

Grade 1 Science

Unit 5: Human Body Systems

7 lessons and a unit quiz. Use this pack with the **Human Body Systems Student Reader** (print it, or download it once from the course) to teach the whole unit without the internet.

What is in this pack

- A lesson plan for each chapter: the Big Question, words to know, which pages to read, questions to talk over and the activity pages.
- The unit quiz, ready to print.
- Answers for the teacher at the back: every discussion question and the quiz key.

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Lesson schedule

Two or three lessons a week, about 30 minutes each. Tick each one off as you go.

	Lesson	Reader pages	Activity pages
☐	Lesson 1: Graceful Grace	PDF pages 6–9	AP 1.1
☐	Lesson 2: Bones	PDF pages 10–15	AP 2.1
☐	Lesson 3: Muscles	PDF pages 16–21	AP 3.1
☐	Lesson 4: Breathing	PDF pages 22–27	AP 4.1
☐	Lesson 5: Pumping Blood	PDF pages 28–33	AP 5.1
☐	Lesson 6: Body Control	PDF pages 34–39	AP 6.1
☐	Lesson 7: Science in Action: Physiologists and Anatomy	PDF pages 40–50	AP 7.1
☐	Unit review and assessment	—	—
☐	Words quiz	—	—

Page numbers are the PDF page numbers of the Student Reader file, so they match what your PDF reader shows.

Lesson 1: Graceful Grace

THE BIG QUESTION

What goes on in a gymnast's moving body? Lesson Question: What movements can we make our bodies perform?

Words to know

- **backbend** — a move in gymnastics that starts in the standing position and then the body arches backward until the hands reach the ground
- **body** — all the parts that make up you
- **flexible** — to have the ability to bend or move a muscle easily
- **gymnast** — a person who practices gymnastics
- **gymnastics** — physical activities that involve balance, flexibility, tumbling, and strength
handstand n. an inverted gymnastics pose performed by balancing vertically supported on the palms of the hands

Teacher's lesson plan

Follow the Teacher Guide, PDF pages 18–22: the steps, materials and timing for this lesson.

Read

Read Student Book, Chapter 1: “Graceful Grace”: PDF pages 6–9. Look at the pictures and maps together.

Talk it over

1. Ask, How did your body feel holding the plank pose?
2. LITERAL—What did Grace share on show-and-tell day?
3. LITERAL—Why is it harder to do a handstand than it is to stand on your legs and feet?
4. INFERENTIAL—What are some other reasons it is hard to do a handstand?
5. Ask, What movements can we make our bodies perform?

Answers are at the back of this pack.

Check for understanding

- Answer the Big Question in a sentence or two: What goes on in a gymnast's moving body? Lesson Question: What movements can we make our bodies perform?
- Use one of today's words in a sentence of your own.

Activity pages

- Activity Page 1.1: If I Were a Gymnast — Teacher Guide PDF page 57

Lesson 2: Bones

THE BIG QUESTION

What goes on in a gymnast's moving body? Lesson Question: What are bones, and how do they work inside the body?

Words to know

- **rib** — one of several curved bones that attach to the spine and protect the organs in the chest cavity
- **skeletal system** — the system made up of bones, cartilage, and joints that provides support for the body and is the point of attachment for muscles
- **system** — a group of things that work together or interact

Teacher's lesson plan

Follow the Teacher Guide, PDF pages 23–28: the steps, materials and timing for this lesson.

Read

Read Student Book, Chapter 2: “Bones”: PDF pages 10–15. Look at the pictures and maps together.

Talk it over

1. Ask, How do you think bones help you hold the plank pose?
2. LITERAL—Which part of the skeleton protects your heart and lungs?
3. CORE VOCABULARY—Have students feel their skull and notice that this bone is round in shape. (See Know the Standards.) INFERENTIAL—What other bone is found in your head and is connected to the skull?
4. Ask, Which parts of the skeletal system do you recognize?
5. Ask, What are bones, and how do they work inside the body?

Answers are at the back of this pack.

Check for understanding

- Answer the Big Question in a sentence or two: What goes on in a gymnast's moving body? Lesson Question: What are bones, and how do they work inside the body?
- Use one of today's words in a sentence of your own.

