

Teaching Guide to *Shortcuts* by Jeff Harris

Introduction

Shortcuts by Jeff Harris is a beautifully illustrated, fact-packed page that makes learning fun. Each week, *Shortcuts'* multicultural cast (Juanita, K., Roland, Junior and James) offers facts, riddles, jokes and puzzles to help kids learn about science, geography, animals, food, history and holidays.

Each teaching guide provides ideas for expanding the lesson and creating discussion and learning activities for your students. The grade level for the guides is usually 3rd to 4th, but they can be adapted for use at other levels. The guides are broken down into four areas:

1. Questions for Discussion and Further Study

Designed to help students think and research, not just give one-word answers

2. Activity Ideas

Designed to allow students to be creative and teach themselves

3. Use the News

Designed to have students use the news in studying each topic

4. Quick Quiz

Designed to be adaptable to several grade levels, evaluate students' comprehension and build vocabulary and math skills

You might use the teaching guides in the following ways:

Questions for Discussion and Further Study: Engage the entire class by asking each question aloud and listing the students' answers on the board. Or have them use reference resources to give their own answers to the questions. Allow them to discuss other students' answers after they've researched the topics. Key words or phrases that can help students search for more information are italicized.

Activity Ideas: Give the students a time limit to research their projects, using library or study time. By having the students cite their resources you can check their work; or, alternatively, tell

them which resource(s) you prefer them to use.

Use the News: These can be worked on individually but we suggest they work in groups to learn teamwork skills.

Quick Quiz: We suggest you review the quizzes ahead of time and change the phrasing or difficulty level based on the students' abilities.

Shortcuts: SHEDDING SOME LIGHT ON FIREFLIES

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Objective: After completing the exercises, students should have a better understanding of fireflies.

Subject Areas: The following information about fireflies will be discussed:

- Living things that “light up”
- Firefly stories
- Nonverbal communication

Evaluation: Students may be evaluated using the following point scale:

Four points: Information is accurate, organized, shows creative thought/use of materials

Three points: Information is accurate and organized

Two points: Information is mostly accurate; organization needs some work

One point: Significant inaccuracies; lacks organization

Topics for Discussion and Further Study

1. What is a glowworm? How is it related to a firefly?
2. Don't the bioluminescent chemicals, *luciferase* and *luciferin* remind you of another word – *Lucifer*(the devil)? Why do they sound similar? Where do the words come from? Check out the Latin origins of these words.

Activity Ideas

- Fireflies are just one type of living organism that can produce light. What other types of living things give off light? Search for other sources of bioluminescence and make a chart listing them. Chart categories could be labeled: plant, mammal, insect, fish, etc.
- Fireflies could make interesting story characters, flashing their lights to signal their friends and family. Create a short children's story with a firefly as the main character. A few colorful pages with a brief story will combine science, art, and creative writing in a fun activity. Here is a link to a lesson plan explaining how to make the booklet:
<http://www.crayola.com/lesson-plans/detail/follow-the-firefly-lesson-plan/>

Use the News

Fireflies use their “glow” to signal other fireflies, to communicate with them. In what ways do humans communicate? In addition to talking, what else do we do to give or get information? Find examples in a newspaper of verbal and nonverbal communication. Even a stop sign is a form of communication.

Answers to the Quiz

1.) a, 2.) c, 3.) b, 4.) a, 5.) b, 6.) d, 7.) light 8.) eggs, 9.) 35 ft., 10.) 60

Quick Quiz — Fireflies

1. Female fireflies do not have wings.
a. True b. False
2. Fireflies are actually _____.
a. wasps b. flies c. beetles d. ladybugs
3. All fireflies use the same pattern of light “blinks” to communicate.
a. True b. False
4. Firefly light is often called _____ light.
a. cold b. dark c. night d. warm
5. Most fireflies live for about three years.
a. True b. False

6. Fireflies are not found in _____.
- a. Africa b. Asia c. Europe d. Antarctica

Vocabulary Comprehension

7. Not all species of fireflies give off _____.
8. The larvae and _____ of most fireflies give off light.

Math Comprehension (subtraction, division, addition, fractions)

9. If a firefly travels 12 feet, then 5 feet, then 18 feet, how far did it go?
10. If a firefly blinks 240 times in one hour, approximately how many times might it blink in just 15 minutes?