

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 HARD LOOK AT CONCRETE

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

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

- Hardness of concrete
- Difference between concrete and cement
- Uses for concrete

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. Why does concrete shrink when it hardens?
2. Which makes a harder countertop, concrete or granite?

Activity Ideas

- Some people confuse the two materials concrete and cement. What is the difference? How is one used compared to the other? Go to this webpage and answer these questions to learn more about concrete. 1. What is concrete made out of? 2. What is cement made of? 3. Why is cement production bad for the environment? 4. What starts the cement to harden and set when making concrete?

Here's the webpage: <http://www.wisegeek.com/what-is-the-difference-between-concrete-and-cement.htm>

- What are some things that are made out of concrete? Brainstorm some possibilities and then see if you can find videos that demonstrate how concrete is used to make what you come up with.

Use the News

- Concrete is an important material for constructing buildings and bridges. Read the newspaper for examples of structures being built or repaired. Can you tell if concrete was used? What other building materials are used in construction?

Answers to the Quiz

1.) a, 2.) b, 3.) b, 4.) d, 5.) a, 6.) c , 7.) Pre-stressed, 8.) cure, 9.) 11 , 10.) 400

Quick Quiz — Concrete

1. Concrete can harden underwater.
a. True b. False
2. About half the world's cement is produced in _____.
a. Germany b. China c. India d. Australia
3. Concrete expands as it cures.
a. True b. False
4. The use of concrete nearly stopped after the fall of the _____ Empire.
a. Persian b. American c. British d. Roman
5. Concrete must dry slowly to harden properly.
a. True b. False
6. Most of the cement used around the world is _____ cement.
a. Chicago b. Scotland c. Portland d. Perlite

Vocabulary Comprehension

7. _____ concrete is made by pouring concrete around stretched steel cables.
8. Concrete must dry, or _____, to harden properly.

Math Comprehension (subtraction, division, addition, fractions)

9. If the concrete in a structure takes about 77 days to cure completely, how many weeks is that?
10. If a bridge needed 12,000 lbs. of concrete divided into 30 pillars, how many pounds would each pillar use?