

Focus Question:

What factors are contributing to overpopulation, and how does this affect Earth?

Book Summary

Text Type: Nonfiction/Informational

Today, seven billion people live on Earth! This large population is affecting our planet in many ways. How many people do you think is too many for Earth to support? *Seven Billion and Counting* provides students a comprehensive look at the problems of overpopulation and the impact it has on Earth. This book can also be used to teach students how to analyze cause-and-effect relationships and the proper use of complex sentences.

The books and lesson are available for levels Y and Z1.



Lesson Essentials

Instructional Focus

- ☐ Summarize to understand text
- ☐ Analyze cause-and-effect relationships
- ☐ Describe information provided by graphics
- ☐ Recognize and understand the use of complex sentences
- ☐ Read and understand number words

Materials

- ☐ Book—*Seven Billion and Counting* (copy for each student)
- ☐ Summarize, cause and effect, complex sentences, number words worksheets
- ☐ Discussion cards
- ☐ Book quiz
- ☐ Retelling rubric

Vocabulary

Boldface vocabulary words also appear in a pre-made lesson for this title on VocabularyA-Z.com.

• Words to Know

Story critical: *birthrate* (n.), *carrying capacity* (n.), *consumed* (v.), *developing countries* (n.), *overpopulation* (n.), *standard of living* (n.)

Enrichment: *arithmetically* (adv.), *ecological footprint* (n.), *emitting* (v.), *estuaries* (n.), *geometrically* (adv.), *hydrologic* (adj.), *infrastructures* (n.), *millennia* (n.), *oversight* (n.)

- **Academic vocabulary:** *available* (adj.), *environment* (n.), *estimate* (v.), *protect* (v.), *source* (n.), *technology* (n.)

Guiding the Reading

Before Reading

Build Background

- Write the phrase *seven billion* on the board. Ask students to assist you in writing the number. Point out that it has nine zeros.
- Ask students: *How large is the number seven billion?* Discuss their answers. Give examples or use the gingerbread diagram on page 6 of the book. Have students work with a partner to think of how much food and water is needed for seven billion people for just one day. Have students discuss what would happen if resources were evenly distributed among everyone compared to resources being unevenly distributed among countries.

Introduce the Book

- Give students their copy of *Seven Billion and Counting*. Guide them to the front and back covers and read the title. Have students discuss what they see on the covers. Encourage them to offer ideas as to what type of book it is (genre, text type, and so on) and what it might be about.
- Show students the title page. Discuss the information on the page (title of book, author's name).
- Preview the table of contents on page 3. Remind students that the table of contents provides an overview of the book. Ask students what they expect to read about in the book, on the basis of what they see in the table of contents. (Accept all answers that students can justify.)

Introduce the Reading Strategy: Summarize

- Explain to students that one way to understand and remember information in a book is to write a *summary*, or brief overview, of the most important information in a section or chapter. Point out that a summary often answers the questions *who*, *what*, *when*, *where*, and *why*.
- Create a chart on the board with the headings *Who*, *What*, *When*, *Where*, and *Why*. Read page 4 aloud and model summarizing by filling in details for each heading and sharing a summary with students.

Guiding the Reading (cont.)

Introduce the Comprehension Skill:

Cause and effect

- Discuss cause-and-effect relationships. Explain that a *cause* is an action or event that makes something happen and the *effect* is what happens because of, or as a result of, the action or event.
- Explain to students that there can be more than one effect from a cause. Copy the top of the [cause-and-effect worksheet](#) on the board, and write *Snowstorm* in the *Cause* box and *Roads closed* in the top *Effect* box. Ask students what else can happen when there is a snowstorm. Record responses in the *Effect* boxes.
- Encourage students to look for cause-and-effect relationships as they read the book.

Vocabulary

Have students turn to the “Words to Know” box on the copyright page. Discuss each word with students. Then, have students turn to the glossary on page 24. Explain that the glossary provides definitions for the vocabulary words in the book. Point out the use of each content word and academic vocabulary word in the book, and then use each word in a different model sentence. Have students work in groups to create posters for these words. Have them include on each poster the word and its part of speech, the definition, the word in an example sentence, and a picture illustrating the meaning of the word.

Set the Purpose

- Have students read to find out more about factors contributing to overpopulation and how this affects Earth. Write the Focus Question on the board. Invite students to look for evidence in the book to support their answer to this question.
- Have students make a small question mark in their book beside any word they do not understand or cannot pronounce. These can be addressed in a future discussion.

During Reading

Text-Dependent Questions

As students read the book, monitor their understanding with the following questions. Encourage students to support their answers by citing evidence from the book.