Activity pages

- Activity Page 2.1: Connecting Bones — Teacher Guide PDF page 58

Lesson 3: Muscles

THE BIG QUESTION

What goes on in a gymnast's moving body? Lesson Question: What are muscles, and how do they work inside the body?

Words to know

- **contract** — in regard to muscles, a shortening of the muscle length
- **flex** — to bend or move a muscle
- **muscular system** — the system that consists of all the different muscles that allow the body to move
- **relax** — to be less tense and more calm
- **stretch** — to extend something to make longer or wider without breaking or tearing

Teacher's lesson plan

Follow the Teacher Guide, PDF pages 29–33: the steps, materials and timing for this lesson.

Read

Read Student Book, Chapter 3: “Muscles”: PDF pages 16–21. Look at the pictures and maps together.

Talk it over

1. Give each student a copy of What Happens to Muscles That Are Used a Lot?
2. Ask, Where are the muscles inside your body that are important for holding the plank pose?
3. Explain that the body part that feels softer and then harder as they flex is a muscle called a bicep. 24 HUMAN BODY SYSTEMS LITERAL—What does Grace do to make her muscles stronger?
4. LITERAL—What pulls on bones to make them move?
5. The heart is made of muscle that is always working—it constantly contracts and relaxes to pump blood through the body. (See Know the Science.) INFERENTIAL—How does exercise affect the heart?
6. LESSON 3 | MUSCLES 25 LITERAL—What happens to muscles that are used to lift weights?

Answers are at the back of this pack.

Check for understanding

- Answer the Big Question in a sentence or two: What goes on in a gymnast's moving body? Lesson Question: What are muscles, and how do they work inside the body?
- Use one of today's words in a sentence of your own.

Activity pages

- Activity Page 3.1: What Happens to Muscles That Are Used a Lot? — Teacher Guide
PDF page 59

Lesson 4: Breathing

THE BIG QUESTION

What goes on in a gymnast's moving body? Lesson Question: What body parts are used for breathing?

Words to know

- **body** — all the parts that make up you
- **diaphragm** — a body part made up of muscle and connective tissue that separates the chest and abdominal cavity
- **exhale** — to push air out of the lungs
- **inhale** — to bring air into the lungs
- **respiratory system** — a system of organs that work to take in oxygen to be distributed to the body and to remove carbon dioxide

Teacher's lesson plan

Follow the Teacher Guide, PDF pages 34–38: the steps, materials and timing for this lesson.

Read

Read Student Book, Chapter 4: “Breathing”: PDF pages 22–27. Look at the pictures and maps together.

Talk it over

1. colored pencils, crayons, or markers (1 set per student) Ch. 4 Activity Page Activity Page How Does My Breathing Change?
2. Give each student a copy of How Does My Breathing Change?
3. both Pages 22–23 Ask students to turn to pages 22–23 of the Student Book and look at the images as you read aloud. LITERAL—When does your body need more air? When does it need less air?
4. Ask, How does the plank pose affect your breathing?
5. LITERAL—Why is Grace breathing so fast?
6. INFERENTIAL—Why do you think some people keep their mouths open when they are exercising?
7. Suggest that students add small labels in pencil. • Ask students, Which part of the muscular system should you also add to your drawing, and why?
8. Ask students, Now that you have learned about the respiratory system, how would you answer the question?

Answers are at the back of this pack.

Check for understanding

- Answer the Big Question in a sentence or two: What goes on in a gymnast's moving body? Lesson Question: What body parts are used for breathing?
- Use one of today's words in a sentence of your own.

Activity pages

- Activity Page 4.1: How Does My Breathing Change? — Teacher Guide PDF page 60

Lesson 5: Pumping Blood

THE BIG QUESTION

What goes on in a gymnast's moving body? Lesson Question: What body parts move blood through the body?

