B R I D G E S
Skills & Strategies

Comprehension Strategies
• Draw Conclusions
• Summarize Information
• Use Graphic Features to Interpret Information
• Use Text Features to Locate Information

Metacognitive/Fix-Up Strategy
• Retell what you’ve read

Vocabulary
• Develop academic content vocabulary

Phonics/Word Study
• Recognize words with the suffix -less

Grammar and Usage
• Use present tense verbs

Fluency
• Read question marks

Body Systems: The Respiratory and Circulatory Systems

For students reading at
Literacy Level O/34, including:
• Grade 3 readers
• Grades 4–8+ students reading below level
• English-language learners at TESOL Level 5

Science

Bridges Theme: The Human Body
• Body Systems: Skeletal and Muscular (Level N/30)
• Body Systems: The Respiratory and Circulatory Systems (Level O/34)
• Body Systems: Human Cells (Level P/38)

Science Big Idea
Readers learn what the respiratory and circulatory systems are and how these systems work together to keep us healthy.
Prepare to Read

Build Comprehension

Pictures To Think About

- Hand out books. Read the title aloud. Ask students to tell what they see on the cover.
- Tell students that our respiratory and circulatory systems work together to keep us healthy.
- Have students turn to the page titled Pictures To Think About. Tell them they will use information on these pages to help recall and add to what they already know about their respiratory and circulatory systems.
- Use the illustration in the center to point out the main organs of the respiratory and circulatory systems—the lungs and heart.
- On the board, create a chart with two columns labeled What is it? and What do I know about it? Have students make a copy on paper.
- Ask partners to study each photograph, starting with the top picture on the left-hand page and moving clockwise. Have students complete as much of the chart as they can on their own and then share their ideas with the class.

Words To Think About

- Have students turn to the Words To Think About spread. Ask them to study the word map for aerobic and think of other characteristics and examples to add. Then read the second paragraph on page 8 and ask: What characteristics and examples could you add now? What do you think the word aerobic means? (kind of exercise that makes your body bring in extra oxygen)
- Ask students to study the word bench for anaerobic. Explain that this word is made up of two word parts from the Greek language. Read the parts aloud for students. Say: Put the word parts together: “without air.” What kind of exercise is done without air? Then read page 9 and ask: What do you think the word anaerobic means? (exercise that uses up more oxygen than you can bring in)
- Ask students to study the word pedestal for oxygen and think of other answers. Then read the first paragraph on page 6 and ask: What information can we add now? What do you think the word oxygen means? (a colorless, odorless gas that we need to breathe)
- Remind students that good readers use their own knowledge and the text to figure out the meanings of words.

Pictures To Think About

<table>
<thead>
<tr>
<th>Photograph</th>
<th>What is it?</th>
<th>What do I know about it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>illustration of human heart and blood vessels</td>
<td>heart pumps blood; blood vessels carry blood to all parts of the body</td>
</tr>
<tr>
<td>2</td>
<td>illustration of human respiratory system</td>
<td>includes nose, mouth, and lungs</td>
</tr>
<tr>
<td>3</td>
<td>two girls swimming in a pool</td>
<td>one kind of exercise that is good for your health</td>
</tr>
<tr>
<td>4</td>
<td>four children jogging</td>
<td>another kind of exercise that is good for your health</td>
</tr>
</tbody>
</table>

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BODY SYSTEMS: THE RESPIRATORY AND CIRCULATORY SYSTEMS
Before Reading

Preview the Book
• Turn to the Table of Contents and read the chapter headings aloud. Ask student partners to discuss what they think they will learn while reading this book.
• Turn to the Index. Explain that an index lists the topics in alphabetical order and the pages they are found on. Ask students to find the word valve in the Index and then again on the correct page in the book.

Set Learning Goals
• Pair students and ask them to generate a learning-goal statement about the book’s topic, such as I want to learn how the respiratory and circulatory systems work together. Have pairs share their statements.
• Post the learning-goal statements.

Build Vocabulary for Comprehension
• Write the words aerobic, anaerobic, and oxygen on the board. Remind students they have already discussed these three important words. Tell them you will now share additional words they will need to know, adding bone marrow, carbon dioxide, circulatory system, gas exchange, respiratory system, and resting heart rate to the list on the board. Read each word and ask students to pronounce it.
• Model how to sort the words on a three-column chart labeled Know, Think I Know, and Do Not Know. Say: I know what carbon dioxide is. I will write carbon dioxide in the first column. I do not know what a gas exchange is. I will write gas exchange in the last column. I have heard of bone marrow, but I do not know much about it. I will write bone marrow in the center column. Ask students to make their own charts and sort the words according to their current understanding of each one. Explain that as they learn more about these words, they can move them to different columns.

