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: GETTING TO THE BOTTOM OF TUNNELS

For release the week of: November 14, 2011

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

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

- Tunnel air quality
- Building your own model tunnel
- Parts of a tunnel

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. Could a tunnel be built under an ocean?
2. With all the exhaust from cars in an automobile tunnel, why isn't it dangerous to breathe there?

Activity Ideas

- Use an available sand area of your playground to practice building long tunnels. They should only be wide enough for an arm to reach inside. How long can you make one? How do you keep it from caving in? Have a competition for the longest tunnel. (Hint: moist sand works better than dry sand.)
- How are tunnels built, and what are the main parts of their construction? Use this website to answer these and other questions about tunnel building. While examining the site you could collect facts to create a "tunnel" crossword puzzle.
http://science.howstuffworks.com/engineering/structural/tunnel.htm

Use the News

- What words can you find in the newspaper that relate to transportation? Have a scavenger hunt for the most words. Your class could compile a common list, or you could have a competition for the most words found. Either way, you may want to practice on the front page sharing all the "transportation" words you find.

Answers to the Quiz

1.) b, 2.) d, 3.) a, 4.) d, 5.) a, 6.) a, 7.) boring, 8.) spoil, 9.) 2,500 ft., 10.) 1,200 ft

Quick Quiz — Tunnels

1. There are four main types of tunnels.
a. True b. False

2. The Channel Tunnel connects England with _____.
a. Germany b. America c. Spain d. France

3. The Laerdal Tunnel in Norway is the longest automobile tunnel in the world.
a. True b. False

4. The River Thames tunnel in London became the first tunnel to be built under a _____ when it was completed in 1843.
a. building b. mountain c. lake d. river

5. Some boring machines can dig more than 500 ft. in a single day.
a. True b. False

6. The ancient _____ began building tunnels for mining and tombs more than 4,500 years ago.
a. Egyptians b. Chinese c. Japanese d. Vikings

Vocabulary Comprehension

7. TBM means "tunnel _____ machines."

8. The debris removed from a tunnel is called "muck" or "_____."

Math Comprehension (subtraction, division, addition, fractions)

9. If a tunnel is dug 500 ft. each day, how long will it be in 5 days?

10. How long is a tunnel that has 12 sections, each 100 ft. long?