

Freaky Frogs

Will see-through frogs clear the way for frog research?

Green is out! Frogs have a new look that has some scientists jumping for joy.

Scientists in Hiroshima, Japan have produced see-through frogs. Japan is a country in Asia. The pale frogs are the world's first see-through animals with four legs. Frogs are often used for scientific research. Now researchers can view **organs** that are under the see-through frogs' skin. Organs are body parts, such as the heart and lungs.

Scientist Masayuki Sumida says the see-through animals provide new ways to study frogs. He says scientists can observe what happens to a frog's organs if it gets sick. "You can see through the skin how organs grow," he says. "You can watch organs of the same frog over its entire life."

Frogs are **cold-blooded**. That means their body temperature depends on their environment. Frogs are also amphibians, which are animals with backbones that spend part of their lives in water and part on land. "That's one of the things that makes them so interesting to study," **herpetologist** Joseph Collins told *WR News*. A herpetologist is a scientist who studies reptiles and amphibians.

Collins says students could benefit as well from studying the see-through frogs. "Seeing the heart actually pumping and the lungs actually working would be really important to younger students," he says. "It will teach a lot about how the organs work."

Types of Amphibians

Frogs are one of more than 5,000 amphibian species! Keep reading to learn more about some of the other species.

Red-Eyed Tree Frog: These colorful frogs have red eyes and blue and yellow stripes. They live in rain forests in Central America.

Toad: Toads have stubby bodies with warty skin, and they walk instead of hopping. Toads live in most parts of the world.

Salamander: Salamanders look like lizards. Some have lungs. They live in cool areas in Europe, North America, and Asia.

Name: _____ Date: _____

1. What is one difference between frogs and toads?

- A Frogs are mammals, and toads are amphibians.
- B Frogs hop, and toads walk.
- C Frogs live in Japan, and toads live in most parts of the world.
- D Frogs are cold-blooded, and toads have stubby bodies.

2. Which of the following does the author describe last in the passage?

- A The author describes what Hiroshima, Japan is like for scientists.
- B The author describes the ways that students can learn from see-through frogs.
- C The author describes different types of amphibians.
- D The author describes what makes frogs interesting to study.

3. It can be inferred from the passage that

- A watching the organs of a see-through frog grow and change is disgusting
- B scientists can observe the organs of a see-through frog grow over time
- C see-through frogs are not very helpful to researchers
- D scientists may someday work to produce other kinds of see-through animals

4. Read the following sentence and answer the question below: "Collins says students could benefit as well from studying the see-through frogs."

In this sentence the word **benefit** most nearly means

- A be helped
- B be taught
- C be careful
- D be seen

5. The passage is mostly about

- A a scientist and his work with see-through frogs
- B a new kind of frog recently produced in Japan
- C how studying frogs can help students learn
- D how to see the heart and lungs of a frog

6. Why is the frogs' see-through skin a helpful thing for researchers?

7. What change might researchers see in a frog's organs if it gets sick?

8. The question below is an incomplete sentence. Choose the word that best completes the sentence.

Frogs are cold-blooded, _____ means their body temperature depends on their environment.

- A although
- B therefore
- C if
- D which

9. Read the following sentence.

Scientists use see-through frogs for research by observing the frogs' organs under their skin.

Answer the following questions based on the information provided in the sentence you just read. One of the questions has already been answered for you.

1. Who is the main subject of the sentence? scientists

2. What do scientists do? _____

3. How? _____

4. Why? _____

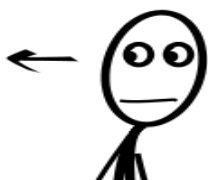
10. Read the vocabulary word and definition below, and complete questions 10a, 10b, and 11.

Vocabulary Word: observe (ob · serve): to watch or to look at closely.

10a. Read the five sentences below and underline the word **observe** in each sentence.

1. I wanted to learn how to play basketball, so I observed the players on the courts near my house.
2. People say that babies learn by observing the world around them.
3. We did a science experiment in class and observed the caterpillars changing into butterflies.
4. We observed the bees flying back and forth between the flowers and their hive.
5. The principal observed that there were a lot of students in the third grade.