Introduction
• Ask students to turn to the Introduction on pages 2 and 3. Explain that an introduction tells what a book is about.
• Ask students to discuss what they see in the photographs and why they think the author put these here.
• Invite students to read the Introduction silently. Then say: Page 2 says whether you sprint or jog makes a difference to your respiratory and circulatory systems. What do you know about how exercise affects these systems? Turn to a partner and discuss your answers. After partners confer, invite them to share their thinking with the group.

Text and Graphic Features
Use this table to help students see how text and graphic features provide extra information to readers.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Feature</th>
<th>Prompts</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>labeled diagram (p. 7)</td>
<td>1. What does this diagram show? 2. What happens after oxygen enters your nose? 3. In what step does carbon dioxide move through your trachea?</td>
<td>1. how the respiratory system works 2. The oxygen travels down the trachea into the lungs. 3. step 6</td>
</tr>
<tr>
<td>2</td>
<td>timeline (p. 18–19)</td>
<td>1. How many years does the timeline show? 2. In what year was the first pacemaker put into a patient? What was its purpose? 3. How was Dr. DeVries’s 1982 surgery different from Dr. Barnard’s 1967 surgery?</td>
<td>1. 50 years 2. 1958; to shock the heart into beating regularly 3. Dr. DeVries implanted an artificial heart; Dr. Barnard implanted a heart from another person.</td>
</tr>
<tr>
<td>3</td>
<td>sidebar (p. 23)</td>
<td>How were Leonardo da Vinci’s studies of the human body different from other studies on the subject?</td>
<td>He actually observed the organs of dead bodies rather than guessing what human organs were like.</td>
</tr>
</tbody>
</table>
Chapter 1

Before Reading
Build Vocabulary for Comprehension
• Write respiratory system, circulatory system and carbon dioxide on the board.
• Say: The author gives us clues on pages 2–3 to help us define respiratory system. Help students find the clues (ways in which your respiratory system works, exercise makes you breathe faster) and define respiratory system. Repeat the process for circulatory system on pages 2–3.
• Say: The author uses the words This colorless and odorless gas is on page 6 to let us know she is defining carbon dioxide. Ask students to define carbon dioxide using the text.

Model Monitor-Reading Strategy: Retell What You’ve Read
• Say: One way to better understand what I read is to retell the information. To retell means to say the important facts and details in my own words.
• Use a real-life example of retelling.
• Explain that today students will retell the important information in Chapter 1.
• Read pages 4–5 aloud while students follow along. Restate at least one important fact or detail, such as The nose and mouth warm and moisten air. Write the idea on a self-stick note and place it on the page. Say: Taking notes will help me retell the information later.

Set Purpose for Reading
• Ask students to read Chapter 1 silently and take notes about important facts and details to retell later.
• Tell students they will read to answer the question How does your respiratory system work in different situations?

During Reading
Observe and Prompt Reading Strategies
• Watch students write important ideas from the chapter in their own words.
• Take note of students who have difficulty.

After Reading
Discuss the Reading
• Ask students to read aloud some of the notes they wrote and explain how the notes can help them retell the important information in Chapter 1.
• Have students answer the question How does your respiratory system work in different situations?
• To focus on text and graphic features for Chapter 1, use the labeled diagram prompt from the chart on page 3 of this guide.
• Read and discuss the checkpoint on page 8.
• Use the Bridges: Body Systems: The Respiratory and Circulatory Systems Comprehension Question Card for text-dependent questions that refer to this section.

Review Vocabulary
• Ask students to restate the descriptions given for respiratory system and circulatory system and the direct definition given for carbon dioxide.
• Ask students to locate the words on their vocabulary charts and decide if they want to move any to another column.

Summarize Information
• Explain that a summary gives the key ideas from a book.
• Have students turn to Chapter 1. As a group, decide on the key ideas. (With your nose, mouth, trachea, diaphragm, and lungs, you breathe in oxygen and breathe out carbon dioxide. During aerobic exercise, you breathe faster, giving your muscles extra oxygen. During anaerobic exercise, your muscles use more oxygen than you can breathe in. The air is thin high in the mountains, making breathing difficult. However, your blood holds more oxygen after living in the mountains. People can also have difficulty breathing due to problems at birth or smoking.)
• Keep the key ideas posted. Say: After we select the key ideas from the rest of the book, we will write a summary together.
Chapter 2

Before Reading

Build Vocabulary for Comprehension

• Write resting heart rate on the board.
• Guide students to see that resting heart rate is directly defined on page 14. Say: The author uses the words This is to let us know she is defining resting heart rate. Ask students to define resting heart rate using the text.

