GIRAFFE MATH

BY **STEPHEN R. SWINBURNE**
ILLUSTRATED BY **GERALDO VALÉRIO**

TEACHING TIPS

Engage children in the worlds of giraffes, math, and science in this informative picture book that introduces important STEM concepts through the animal kingdom's most beloved gentle giants.

Start by exploring *Giraffe Math*:

BEFORE, DURING, AND AFTER READING

BEFORE

- Set a purpose. Are you ready to learn about giraffes? What do you think the connection is between giraffes and math?
- Examine the front cover of *Giraffe Math*. What do you notice? Write down on chart paper the numbers (many are repeating) as well as the symbols, words, and abbreviations displayed. Next, open the book and reveal the endpapers. Write down any additional words or symbols. Then remove the book jacket and explore the illustration on the book's casing. Ask, "What is the same and what is different between the two covers?"

DURING

- The first sentence in *Giraffe Math* asks, "Do you like giraffes? Do you like math? What if you put them together" (p. 2)? Turn and talk to the person next to you and think about ways that giraffes and math might be connected. Then, share a few ideas that you discussed.
- "Male giraffes can weigh up to 4,200 pounds. Female giraffes, like me, [Twiga] average 1,800 pounds. My baby giraffe, Sita, weighed 150 pounds at birth and was six feet tall" (p. 5). Let's zoom in on this page for a minute to notice what the author did to help us learn facts and make the book interesting.
- "Giraffe tongues are the longest in the world for a land animal" (p. 12). After reading this page, show 20 inches in length using a yardstick, tape measure, or math manipulatives. Have children turn and talk to share the fact they thought was the most interesting on this page. [Pause and ponder throughout the book to identify facts about giraffes that pique children's interest.]
- As the book is read, highlight or circle the numbers and words on the chart that are found in the narrative text [this is the chart created when sharing the book jacket and end pages]. Write down what these numbers and words are referencing such as how many inches in diameter are the giraffe's eyes or to explain that "lbs" is an abbreviation for pounds.

AFTER

- "More About Giraffes!" (pp. 29–30) Stephen Swinburne provided additional information about giraffes in the back matter in an engaging way. What do you notice on these pages? [There is a map of Africa, glossary, quiz, metric conversions, and websites]. If you were writing a book about your favorite animal, what might you include in the back matter?
- Record a list of five to seven mathematical facts children commented on during the reading of the book. Create a bar graph for children to vote on their favorite fact to determine which one the majority of children thought was the most fascinating.

WHAT DO YOU NOTICE? WHAT DO YOU WONDER?

The purpose of notice and wonder is to slow down and consider visual aspects of *Giraffe Math* and record what bubbles up as children view the pages. First, define what is notice and what is wonder. Model this type of thinking by sharing your think-aloud about the cover illustration. Next, ask children to notice and wonder. Write down the comments on a sticky note and attach them to the respective pages. Use two different colors of sticky notes—one for the noticing and another for the wondering.
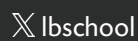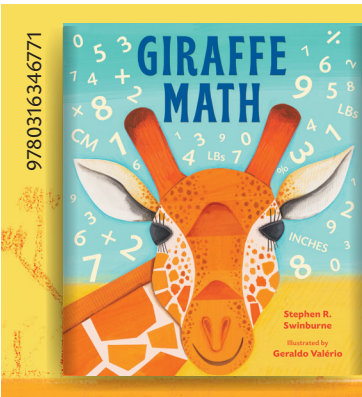
MEASURE & COMPARE

Stephen Swinburne uses measurement to explain the different features of Twiga, the giraffe. He provides examples of items similar in size such as a golf ball = eye size and a medium size pizza = hoof. There are also other measurements for Twiga such as her tongue, neck/vertebrae, heart, and tail. Have children work in pairs to compare Twiga with their measurements using rulers, tape measures, or math manipulatives (especially for height). Children can measure the tail of their pet and bring the result to class to create a different comparison chart.

TRIANGULAR TREATS

The author of *Giraffe Math* explains that a giraffe forms a triangle when bending over to drink water. Isosceles triangles have two congruent sides and two congruent base angles. Equilateral triangles have all side lengths equal and all angle measures equal. Have students draw, color, or cut out pictures of food that form a triangle such as a slice of pizza, a piece of pie, an ice cream cone, etc. Paste or glue these images on a large sheet of paper with the heading "Triangular Treats." Next to the image, identify if the food item is an isosceles or an equilateral triangle. Be sure students pay attention to the length of the sides to be accurate as to the type of triangle depicted by the treat.

GIRAFFE FACT AND GIRAFFE MATH

Create a table with two columns. In the left column, pose a question about a giraffe and record the facts that are generated from *Giraffe Math* such as, "What are the things called on the top of a giraffe's head?" [ossicones], or "What are giraffe tongues covered with?" [thick saliva]. Use the right column to pose questions and answers that are math related such as, "How many pounds does a giraffe's heart weigh?" [approximately 24 pounds], or "How fast can a giraffe run?" [31 mph]. Even though all of the information in *Giraffe Math* is considered a fact, this enables students the opportunity to be motivated to conduct further investigation into different facts and math about giraffes.

MATH OR GIRAFFE WORDS

Children's literature supports mathematical vocabulary and concept building while increasing interest in mathematics. The same is true in learning new terms related to animals. Draw a picture of a giraffe on a large sheet of paper then write words around it. Use a blue marker to write math vocabulary such as inches, triangles, and pounds, and words related to the giraffe in orange such as predator, oxpeckers, and gregarious. Be sure students understand the meaning of the words.

3-2-1 STRATEGY

Have each child write and/or draw three facts learned about giraffes, two questions they still have, and one thing they will never forget about *Giraffe Math*.

CONNECTING THE SPOTS AND MATH

Free School has a video about giraffes that can be accessed at https://www.youtube.com/watch?v=1Uj2r-8DjG4. This video shares some of the same statistics found in *Giraffe Math*. By viewing this video, children can observe giraffes in the wild while reviewing and connecting information learned. "10 Giraffe Facts!" located on National Geographic Kids website: https://www.natgeokids.com/uk/discover/animals/general-animals/ten-giraffe-facts/ (and cited in the back matter of *Giraffe Math*) uses metric measurement. This is a good site to correlate the metric conversions in the back of the book with the units of measurement many children are familiar with such as feet and inches. And don't forget to celebrate World Giraffe Day on June 21 https://giraffeconservation.org/world-giraffe-day/.

These Teaching Tips were created by Cyndi Giorgis, Professor of Literacy Education and Children's Literature at Arizona State University.