A Teacher's Guide to the Books of
BRUCE GOLDSTONE

ABOUT THE AUTHOR

BRUCE GOLDSTONE has created many books for young readers, including those that explore mathematical concepts such as the ones in this guide. He has a gift for presenting complicated ideas and making them accessible to elementary school–age children through the use of clear, concise language and eye-catching photographs. His subtle use of humor adds to the playful tone of his books. These are books that children will pore over and return to again and again. Visit Bruce online at brucegoldstone.com.

ABOUT THE GUIDE

This guide supports the use of Bruce Goldstone's books as part of a standards-based or STEM curriculum. It provides questions and activities for use before, during, and after reading as well as suggestions for how the books can be used independently, in pairs, or in small- and whole-group settings.

The guide is designed to deepen students' literacy skills and content knowledge and is aligned with the Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects, and the Common Core State Standards for Mathematics. In addition to the ELA and Literacy and Mathematics standards that are referenced throughout the guide, the questions and activities support the types of expertise teachers seek to develop in their students as outlined in the CCSS Standards for Mathematical Practice.
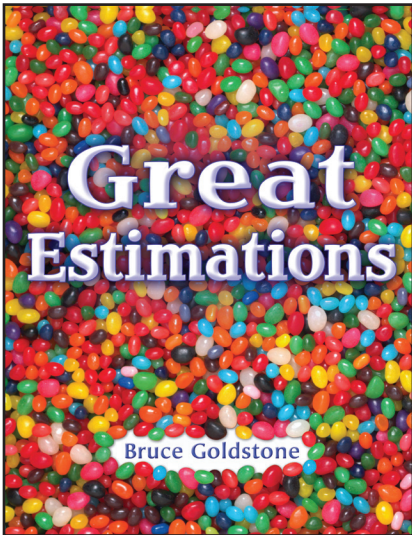
Each title also supports the interdisciplinary and applied approach of a STEM curriculum. Goldstone's books encourage readers to integrate knowledge and apply it in real-life situations.

We hope you will find this guide helpful, and we encourage you to adapt it as needed for the students in your classroom. Enjoy!

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ABOUT THE BOOKS

GREAT ESTIMATIONS

Bruce Goldstone introduces children to the concept of estimation and how it can be used in everyday situations. He explains how to make reasonable estimates using three different strategies: eye training, clump counting, and box and count. Hints at the bottom of many pages provide practical suggestions for the problems he poses. The language is clear and direct, and the photographs contain real-life objects elementary school–age children encounter daily. Humorous speech bubbles add to the playful tone of the book. At the end of the book, readers are challenged to use estimation in real-life situations. Readers will enjoy the playful approach to this mathematical theory and learn an important skill at the same time.

HC: 9780805074468 / Ages 7–10
PB: 9780312608873 / Ages 7–10

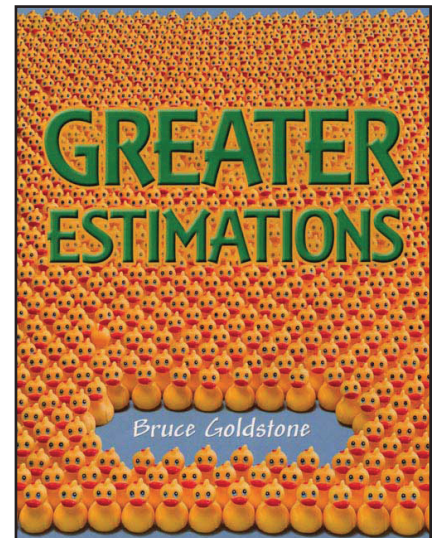### Questions to Check Comprehension of *Great Estimations*

1. What is an estimate?
2. Why is estimating a useful skill?
3. What are three strategies for estimating numbers? Explain how each works.
4. What is an easy way to multiply by 10? by 100?
5. Give an example of a time when you might use estimation in your own life.

GREATER ESTIMATIONS

In this companion book to *Great Estimations*, Bruce Goldstone continues to get elementary school–age children excited about estimation. He provides more examples of the three estimation strategies introduced in his first book and presents two new strategies: about how much and really big numbers. As in his previous book, the colorful photographs contain varied objects displayed in intriguing ways. Hints at the bottom of each page help readers tackle each problem. Goldstone has again created an engaging book that will delight readers and extend their mathematical skills.

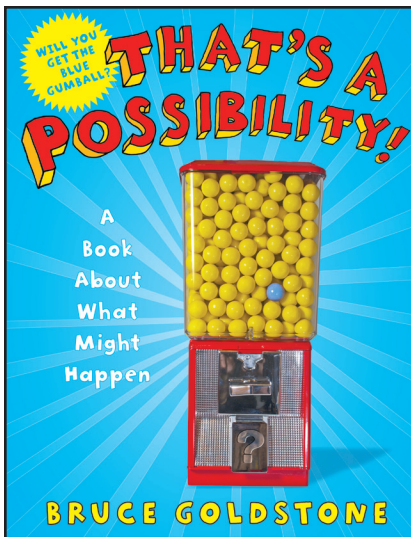HC: 9780805083156 / Ages 7-10

Questions to Check Comprehension of *Greater Estimations*

1. Why is clump counting a good strategy to estimate the number of skydivers on page 10?
2. Why isn't clump counting a good strategy to estimate the number of bees in the photo on page 12?
3. What are four ways estimating can help you decide how much of something there is?
4. How does the paper clip at the top of the photo on page 22 help you to estimate the length of the other objects?
5. Why is an aerial photograph more helpful than a photograph taken on the ground to estimate how many people are in a crowd of people?