- *Why did the Rapanui use up many of their resources?* (level 3) page 5
- *How would you summarize Earth’s carrying capacity?* (level 2) pages 7 and 8
- *How would you describe the sequence of the loss of the Fertile Crescent?* (level 3) pages 9 and 10
- *What do you think the outcome would have been on Earth’s population without the Industrial Revolution?* (level 3) pages 9 and 10

- *What facts would you select to support the idea that new technology brought new problems?* (level 3) pages 14–17
- *How did efficient water use affect forests?* (level 2) page 18
- *What conclusions can you draw about the United States’ impact on Earth?* (level 3) multiple pages
- *What can we learn from the Rapanui?* (level 3) page 23

Text Features: Graphics

Explain that *graphics*, including charts, graphs, and cutaways, are used to help readers understand what the author is trying to explain. Have students work with a partner to review the chart on page 11. Ask students: *How does the chart support the main idea of this section? How is the information organized on the chart? How does the population growth in the modern age compare to that in the Middle Ages? What is the largest population projection for the year 2025?* Have students review other graphics in the book and discuss in groups which cause-and-effect relationships they support. Invite volunteers to share their thoughts with the class.

Skill Review

- Model for students how you summarize as you read, and direct them to stop at several points during reading to answer the questions *who*, *what*, *when*, *where*, and *why*.
- **Check for understanding:** Have students read pages 9 and 10 with a partner. Ask students to summarize what they read in groups. Invite volunteers to share their summaries with the rest of the class. Have students continue working with their partner to summarize a section assigned from the table of contents.
- **Independent practice:** Introduce, explain, and have students complete the [summarize worksheet](#). If time allows, discuss their answers.
- Have students work in groups to periodically review the cause-and-effect relationships in the book. Have groups discuss these relationships and how they affect outcomes in the book.
- Model evaluating details to understand cause-and-effect relationships in the book.
Think-aloud: *The book is providing me with information about the cause-and-effect relationships of overpopulating Earth. I read on page 17 that we are burning more fossil fuel and releasing carbon dioxide into the air. This is causing Earth to get warmer and ecosystems to change. This is one of many cause-and-effect relationships I can read about in the book.*

Guiding the Reading (cont.)

- Model how to complete the cause-and-effect worksheet. Have students identify details from the book and circle them. Then, have students discuss the details with a partner and determine the cause-and-effect relationships in the book.

After Reading

Ask students what words, if any, they marked in their book. Use this opportunity to model how they can read these words using decoding strategies and context clues.

Skill Review

Graphic Organizer: Cause and effect

Review the cause-and-effect worksheet that students completed. Have students share their work in groups. Invite volunteers to share the relationships they chose with the rest of the class. Point out that sometimes, one effect leads to another, and so on. Ask students why it is important to understand cause-and-effect relationships when considering a historic event or series of events.

Comprehension Extension

Discussion cards covering comprehension skills and strategies not explicitly taught with the book are provided for extension activities.

Response to Focus Question

Have students cite specific evidence from the book to answer the Focus Question. (Answers will vary. Reasons should include factors contributing to overpopulation and how this affects Earth. Samples: *More people are living on Earth since the Industrial Revolution because of new farming practices, manufacturing, railroads, better food supplies and distribution, movement from farms to cities, a better understanding of diseases, and better hygiene practices. As a result, people use more resources, including those that are nonrenewable, like coal, oil, metals, and ecosystems. Once these resources are gone, we can't get them back.*)

Comprehension Checks

- **Book quiz**
- **Retelling rubric**

Book Extension Activities

Build Skills

Grammar and Mechanics: Complex sentences

- Have students find and point to the word *because* on page 5. Read the sentence aloud. Review or explain with students that a *conjunction* is a word that joins together the two parts of a complex sentence. When joining an independent clause (complete thought) and a dependent clause (incomplete thought) together (as in the example),

a special type of conjunction called a *subordinating conjunction* must be used. Explain to students that the word *because* is the subordinating conjunction in the complex sentence. List the following examples of subordinating conjunctions on the board: *as, as if, before, after, though, even though, while, when, since, until, unless, where.*

- Write the following sentence on the board: *When a group of people called the Rapanui settled the island, they cleared trees for homes and fields.*
- Have students identify the conjunction (*When*), the dependent clause (*a group of people called the Rapanui settled the islands*), and the independent clause (*they cleared trees for homes and fields*). Review or explain that when the dependent clause is at the beginning of the sentence, a comma often separates the clauses.
- **Check for understanding:** Have students highlight all of the complex sentences on page 20 in their book. Have volunteers write the sentences on the board and circle the conjunctions.
- **Independent practice:** Introduce, explain, and have students complete the **complex sentences worksheet**. If time allows, discuss their answers.

Word Work: Number words

- Explain that when reading aloud, readers will sometimes encounter different symbols, numbers, and abbreviations within a text. Effective readers read these parts of the text fluently, just as they read the words.
- Have students read the first paragraph on page 18. Ask them to find the numbers in the text with a partner. Review or explain that numbers written in standard form are called *cardinal numbers* and are used to describe an amount, a date, or a time. Point out that a cardinal number is read in the same manner as the written word for the number. Practice reading the numbers, symbols, and abbreviations aloud. Review or explain that the decimal point is read as *point*.
- **Check for understanding:** Have students work in pairs to identify and read the symbols, numbers, and abbreviations on the graphic on page 15. Ask volunteers to write their word equivalents on the board.
- **Independent practice:** Introduce, explain, and have students complete the **number words worksheet**. If time allows, discuss their answers.

Connections

- See the back of the book for cross-curricular extension ideas.