10b. In which image is someone making an observation?



11. If you are blindfolded, are you able to observe what is going on around you? Why or why not?

Teacher Guide & Answers

Passage Reading Level: Lexile 750

Featured Text Structure: Descriptive – the writer explains, defines, or illustrates a concept or topic

Passage Summary: The author describes a recent scientific breakthrough, the production of see-through frogs by scientists in Japan. The see-through skin allows researchers to see and learn about the frogs' organs.

1. What is one difference between frogs and toads?

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- B Frogs hop, and toads walk.**
- C Frogs live in Japan, and toads live in most parts of the world.
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- A a scientist and his work with see-through frogs
- B a new kind of frog recently produced in Japan**
- C how studying frogs can help students learn
- D how to see the heart and lungs of a frog

6. Why is the frog's see-through skin a helpful thing for researchers?

Suggested answer: See-through skin is a helpful thing for researchers because they can study the frogs' internal organs by watching them grow over time or change when the frog is sick. [paragraphs #1-2]

7. What change might researchers see in a frog's organs if it gets sick?

Suggested answer: If a frog gets sick, the researchers might see the organs get smaller, change color, or get lumps or other changes in shape. [paragraph #3]

8. The question below is an incomplete sentence. Choose the word that best completes the sentence.

Frogs are cold-blooded, _____ means their body temperature depends on their environment.

- A although
- B therefore
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9. Read the following sentence.

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Answer the following questions based on the information provided in the sentence you just read. One of the questions has already been answered for you.

1. Who is the main subject of the sentence? scientists
2. What do scientists do? **use see-through frogs**
3. How? **by observing the frogs' organs under their skin**
4. Why? **for research**

10. ReadWorks recommends that you teach this vocabulary word to the whole class out loud using the four steps listed below.

Vocabulary word: observe

Step 1: Introduce the word

- a. Teacher writes the word on the board and divides it into syllables: (ob · serve)
- b. Teacher says: "This word is observe. What is the word?" [All students reply together out loud: "observe."]

Step 2: Provide a child-friendly definition

- a. Teacher says: "Observe means to watch or to look at closely."
- b. Teacher says: "The text states that now that the frogs are see-through, scientists can observe what happens to a frog's organs if it gets sick. This means the scientists can look very closely at the frog's body and learn more about it when it is sick. Observe can also mean to see something, or it can mean to say something about what you notice. But in this passage, observe means to watch or to look at closely."

- c. Teacher says: "What is the word?" [All students reply together out loud: "observe."]

Step 3: Practice the word

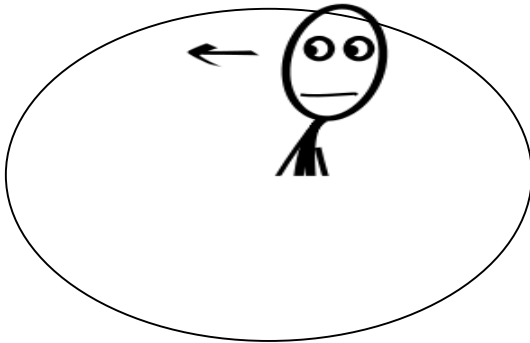
Teacher provides examples and additional opportunities to repeat the word. Read the first sentence out loud to your students. Begin reading it again and when you come to the vocabulary word prompt students to say the vocabulary word out loud. Then, finish reading the sentence out loud to your students.

- 10a.**
1. I wanted to learn how to play basketball, so I observed the players on the courts near my house.
 2. People say that babies learn by observing the world around them.
 3. We did a science experiment in class and observed the caterpillars changing into butterflies.
 4. We observed the bees flying back and forth between the flowers and their hive.
 5. The principal observed that there were a lot of students in the third grade.

Step 4: Check for understanding

This step can be completed as a whole class activity or as an independent practice.

- 10b.** In which image is someone making an observation?



- 11.** If you are blindfolded, are you able to observe what is going on around you? Why or why not?

Suggested answer: No, because you would not be able to look at your surroundings.

Suggested Additional Vocabulary: research, environment, benefit