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: A FOCUSED LOOK AT OBSERVATORIES

For release the week of: May 14, 2012

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

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

- Types of telescopes
- Famous observatories
- A day in the life of an astronomer

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's the most distant object ever seen with a telescope?
2. How do astronomers "see" anything with a radio telescope?

Activity Ideas

- There are many observatories in existence. Some are optical. Some are radio. Some are Earth-based, while others are orbiting in space. Research and choose one to learn about and report on.
- What does an astronomer do in an observatory? Research and describe in you own words what a day in the life of an astronomer is like. You could start your research by watching a video like this one: http://www.youtube.com/watch?v=q7QmrvX5hQY Here's another: http://www.youtube.com/watch?v=8icydzuxd84&feature=related

Use the News

- What stars and planets are visible in your night sky? Look outside and research what is visible to a casual observer. Then write a brief news article explaining how others can go outside at night and see what's up in the sky.

Answers to the Quiz

1.) a, 2.) d, 3.) b, 4.) b, 5.) a, 6.) a , 7.) atmosphere, 8.) countries 9.) 100 m , 10.) 40

Quick Quiz — Observatories

1. The Large Binocular Telescope is one of the largest optical telescopes in the world.
a. True b. False

2. The Sudbury Observatory is used to detect extremely tiny particles called _____.
a. atoms b. electrons c. photons d. neutrinos

3. Space telescopes, such as Stonehenge, are located deep in space.
a. True b. False

4. Special buildings called _____ house telescopes.
a. laboratories b. observatories c. lavatories d. telestories

5. Most observatories that use optical telescopes are built to avoid clouds, air pollution, and city lights.
a. True b. False

6. The _____ telescope at Arecibo Observatory in Puerto Rico is 305 m (1,000 ft.) in diameter.
a. radio b. optical c. neutrino d. space

Vocabulary Comprehension

7. Observatories are often located in space where they can avoid the distortion created by our planet's _____.

8. Most observatories are shared by several _____ because of the high costs involved with construction and maintenance.

Math Comprehension (subtraction, division, addition, fractions)

9. If a radio telescope is 300 meters in diameter, how much is 1/3 that size?

10. Five rows of radio telescopes, with 8 telescopes in each row, would mean amount to a total of how many telescopes?