Guide Monitor-Reading Strategy:
Retell What You’ve Read

• Remind students that writing about and retelling what they read can help them understand and remember important facts and details.
• Say: As you read, take notes on the important information. Don’t copy word-for-word from the book, though. Instead, write the facts and details in your own words. That way you’ll make sure you really understand them. You’ll remember them longer, too.
• After you read page 12 aloud, ask: What do I need to remember? How can I say it in my own words? Write students’ ideas on a self-stick note and place it on the page.

Set Purpose for Reading

• Ask students to read Chapter 2 and take notes on important facts and details to use for future retelling.
• Tell students they will read to answer the question How does your circulatory system work in different situations?

During Reading

Observe and Prompt Reading Strategies

• As students read, observe them carefully. For students who struggle with retelling, model it again. Then read page 17 aloud. Ask students what important facts and details they could write notes about in their own words. Encourage them to do so.

After Reading

Discuss the Reading

• Ask students to read some of their notes aloud. Ask: How did writing retelling notes about important facts and details help you understand the circulatory system? Discuss responses.
• Have students answer the question How does your circulatory system work in different situations?
• To focus on text and graphic features for Chapter 2, use the timeline prompt from the chart on page 3 of this guide.
• Read and discuss the checkpoint on page 17.
• Use the Bridges: Body Systems: The Respiratory and Circulatory Systems Comprehension Question Card for text-dependent questions that refer to this section.

Review Vocabulary

• Ask students to restate the direct definition given for resting heart rate.
• Ask students to decide if they want to move this term to another column on their charts.

Summarize Information

• As a group, decide on the key ideas from Chapter 2 and add them to the Chapter 1 summary. (Your heart pumps blood through your blood vessels. Arteries carry oxygen-rich blood from your heart through your body. Veins return oxygen-poor blood to your heart and lungs. The resting heart rate of most people is about seventy beats per minute. Aerobic exercise boosts the circulatory system. Doctors can fix many heart and heart valve problems.)
Before Reading

Build Vocabulary for Comprehension
• Write gas exchange and bone marrow on the board.
• Guide students to see that gas exchange is described on page 23. Say: The author gives us clues to help us define gas exchange. Help students find the clues (oxygen from lungs turns blood bright red; in your tissues, capillaries trade oxygen for carbon dioxide; this makes blood a dark, purplish red) and define gas exchange.
• Guide students to see that bone marrow is directly defined on page 25. Say: The author uses the words That is to let us know she is defining bone marrow. Ask students to define bone marrow using the text.

Apply Monitor-Reading Strategy:
Retell What You’ve Read
• Remind students they have been writing notes about the book so they can retell the information. Say: Use your notes to tell about the book in your own words.
• Read page 20 aloud as students follow along. Remind them to use their own words as they take notes about the important facts and details, such as the four parts in blood.
• Say: Retelling helps you better remember what you read. Encourage students to write notes and retell the information as they finish reading the book.

Set Purpose for Reading
• Ask students to read Chapter 3 and the Conclusion and write notes on important facts and details to retell later.
• Tell students they will read to answer the question How do the parts of your blood work?

During Reading
Observe and Prompt Reading Strategies
• As students read, watch them as they write notes about the text so they can retell the information.
• Ask yourself Who is still struggling with this strategy? How can I help them? and provide support as needed.

After Reading
Discuss the Reading
• Ask students to retell important ideas and details based on the notes they have written. Ask: How did retelling help you understand blood and its purposes? Discuss students’ responses.
• Have students answer the question How do the parts of your blood work?
• To focus on text and graphic features for Chapter 3, use the sidebar prompt from the chart on page 3 of this guide.
• Use the Bridges: Body Systems: The Respiratory and Circulatory Systems Comprehension Question Card for text-dependent questions that refer to this section.

Review Vocabulary
• Ask students to restate the description given for gas exchange and the direct definition given for bone marrow and decide if they want to move any words to another column on their charts.

Summarize Information
• Have students turn to Chapter 3. Ask: What are the key ideas from Chapter 3? (Blood is made of four parts. Plasma keeps body tissues moist. Red cells carry oxygen from lungs to tissues. White cells fight infections. Platelets clump to stop bleeding. When you breathe, the heart pumps bright red, oxygen-rich blood through arteries. In tissues, oxygen is traded for carbon dioxide. Then purplish blood goes through veins back to the heart and lungs. You breathe out carbon dioxide. Bone marrow constantly makes red blood cells.)
• Tell students they will write a summary of the book later on in the lesson.
Build Comprehension

Draw Conclusions

• **Model** Say: Authors can’t tell readers everything about a topic. Readers have to “read between the lines.” Good readers draw conclusions based on three or more clues. For example, I notice on page 8 the author says aerobic exercise makes you breathe faster and more deeply and gives your muscles extra oxygen. On page 9 the author says anaerobic exercise makes your muscles use more oxygen than you can breathe in, and your body must work to repay the oxygen your muscles used. From these clues I can conclude that aerobic exercise is the best way to get in shape.