THAT'S A POSSIBILITY!

As he did in his previous books, Bruce Goldstone introduces young readers to a complex mathematical concept in a fun, interactive way, using a question/answer format and colorful photographs that contain appealing objects such as animals, games, and teddy bears. In this introduction to probability, he explores what it means to be possible, impossible, certain, likely, probable, or improbable. He poses challenging problems and provides answers at the end. The book contains additional explanations of other mathematical concepts: odds, chances, outcomes, combinations, and permutations. This book is a wonderful resource for the classroom library.

Questions to Check Comprehension of *That's a Possibility!*

1. What is the difference between being possible and being certain?
2. Is it possible or probable that everyone in your class would get 100% on a spelling test? Explain your answer.
3. Is it likely or unlikely to snow in June? Why?
4. A brown paper bag contains three red Legos and one green one. If you pulled one Lego out of the bag without looking, what are the odds it would be green?
5. What is something that will probably happen at a birthday party?

I SEE A PATTERN HERE

In *I See a Pattern Here*, Bruce Goldstone has created another fascinating book about a mathematical concept. Presented in a conversational tone and containing colorful photographs of everyday objects and beautiful artifacts from many cultures, Goldstone explains what patterns are and how to create them by sliding, turning, and flipping shapes. Informational text boxes, titled MathSpeak, provide mathematical vocabulary and definitions for these concepts. As in his other books, he challenges readers to apply what they've learned in different situations. An answer key is provided at the end. After reading this book, children will see patterns everywhere in their world.

Questions to Check Comprehension of *I See a Pattern Here*

1. What is a pattern? Why don't most patterns repeat forever?
2. What are three ways to move a shape to make a pattern?
3. How can you tell if a shape has been turned or flipped?
4. Does a human body have a line of symmetry? Why or why not?
5. Think of the seats on a school bus. What kind of pattern is this? Is there a line of symmetry on the bus? Where would you draw it?
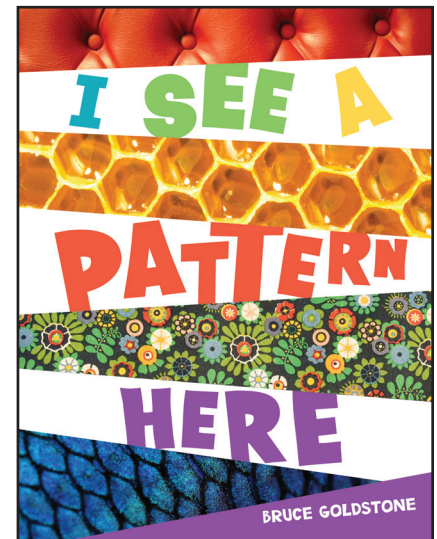
COMMON CORE ACTIVITIES

Students can do these activities independently, with a partner, or in small groups.
They should record their responses on sticky notes or in notebooks.

BEFORE READING

Preview the Text:

Students examine the cover of the book and read the title. They ask themselves the following questions:
- What do I think this book is about?
- What do I already know about this topic?
- What questions do I have?
- What do I think I might learn from this book?

Students preview the whole book and ask themselves the following questions:
- Authors of informational books organize texts in many ways: chronological order, compare/contrast, cause/effect, problem/solution, question/answer. How is this book organized?
- How will this help me read this book?
- What text features are used to organize the information in the book?
- What other resources does the author include to help you understand the concepts in the book?

What's So Funny?

Explain that informational books can be entertaining as well. Ask students to keep track of the ways Bruce Goldstone uses humor in his books. They should write down examples from each book in their notebooks.

CCSS FOR ELA AND LITERACY:

➤ **RI.3.5** Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

➤ **RI.3.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

➤ **RI.4.5** Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/ solution) of events, ideas, concepts, or information in a text or part of a text.

➤ **RI.4.7** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

DURING READING

Questions/Answers:

As they read, ask students to answer the questions posed by the author. Encourage them to use the information from the photographs and the hints and notes that the author provides in formulating their answers. They write their answers on sticky notes and place them on each page. After reading, they meet with a partner or in a small group to compare their answers with other students'.

Be the Expert:

Chunk each book into logical sections and assign each section to a different student. Each student must become the expert of that section, learning the information and deciding how to teach it to classmates. Students then have the opportunity to teach classmates what they learned. Other students ask questions for clarification as needed.

My Favorite Page:

As students read, ask them to choose the photograph that best helped them to understand a math concept. They place a sticky note on the page and write down how the photo helped them. They meet with a partner or in a small group to share their page and tell how it helped them learn this concept.

