

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 LIGHT LOOK AT ALUMINUM

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

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

- Identifying aluminum and steel
- Is recycling worth it?
- Aluminum and other metals as alloys

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. Aluminum looks very much like steel. Is there a simple way to tell them apart?
2. Aluminum is the third most abundant element on earth. What are the first two?

Activity Ideas

- Aluminum recycling is cost-effective, meaning it costs less to recycle aluminum than to make aluminum from ore mined in the earth. However, the recycling process does produce a lot of pollution. So there are some drawbacks to recycling. Read these two articles about recycling and form your own opinion about the pros and cons of recycling many different materials. Look for the main ideas in each paragraph of the articles without worrying about the figures and details. This first article is about a 15-year-old in India who recycles aluminum cans for a living:

http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_MULTICOLU_MN_T2_66&node_id=801&use_sec=false&sec_url_var=region1&_uuid=6398aae9-ecd2-4cda-b564-9d51176026f6

This second article talks about the high costs of recycling most other materials:

<http://www.english.umd.edu/interpolations/2601>

- Although aluminum is an element, it is usually combined with other metals to form an “alloy.” What other alloys can you think of? Research and make a list of several alloys. Include the name of the alloy and the metals that are combined.

Use the News

- Various metals are commonly used to produce things in our modern society. However, plastic has become very popular also. Read the newspaper to search for things that have

metal, such as aluminum, in them. Could they have been made from plastic also? Which things must be made out of metal? Why?

Answers to the Quiz

1.) b, 2.) c, 3.) a, 4.) b, 5.) b, 6.) a, 7.) bauxite, 8.) alloy, 9.) 69%, 10.) 11

Quick Quiz — Aluminum

- Pure aluminum is a strong and hard material.
a. True b. False
- Most of the aluminum produced in the world is used to make _____.
a. cookware b. cars c. packaging d. wire
- Aluminum conducts electricity.
a. True b. False
- Aluminum is the _____ most abundant element on earth.
a. first b. third c. ninth d. twentieth
- Making aluminum from ore is less expensive than recycling it.
a. True b. False
- Most other English – speaking countries, besides the U.S., refer to this metal as _____.
a. aluminium b. alumium c. alumine d. alumium

Vocabulary Comprehension

- An ore called _____ contains a lot of aluminum.
- When a metal is combined with another metal it is called an _____.

Math Comprehension (subtraction, division, addition, fractions)

- If an alloy is 10% aluminum, and 21% copper, what is the percentage of other metal?
- If you had 55 feet of aluminum foil, and divided it into 5-foot pieces, how many pieces would you have?