• **Draw a chart on the board with three columns labeled Page, Clues, and Conclusions and ask students to create similar charts on paper. Record information for the conclusion from pages 8 and 9 while students do the same.**

• **Guide** Help students locate clues and evidence on page 14 that support a conclusion about healthy and less healthy hearts. Record their responses on your chart as students do the same.

• **Apply** Reread the chart and then explain that student partners will draw conclusions based on clues found on pages 21 and 25.

• **Ask students if they have any questions before they begin. Monitor their work and intervene if they have difficulty. If students draw conclusions different from those in the sample, be sure each one is supported by clues and evidence in the text.**

• **Read the completed graphic organizer.**

Shared Writing

**Summarize the Book**

• **Say:** We have selected key ideas from each chapter. Now we will work together to write a summary of the entire book.

• **Review the key ideas recorded on chart paper, and then ask:** How can we summarize the book in our own words? Ask one or two students to serve as scribes as the class forms summary sentences.

**Sample Summary for Body Systems: The Respiratory and Circulatory Systems**

With the nose, mouth, trachea, diaphragm, and lungs, you breathe in oxygen and breathe out carbon dioxide. Aerobic exercise gives muscles extra oxygen. Anaerobic exercise takes more oxygen from muscles than is breathed in. Blood is made up of plasma, red cells, white cells, and platelets. The heart pumps blood through the blood vessels. Arteries carry oxygen-rich blood from the heart through the body. Veins return oxygen-poor blood to the heart and lungs.

### Draw Conclusions

<table>
<thead>
<tr>
<th>Page</th>
<th>Clues</th>
<th>Conclusions</th>
</tr>
</thead>
</table>
| 8–9  | • aerobic exercise makes you breathe faster and more deeply, gives muscles extra oxygen  
• anaerobic exercise takes more oxygen out than is breathed in, body must work to repay oxygen used by muscles | Aerobic exercise is the best way to get in shape. |
| 14   | • pulse is the beat of your heart  
• most people have a resting heart rate of about 70 beats per minute  
• a well-trained athlete may have a resting heart rate of 45 beats per minute | The healthier your heart is, the slower it beats at rest. |
| 21   | • plasma keeps body’s tissues moist  
• platelets stop bleeding  
• red cells carry oxygen from lungs to body tissues  
• white cells fight infections | Each part of the blood is essential for health. |
| 25   | • red blood cells are made in bone marrow  
• about three million red blood cells die every second  
• bone marrow makes about three million new ones to take their place | Bone marrow can make about three million red blood cells every second. |
Phonics/Word Study

Suffix -less
• Ask students to locate the word odorless on page 6. Write odorless on the board and circle less. Say: A word part added to the end of a word is called a suffix. Each suffix has its own meaning. The suffix -less means without. Odorless means without odor.
• Ask students to read the third sentence on page 6. Ask: What does the word colorless mean? (without color) How do you know? (Colorless has the suffix -less, which means without.) What does the author describe using the words odorless and colorless? (the gases oxygen and carbon dioxide)
• Write the words smokeless, painless, breathless, and soundless on the board. Ask student pairs to choose one word to use in an oral sentence about health. Then invite students to think of other -less words to add to the list.
• See SpiralUp Phonics Skill Bag #30 from BEC for more in-depth instruction.

Grammar and Usage

Present Tense Verbs
• Say: Authors use present tense verbs to tell about events that happen on a regular basis. Ask students to read the second sentence on page 5 with you: “It relaxes when you breathe out.” Say: The verb relaxes means your diaphragm relaxes on a regular basis. Repeat the process with tightens in the third sentence and flows in the fifth sentence.
• Invite students to read the third sentence on page 15 with you. Ask: What word names an action the heart does on a regular basis? (pumps) What does the heart pump? (blood) Ask similar questions about the next four sentences on the page.
• Ask students to find the present tense verbs in the text on page 23. (turns, pumps, trade, makes, move, breathe, return) Write the verbs on the board as students name them. Challenge student partners to use the words in sentences about events that happen on a regular basis.

Fluency

Read Question Marks
• Say: Sometimes authors ask questions. We recognize a question by the question mark at the end. Our voices sound different when we ask something. Our voices move to a higher pitch at the end of the question.
• Ask students to turn to page 6. Read the author’s question in a flat voice. Hold your hand level while you read it. Then read the question again, moving your hand upward at the end as you move your voice to a higher pitch. Say: Using a higher pitch at the end of the question indicates that we need to keep reading to find the answer. Have students read the question aloud as modeled.
• Invite students to locate questions on pages 2, 12, 16, 24, 25, and 28 and take turns reading them, moving their voices to a higher pitch at the end of each one.