Key Vocabulary:

Tell students that Bruce Goldstone's books teach important mathematical concepts and contain correct mathematical vocabulary. Provide each student with three index cards. Ask the students to identify important math vocabulary in their book and write the word or phrase on the front of the card with the definition on the back. After reading, students take turns "quizzing" each other on this vocabulary. The words can then be posted on a math word wall.

CCSS FOR ELA AND LITERACY:

➤ **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

➤ **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea.

➤ **RI.3.4** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 3 topic or subject area.*

➤ **RI.3.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

➤ **RI.4.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

➤ **RI.4.2** Determine the main idea of a text and explain how it is supported by key details; summarize the text.

➤ **RI.4.4** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area.*

➤ **RI.4.7** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

➤ **L.3.4** Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies

➤ **L.3.6** Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., *After dinner that night we went looking for them*).

➤ **L.4.4** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies

➤ **L.4.6** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., quizzed, whined, stammered) and that are basic to a particular topic (e.g.,*wildlife*, *conservation*, and *endangered* when discussing animal preservation).

CCSS FOR MATHEMATICS:

➤ **3.OA.A.3** Use multiplication and division within 100 to solve word problems isituations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

➤ **3.NBT.A.1** Use place value understanding to round whole numbers to the nearest 10 or 100.

➤ **3.MD.A.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem

➤ **4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

➤ **4.NBT.A.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.

➤ **4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

AFTER READING

Exit Slips:

Write the title of each book by Bruce Goldstone at the top of separate pieces of chart paper. Under each title, write "What I Learned" on the left and "A Question I Have" on the right. Students use sticky notes to write their responses and place them on the charts in the appropriate places.

Integrating Knowledge:

Provide students with other books or materials on the mathematical concepts presented in Bruce Goldstone's books. Students choose one concept and read another text on that concept. They write a brief report on the topic integrating information from both sources. These can be posted on the math wall and/or presented orally to classmates.

That's My Life!:

After reading each Bruce Goldstone book, students write a short summary of when they have used that mathematical concept in their own lives.

I Know What's Funny!:

Students meet in small groups to share their favorite examples of humor in Bruce Goldstone's books and tell why they thought the passages were so funny.

EXTENDING LEARNING

CLASSROOM BOOKS:

Students bring in photographs or create their own pictures that can be used to illustrate one of the concepts in Bruce Goldstone's books: estimation, possibility, or patterns. They paste the photo or picture on construction paper and formulate a question about the concept. For example, a student may use a photograph of fans at a baseball game and ask the reader to estimate how many people there are. The student includes a hint to help the reader solve the problem. Compile the pages into classroom books and display in the classroom library for others to enjoy and learn from.

CCSS FOR ELA AND LITERACY:

➤ **RI.3.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

➤ **RI.3.9** Compare and contrast the most important points and key details presented in two texts on the same topic.

➤ **RI.4.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

➤ **RI.4.7** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on web pages) and explain how the information contributes to an understanding of the text in which it appears.


➤ **RI.4.9** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

➤ **SL.3.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

➤ **SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

➤ **SL.4.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

➤ **SL.4.4** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

➤ **W.3.7** Conduct short research projects that build knowledge about a topic.

➤ **W.4.7** Conduct short research projects that build knowledge through investigation of different aspects of a topic.

CCSS FOR MATHEMATICS:

➤ **3.OA.D.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

➤ **3.NBT.A.1** Use place value understanding to round whole numbers to the nearest 10 or 100.

➤ **3.MD.A.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

➤ **4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

➤ **4.NBT.A.1** Recognize that in a multidigit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.

➤ **4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
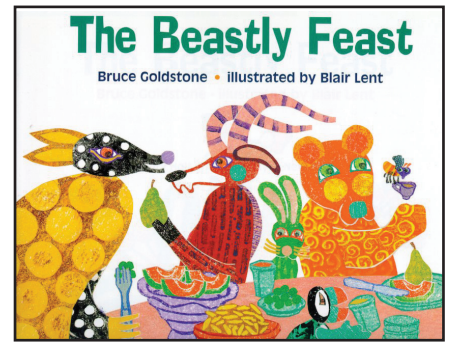
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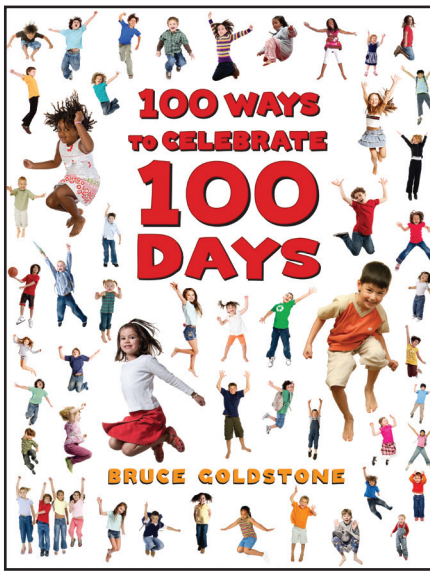
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This guide was written by Barbara McLaughlin, literacy consultant and former senior program director for Elementary ELA in the Boston Public Schools. She holds masters' degrees in reading and children's literature.