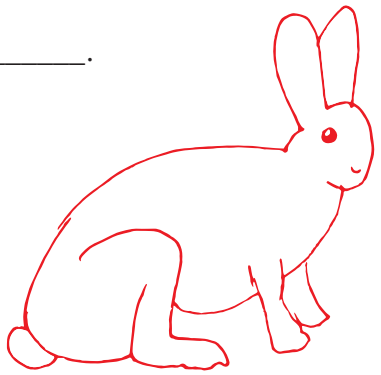
Bird

My species is a _____sparrow_____.



Mammal

My species is a _____rabbit_____.



3. **Compare** and **contrast** the structures that each organism uses for each of the following functions.
Answers will vary, but good ones will describe how different structures provide the same basic functions for different species.

•Sense the environment

The rabbit uses ears and eyes to sense its environment, while the great white shark has eyes and electroreception. The insect has antenna to sense its surroundings, which is a completely unique structure.

•Move

The shark moves underwater using fins and propulsion, and is very hydrodynamic. The bird has legs for walking on the ground, and wings for flying. The snail has a sticky foot that ungulates to move, and can adhere to multiple surface types.

•Eat

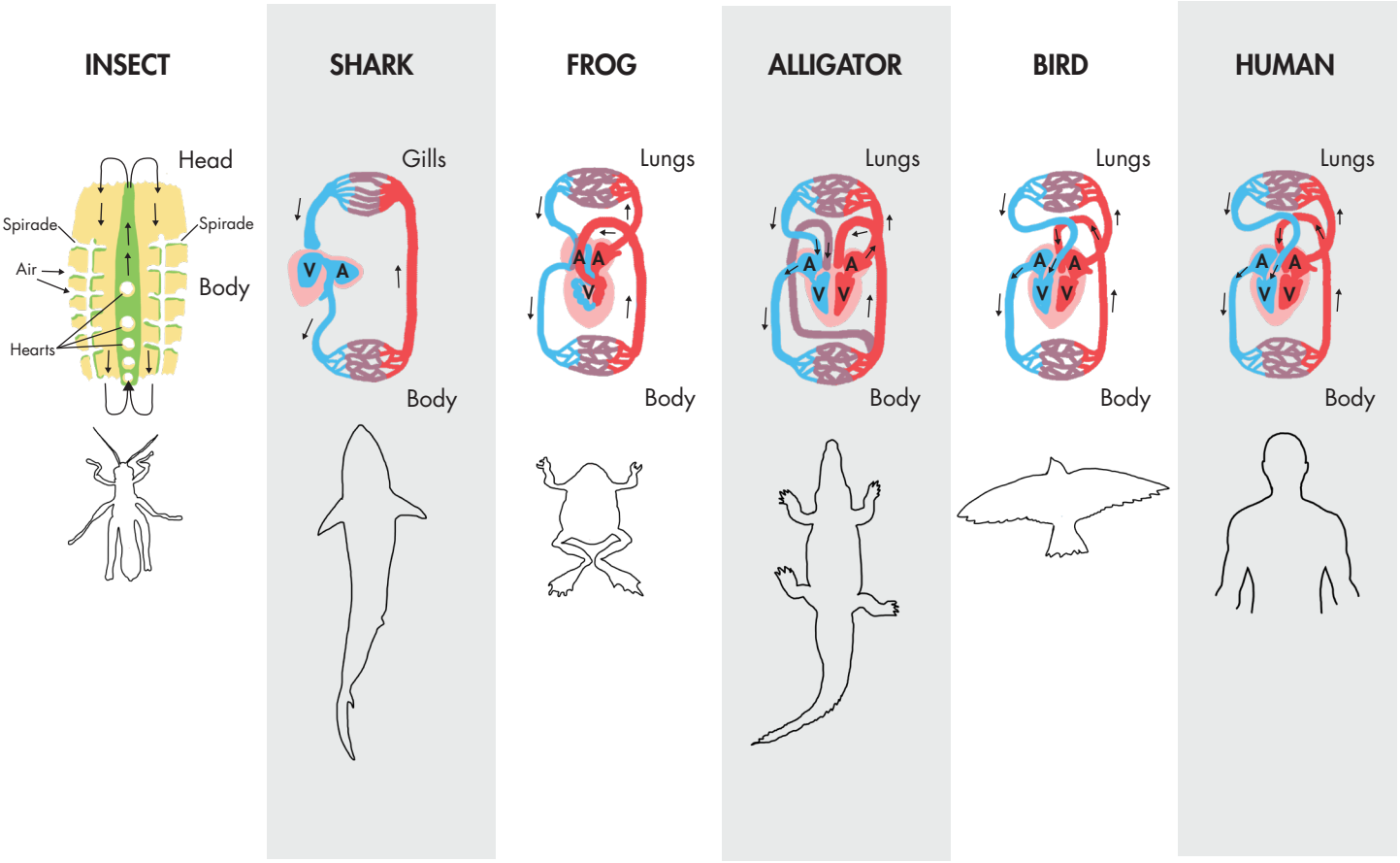
The insect and snail have very different feeding mouth parts, and ingest food differently than the rabbit and turtle, both of which ingest food in a manner similar to humans. The bird uses a beak to forage for various food types.

•Stay safe from predators

Both the turtle and the snail have shells to protect their bodies, but they are different kinds of shells. Both birds and insects have wings to help escape predators, but they are different kinds of wings.

ACTIVITY 2: GETTING OXYGEN

Below are the diagrams of the respiratory and circulatory systems of an **insect, shark, frog, alligator, bird,** and **person.**



1. **Compare** and **contrast** the circulatory systems of these animals. Consider which is most efficient at getting oxygen and removing carbon dioxide. Use the diagrams and the **Mission Reader** to support your answer.

Good answers should include a consideration of the number of chambers each heart has and whether blood with a lot of oxygen mixes with de-oxygenated blood in the heart (reducing efficiency).

Extend the lesson: Have students make a poster of the animals and highlight key anatomy, places where oxygen is taken in and carbon dioxide released, and how oxygen and carbon dioxide move through the body.

ACTIVITY 3: WHAT'S IT FOR?

Some sharks glow, but what is the function of glowing?

1. Why do you think some sharks glow?

Accept reasonable answers. Examples include: It might help them blend in with the background in the deep sea. Having special glowing patterns might help sharks find other members of their species. It might help them attract prey or warn predators. This question is more to set up question 2.

2. In the space below, describe an experiment you could conduct to test your predictions about why sharks glow.

Accept reasonable answers. Complete answers will include hypotheses, or predictions, and a control and experimental group.