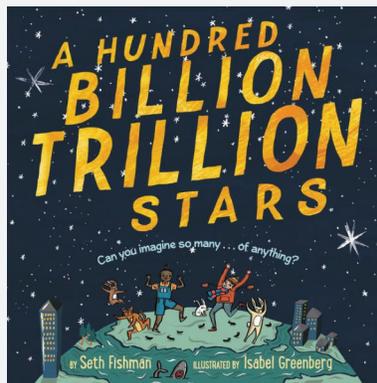


## **Second Reaction: *A Hundred Billion Trillion Stars*: Evoking Student Curiosity in Mathematics and Science Through a Cross-Curricular Text**

Fishman, Seth, and Isabel Greenberg. *A Hundred Billion Trillion Stars*. Fairfax, VA: Library Ideas, LLC, 2018. Print.

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*A Hundred Billion Trillion Stars*, written by Seth Fishman and illustrated by Isabel Greenberg, is a book packed with large, thought-provoking numbers that can be found in our great big world. Fishman encourages curiosity of large numbers by making connections between and comparing different living things found on Earth. “The strange thing is that seven billion five hundred million humans weigh about the same as ten quadrillion ants” (Fishman unpagged). In addition to the obvious mathematics learning in the text, Fishman also infuses fascinating science concepts such as space, gravity, animals, and weather throughout. This text is a great example of how science and mathematics can be found everywhere in the world around us.

Reading this text fit seamlessly into my fifth-grade classroom. Mathematically, evaluating and understanding place value, including large numbers, is an incredibly important part of our state curriculum as well as a large part of national standards. Fifth grade is the first year that students are working with numbers beyond a million, as well as investigating exponential form and scientific notation. This place value unit is taught at the beginning of the year, but I can see the power behind using this book as a mentor text when introducing large number concepts. Many students have an incredibly difficult time conceptualizing such enormous numbers because they are not able to give them context. This text provides the opportunity for students to connect these numbers with objects in their environment. Also, teaching scientific notation can be a more procedural task, but using this text we could explore situations where scientific notation is necessary and helpful. This text can be a great starting resource to help provide a

background of when large numbers are used as well as their magnitude when thinking about how many stars are in the sky. Overall, I believe the situations in this book support students' understanding of the scale of large numbers.

As well as the mathematics connections *A Hundred Billion Trillion Stars* offers, there are also many connections that can be made to science curricula. As a semi-departmentalized math and literacy teacher, I no longer teach social sciences, but I can see how this text could be incorporated into a science class and would recommend this to science teachers as well as mathematics teachers. Fishman begins his text talking about the stars and planets, as well as touching on Earth's composition. Fishman also writes, "On the other side of the planet, where the sun isn't shining, you can see bright lights like little stars all over its surface" (unpaged). This passage provides students an inquiry opportunity to learn how and why one part of the earth is in light while the other is in darkness.

I shared this book with my students as a read aloud during our literacy block. I asked students to give an honest critique of the text, as well to share any ideas that were sparked from conversation. Student interest was most piqued by the facts about our planet and the living things found here. For example, when Fishman compared the weight of the number of people on Earth to the weight of the number of ants, students began to question other ideas. "How many ants would equal the weight of one person?" With more time, this would have been a great responsive teaching opportunity to introduce ratios and proportions. The students were very interested in making smaller connections that were more relevant to them. Students were very engaged with the bright and detailed illustrations from Greenberg. They were excited to see what was coming on the next page, and often asked for more time to inspect the page before moving on. In addition, students enjoyed the interesting way the facts were presented, critiquing the author's craft.

Teachers can find it difficult to find ways to incorporate tasks that are cross-curricular. *A Hundred Billion Trillion Stars* provides this opportunity. The mathematics and science connections that can be made will make learning more meaningful to students. Ultimately, Fishman and Greenberg's book evokes curiosity naturally in students.

### **About the Author**

**Jennifer Bordenkircher** is currently a fifth-grade classroom teacher at Premier Charter School in St. Louis, Missouri. She has spent her career in grades three through six in a variety of roles, including teacher, literacy coach, reading interventionist, mentor, and professional developer.