Words to know

- **artery** — a blood vessel that carries oxygenated blood from the heart to the rest of the body
- **blood** — a thick mixture of different materials that are needed by all parts of the body
- **circulatory system** — the system that is made up of the organs and parts that move blood throughout the body
- **pulse** — the regular throbbing of blood through an artery each time the heart beats that can be felt on the wrist or neck
- **vein** — a blood vessel that carries deoxygenated blood back toward the heart

Teacher's lesson plan

Follow the Teacher Guide, PDF pages 39–44: the steps, materials and timing for this lesson.

Read

Read Student Book, Chapter 5: “Pumping Blood”: PDF pages 28–33. Look at the pictures and maps together.

Talk it over

1. Explain to students that everyone has blood inside their bodies. Ask, How much blood do you think your body can hold?
2. Ask, How does the plank pose affect your heart?
3. Tell students they are now going to measure how much blood is in their bodies. • Have students take turns holding the cups over the tray while you pour “blood” into them. • Ask students, How many cups did we fill up?
4. Ask students, What kind of body part is the heart?
5. Differentiation LITERAL—What is the job of the circulatory system?
6. Suggest that students add small labels in pencil. • Ask students, Where is the blood in your drawing?
7. Ask students, How does knowing about the circulatory system help you answer the question?

Answers are at the back of this pack.

Check for understanding

- Answer the Big Question in a sentence or two: What goes on in a gymnast's moving body? Lesson Question: What body parts move blood through the body?
- Use one of today's words in a sentence of your own.

Activity pages

- Activity Page 5.1: What Do the Heart, Blood, and Blood Vessels Do? — Teacher Guide PDF page 61

Lesson 6: Body Control

THE BIG QUESTION

What goes on in a gymnast's moving body? Lesson Question: What body parts control the body?

Words to know

- **body** — all the parts that make up you
- **control** — the power to direct or influence something
- **nervous system** — the system of organs, tissues, and nerves that receive and respond to stimuli

Teacher's lesson plan

Follow the Teacher Guide, PDF pages 45–50: the steps, materials and timing for this lesson.

Read

Read Student Book, Chapter 6: “Body Control”: PDF pages 34–39. Look at the pictures and maps together.

Talk it over

1. Answers will vary, with some students taking more time than others. Ask, What makes it hard to stack the cups quickly?
2. Ask, How do your muscles know to stay in the plank pose?
3. Ask students, What differences do you see in the amount of time it took to play the game?
4. Ask, Is it possible to get a faster time than on your first try?
5. LITERAL—What part of Grace's body controls all her gymnastics movements?
6. Differentiation LITERAL—What is the job of the nervous system?
7. Ask students, What do these bones feel like?
8. Ask, Which body parts collect information for your senses?
9. LITERAL—What connects each of these parts to the brain?
10. Ask, How does knowing about the nervous system help you answer the question?

Answers are at the back of this pack.

Check for understanding

- Answer the Big Question in a sentence or two: What goes on in a gymnast's moving body? Lesson Question: What body parts control the body?
- Use one of today's words in a sentence of your own.

Activity pages

- Activity Page 6.1: What's So Hard about Stacking Cups? — Teacher Guide PDF page 62

Lesson 7: Science in Action: Physiologists and Anatomy

THE BIG QUESTION

What goes on in a gymnast's moving body? Lesson Question: Who helps athletes and other people stay safe and healthy?

Words to know

- **exercise** — physical activity that is done to improve health
- **physical therapist** — a person who specializes in rehabilitating people by using exercise to improve physical capabilities
- **physiologist** — a person who specializes in the study of body functions and processes
- **sports** — physical activities played for fun as a group or individual

Teacher's lesson plan

Follow the Teacher Guide, PDF pages 51–55: the steps, materials and timing for this lesson.

Read

Read Student Book, Chapter 7: “Science in Action”: PDF pages 40–50. Look at the pictures and maps together.

Talk it over

1. If there are none, give a few hints by asking questions such as the following: • Who takes care of your teeth?
2. LITERAL—What is the job of a sports coach?
3. LITERAL—What do physiologists and physical therapists study?
4. What is the device helping the young girl do?
5. Some viruses make people very sick. (See Know the Science 2.) LITERAL—What is polio?
6. Jonas Salk INFERENTIAL—Why were most parents so happy to hear about the invention of a polio vaccine?
7. What goes on in a gymnast's moving body?

