

# 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 3<sup>rd</sup> to 4<sup>th</sup>, 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: TAKING FLIGHT WITH THE WRIGHT BROTHERS**

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**Objective:** After completing the exercises, students should have a better understanding of the Wright brothers.

**Subject Areas:** The following information about the Wright brothers will be discussed:

- How are wind tunnels used?
- How has airplane design changed over the years?
- What are the aerodynamics of "lift"?

**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 wind tunnel?
2. How do gliders get off the ground? How long do they stay aloft?

## **Activity Ideas**

- What did the Wright brothers' first glider look like? What did their later versions look like? How have airplanes changed through the years? Research pictures of airplanes, and put them in a timeline to show how they have progressed to present-day designs. Can you describe characteristics of the changes you observe?
- The Wright brothers were very interested in wing design so their airplane would have greater "lift." What is "lift?" Research how air flowing over a wing can lift it into the air. Use descriptions and diagrams to explain what you learn.

### **Use the News**

- Other than tourism, how is flight used in today's society? Read the newspaper and share any examples of news stories that involve flight. Even if it isn't mentioned specifically, are there situations in which you can assume air travel was involved? Would the event have occurred if flight hadn't been available?

## **Answers to the Quiz**

1.) b, 2.) a, 3.) b, 4.) b, 5.) a, 6.) d, 7.) curved, 8.) wind 9.) 120 miles , 10.) 91 mph

# Quick Quiz — The Wright Brothers

1. The Wright brothers got interested in flight after their father gave them a toy rocket when they were young.  
a. True b. False
2. The Wright brothers tested their first glider near Kitty Hawk, \_\_\_\_\_.  
a. North Carolina b. North Dakota c. Kentucky d. California
3. The Wright brothers were twins.  
a. True b. False
4. In 1903, Orville Wright made the world's first self-propelled, heavier-than-air flight that lasted \_\_\_\_\_.  
a. 5 sec b. 12 sec c. 2 min d. 12 min
5. After their first successful flight, the Wright brothers opened a printing shop, and then a bicycle shop.  
a. True b. False
6. After their famous first flight, the Wright brothers conducted the rest of their experiments in \_\_\_\_\_.  
a. France b. Michigan c. North Carolina d. Ohio

## Vocabulary Comprehension

7. The Wright brothers used a wind tunnel to test the effects of air pressure over \_\_\_\_\_ surfaces.
8. After the poor performance of their 1901 glider, the bothers built their own \_\_\_\_\_ tunnel to test new wing designs.

## Math Comprehension (subtraction, division, addition, fractions)

9. If a plane flew for 120 minutes at 60 miles an hour, how far will it have flown?
10. If a plane flew at 111 miles an hour, and then slowed down by 20 miles per hour, how fast would it be flying?