Answers are at the back of this pack.

Check for understanding

- Answer the Big Question in a sentence or two: What goes on in a gymnast's moving body? Lesson Question: Who helps athletes and other people stay safe and healthy?
- Use one of today's words in a sentence of your own.

Activity pages

- Activity Page 7.1: Helping People Heal — Teacher Guide PDF page 63

UNIT REVIEW

Unit review and assessment

- Activity page answer key (for the teacher): Teacher Guide PDF pages 64–64

WORDS QUIZ

Human Body Systems

Name: _____ Date: _____

Circle the letter of the best answer.

1. Which word means “structures in the body that are shaped like tubes and that blood flows through”?

- a) bend
- b) blood vessels
- c) heartbeat
- d) artery

2. Which word means “the system of organs, tissues, and nerves that receive and respond to stimuli”?

- a) skeletal system
- b) nervous system
- c) system
- d) spine

3. Which word means “a person who practices gymnastics”?

- a) flex
- b) vein
- c) physiologist
- d) gymnast

4. Which word means “one of several curved bones that attach to the spine and protect the organs in the chest cavity”?

- a) heartbeat
- b) virus
- c) flex
- d) rib

5. Which word means “the bone and cartilage found on the head that surrounds the brain”?

- a) skull
- b) exercise
- c) gymnastics
- d) physiologist

6. Which word means “a thick mixture of different materials that are needed by all parts of the body”?

- a) blood
- b) fitness
- c) gymnastics
- d) bend

- 7.** Which word means “a move in gymnastics that starts in the standing position and then the body arches backward until the hands reach the ground”?
- a) physiologist
 - b) spinal cord
 - c) exhale
 - d) backbend
- 8.** Which word means “to push air out of the lungs”? Words and phrases are the unit that you should model for use in isolated drill or memorization?
- a) exhale
 - b) skull
 - c) relax
 - d) lungs
- 9.** Which word means “to take air into the lungs and then to expel from the lungs”?
- a) breathe
 - b) bend
 - c) vaccine
 - d) joint
- 10.** Which word means “physical activity that is done to improve health”?
- a) exercise
 - b) movement
 - c) skeletal system
 - d) spine
- 11.** Which word means “in regard to muscles, a shortening of the muscle length”?
- a) vaccine
 - b) spinal cord
 - c) movement
 - d) contract
- 12.** Which word means “helps fight a virus once it gets inside the body”?
- a) virus
 - b) vaccine
 - c) exercise
 - d) sports

Answers

Lesson 1: Graceful Grace

1. **Ask, How did your body feel holding the plank pose?**

It felt tired and shaky, and I was out of breath. Explain that if students practice the pose every day for a few weeks, their bodies will get stronger and they will be able to hold the plank pose longer.

2. **LITERAL—What did Grace share on show-and-tell day?**

She showed the class how she does a backbend. **INFERENTIAL**—Why is Grace proud to show how she can do a backbend?

3. **LITERAL—Why is it harder to do a handstand than it is to stand on your legs and feet?**

Holding the body up with arms and hands is harder because those body parts are not as strong as legs and feet. **SUPPORT**—Make sure students understand the meaning of the word flexible.

4. **INFERENTIAL—What are some other reasons it is hard to do a handstand?**

Your head is upside down, and it could make you dizzy

5. **Ask, What movements can we make our bodies perform?**

Plank pose, jumping, running, backbends, handstands, flips

Lesson 2: Bones

1. **Ask, How do you think bones help you hold the plank pose?**

They keep my body straight, and they hold up my body.

2. **LITERAL—Which part of the skeleton protects your heart and lungs?**

The rib cage; breastbone **CORE VOCABULARY**—Remind students that bones are hard structures and that they do not bend. They are stiff rather than flexible.

3. **CORE VOCABULARY—Have students feel their skull and notice that this bone is round in shape. (See Know the Standards.) INFERENTIAL—What other bone is found in your head and is connected to the skull?**

The jawbone **SUPPORT**—Have students answer the text question, Can you count how many bones each finger has? by using one hand to feel the individual fingers in their other hand. Then give each student a piece of drawing paper. Have students trace the outline of their hand with their fingers spread out. Next, have students draw on the outline where they think each individual bone is located in their hand. Pages 10–11

4. **Ask, Which parts of the skeletal system do you recognize?**

Skull, rib cage, finger bones, foot bones, arms bones, leg bones

5. **Ask, What are bones, and how do they work inside the body?**

Bones are hard parts of the body that make up the skeleton. They hold up the body and help it move. Formative Assessment

Lesson 3: Muscles

1. **Give each student a copy of What Happens to Muscles That Are Used a Lot?**
AP 3.1
2. **Ask, Where are the muscles inside your body that are important for holding the plank pose?**
They are around my tummy and in my arms and legs.
3. **Explain that the body part that feels softer and then harder as they flex is a muscle called a bicep. 24 HUMAN BODY SYSTEMS LITERAL—What does Grace do to make her muscles stronger?**
She exercises; she practices gymnastics. INFERENTIAL—How do muscles and the skeleton work together?
4. **LITERAL—What pulls on bones to make them move?**
Muscles SUPPORT—Have students feel their calf muscles contract and relax as they flex their foot by pointing their toes toward and away from their bodies. LITERAL—How do muscles get stronger?
5. **The heart is made of muscle that is always working—it constantly contracts and relaxes to pump blood through the body. (See Know the Science.) INFERENTIAL—How does exercise affect the heart?**
Exercise makes the heart stronger.
6. **LESSON 3 | MUSCLES 25 LITERAL—What happens to muscles that are used to lift weights?**
They get stronger. INFERENTIAL—If you want to learn gymnastics movements that stretch muscles, why is it important to work with a coach?

Lesson 4: Breathing

1. **colored pencils, crayons, or markers (1 set per student) Ch. 4 Activity Page Activity Page How Does My Breathing Change?**
AP 4.1
2. **Give each student a copy of How Does My Breathing Change?**
AP 4.1
3. **both Pages 22–23 Ask students to turn to pages 22–23 of the Student Book and look at the images as you read aloud. LITERAL—When does your body need more air? When does it need less air?**
See Know the Science.
4. **Ask, How does the plank pose affect your breathing?**
When I started the pose, my breathing was slow, but as I held it longer, I had to breathe a little faster.
5. **LITERAL—Why is Grace breathing so fast?**
She worked very hard when she demonstrated some of her gymnastics skills. INFERENTIAL—How is Grace’s breathing pattern like what you found when you did an investigation of your own breathing?
6. **INFERENTIAL—Why do you think some people keep their mouths open when they are exercising?**

Because they can take in more air through their mouth and nose than just their nose alone INFERENTIAL—Why do people sometimes wear masks when they go outside their homes?

7. **Suggest that students add small labels in pencil. • Ask students, Which part of the muscular system should you also add to your drawing, and why?**

The diaphragm—because it helps the body inhale and exhale

8. **Ask students, Now that you have learned about the respiratory system, how would you answer the question?**

Air goes in their nose or mouth, through the throat and windpipe, and into their lungs. Old air goes out of the body through the same parts. Formative Assessment Collect Activity Page 4.1. Review the data table and answers to the questions to determine if students understand that the rate of breathing changes when the body needs more air during exercise or less air when it is at rest. 32

Lesson 5: Pumping Blood

1. **Explain to students that everyone has blood inside their bodies. Ask, How much blood do you think your body can hold?**

See Know the Science 1.

2. **Ask, How does the plank pose affect your heart?**

It makes my heart beat faster.

3. **Tell students they are now going to measure how much blood is in their bodies. • Have students take turns holding the cups over the tray while you pour “blood” into them. • Ask students, How many cups did we fill up?**

Seven EXTEND—If students ask how much blood other age people have, take them online to use a web-based calculator. Students may enjoy inputting various weights, ages, and sexes and finding out how these variables affect blood volume. If you have enough plastic cups, allow students to fill them to show how a teenager’s blood volume compares to theirs.

4. **Ask students, What kind of body part is the heart?**

A muscle LITERAL—When does your heart beat?

5. **Differentiation LITERAL—What is the job of the circulatory system?**

To move blood throughout the body CORE VOCABULARY—Explain to students that blood is a thick mixture of different materials that are needed by all parts of the body. CORE VOCABULARY—Point out the blood vessels in the diagram on page 26. Explain that they are shaped like tubes and that blood flows through them. SUPPORT—Explain that blood flows in only one direction in each blood vessel.

6. **Suggest that students add small labels in pencil. • Ask students, Where is the blood in your drawing?**

Inside the blood vessels and the heart

7. **Ask students, How does knowing about the circulatory system help you answer the question?**

A gymnast's heart beats all the time. The heart pushes blood through blood vessels to all the other parts of the body. During a gymnastics routine, the heart beats faster to get enough air and food to the gymnast's hardworking muscles. Online Resources

Lesson 6: Body Control

1. **Answers will vary, with some students taking more time than others. Ask, What makes it hard to stack the cups quickly?**

See Know the Science.

2. **Ask, How do your muscles know to stay in the plank pose?**

Accept all reasonable answers. Sample answer: I think about squeezing muscles in my arms, legs, and tummy.

3. **Ask students, What differences do you see in the amount of time it took to play the game?**

Answers will vary, with some students taking more time than others. Ask, What makes it hard to stack the cups quickly? (See Know the Science.)

4. **Ask, Is it possible to get a faster time than on your first try?**

Maybe, if I practice

5. **LITERAL—What part of Grace's body controls all her gymnastics movements?**

Her brain CORE VOCABULARY—Remind students that the brain is a body part located inside their skull. It is the control center for the entire body. INFERENTIAL—Why do athletes practice their sports over and over again?

6. **Differentiation LITERAL—What is the job of the nervous system?**

To send messages between the brain and the rest of the body CORE

VOCABULARY—Explain that nerves are a long, thin network of body parts that help the brain get information from all other parts of the body.

7. **Ask students, What do these bones feel like?**

They feel small; they feel round. Pages 34–35

8. **Ask, Which body parts collect information for your senses?**

Eyes for sight

9. **LITERAL—What connects each of these parts to the brain?**

Nerves EVALUATIVE—How do people protect their sense of sight when performing a sport?

10. **Ask, How does knowing about the nervous system help you answer the question?**

A gymnast's arms, legs, and body move because the brain sends messages to these parts through the spinal cord and nerves.

Lesson 7: Science in Action: Physiologists and Anatomy

1. **If there are none, give a few hints by asking questions such as the following: • Who takes care of your teeth?**

A dental hygienist; a dentist

2. **LITERAL—What is the job of a sports coach?**

To teach skills of the sport and make sure athletes do not get hurt
INFERENTIAL—Why does the sports physiologist who helps Grace need to know about gymnastics?

3. **LITERAL—What do physiologists and physical therapists study?**

The human body; how the parts of the human body work together
INFERENTIAL—Direct student attention to the image on page 38. Ask, How is the physical therapist helping the woman get stronger?

4. **What is the device helping the young girl do?**

Walk LESSON 7 | SCIENCE IN ACTION: PHYSIOLOGISTS AND ANATOMY

5. **Some viruses make people very sick. (See Know the Science 2.)**

LITERAL—What is polio?

A disease caused by a virus
CORE VOCABULARY—Explain to students that a vaccine helps fight a virus once it gets inside the body. Each vaccine works on only one kind of virus, so people need to get several vaccines.
LITERAL—Who invented the polio vaccine?

6. **Jonas Salk INFERENTIAL—Why were most parents so happy to hear about the invention of a polio vaccine?**

They would no longer have to worry about their kids getting sick and losing their ability to walk.

7. **What goes on in a gymnast's moving body?**

Bones hold a gymnast up. Muscles move the bones. The brain sends signals to the muscles to move the bones. When a gymnast is exercising, more air is brought into the lungs, and the heart pumps faster to send more air to the muscles that are working so hard.

Unit quiz key

1. b 2. b 3. d 4. d 5. a 6. a 7. d 8. a 9. a 10. a 11. d 12. b