

# Unit Summary

## Cluster 1: Mechanics of Movement (Lessons 2–5)

<b>Overview</b>	<p>The class focuses on three systems most directly involved in moving the body—the skeletal, muscular, and nervous systems. Students learn that muscles move at joints and that the design of these joints affects the ways various bones can move. They construct arm models to discover how the muscles that move the body often work in pairs. They discover that the nervous system controls the muscles that move the body.</p>
<b>Science Content</b>	<ul style="list-style-type: none"> <li>• To move, many parts of our bodies must work together.</li> <li>• Muscles move our skeletons by pulling on bones that meet at joints</li> <li>• Nerves carry signals to move parts of the body.</li> </ul>
<b>Science Center</b>	<ul style="list-style-type: none"> <li>• Use reference books to identify and label x-ray images of joints.</li> <li>• Create a “Joint” wall displaying pictures of joint-like connections found in everyday life.</li> <li>• Collect small items featuring joint-like connections.</li> <li>• Display the skeletal, muscular, and nervous system posters.</li> <li>• Provide reference books on the skeletal, muscular, and nervous systems.</li> <li>• Modify and refine limb models.</li> </ul>
<b>Family Links</b>	<ul style="list-style-type: none"> <li>• Identify ways to maintain our joints and keep them healthy throughout our lives.</li> <li>• Demonstrate and explain their limb models to three friends or family members.</li> <li>• Track how many times particular reflexes occur in one evening.</li> </ul>
<b>Further Science Explorations</b>	<ul style="list-style-type: none"> <li>• Revise a spiritual lyric using actual bone names.</li> <li>• Learn about scientists, doctors, and other professionals who deal with bones and muscles.</li> <li>• Use chicken wings to demonstrate the concept of antagonistic muscles.</li> <li>• Learn first aid guidelines for sprains and strains.</li> <li>• Explore the knee-jerk reflex and other common reflexes.</li> <li>• Discover how the nervous system controls body temperature.</li> <li>• Create a class cookbook with high-calcium recipes and have a calcium food feast.</li> <li>• Discover how muscle fatigue affects handwriting.</li> <li>• Research diseases of the joints, bones, muscles, and nervous system.</li> </ul>
<b>Cross-Curricular Extensions</b>	<p><b>Language Arts:</b> Interview and report on someone suffering from arthritis. Relate the terms “antagonistic muscles” and “antagonist.” Read about people afflicted with conditions of the nervous system.</p> <p><b>Mathematics:</b> Calculate the number of times an average person blinks each day.</p> <p><b>Social Studies:</b> Present a report on the “Bone and Joint Decade.” Locate the Achilles tendon and then read stories about the Trojan War featuring the Greek warrior Achilles.</p> <p><b>Art:</b> Draw proportionally correct figures of the human body.</p>

Cluster 2: Body Basics (Lessons 6–7, 11)	Cluster 3: Supporting Active Muscle Cells (Lessons 1, 8–10, 12)	
<p>Students learn how the human body is “put together” or organized. They learn about the needs of cells, specifically bone cells and muscle cells, and gain an understanding of the structure of bones.</p>	<p>Students learn how three systems—the circulatory, respiratory, and digestive systems—support their muscles and bones. The circulatory system delivers oxygen and nutrient-rich blood that muscle cells need and carries away their waste. The respiratory system delivers oxygen to the blood and removes carbon dioxide waste from the blood. The digestive system takes in food, digests it, and passes its nutrients into the blood.</p>	<p><b>Overview</b></p>
<ul style="list-style-type: none"> <li>• The human body is made of many different types of cells.</li> <li>• Bones and muscles are made of unique cells important for movement.</li> <li>• To produce energy needed for movement and to function properly, all cells need a constant supply of oxygen, nutrients, and water.</li> <li>• Each type of cell has unique characteristics for performing a specific job.</li> </ul>	<ul style="list-style-type: none"> <li>• To produce energy needed for movement, our muscle cells need a constant supply of oxygen, nutrients, and water.</li> </ul>	<p><b>Science Content</b></p>
<ul style="list-style-type: none"> <li>• Create a “Calcium” collage with pictures of foods that are high in calcium.</li> <li>• Look for cookbooks featuring calcium-rich recipes.</li> <li>• Provide books on the muscular system, fitness, and athletes.</li> <li>• Use reference books to identify and label images of cells posted in the Science Center</li> </ul>	<ul style="list-style-type: none"> <li>• Create a pictorial “Human Body in Motion” wall.</li> <li>• Look through books that cover the circulatory, respiratory, and digestive systems.</li> <li>• Display the circulatory, respiratory, and digestive system posters.</li> <li>• Contribute thoughts and discoveries recorded in journals to create a class book.</li> </ul>	<p><b>Science Center</b></p>
<ul style="list-style-type: none"> <li>• Use a nutritive value chart to identify foods that are high in calcium.</li> <li>• Compare cells to the building parts of a familiar construction toy.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify some conditions of the respiratory system that make it difficult to exercise.</li> </ul>	<p><b>Family Links</b></p>
<ul style="list-style-type: none"> <li>• Calculate the time required to “burn off” the calories present in a variety of common foods.</li> <li>• Learn about the field of microscopy.</li> </ul>	<ul style="list-style-type: none"> <li>• Determine the amount of time it takes the heart to return to a normal resting heart rate after exercising.</li> <li>• Use a cardboard tube to listen to a partner’s heart beat.</li> <li>• Investigate disease of the circulatory, respiratory, and digestive systems</li> <li>• Create a lung model.</li> <li>• Use index cards smeared with petroleum jelly to discover why it is important for our airways to filter the air we breathe.</li> <li>• See how CPR and other first aid techniques are performed.</li> </ul>	<p><b>Further Science Explorations</b></p>
<p><b>Language Arts:</b> Write reports on famous athletes, their training, and accomplishments. Read select pages from <i>Cells Are Us</i> and <i>Enjoy Your Cells</i>.</p> <p><b>Mathematics:</b> Make calculations of data from Lesson 7’s exploration on muscle fatigue. Calculate how many years it would take to count to 50 trillion—the approximate number of cells in the human body. Calculate how many average-sized human cells would span the diameter of a pencil eraser.</p> <p><b>Social Studies:</b> Research discoveries relevant to cells during the Age of Enlightenment.</p>	<p><b>Language Arts:</b> Create a “Motion” word bank. Create imagined diary entries of an individual engaged in a feat of endurance. Think of common terms or phrases that include the word <i>heart</i>. Create a newsletter on healthy eating. Write a descriptive essay on a memorable meal.</p> <p><b>Mathematics:</b> Make calculations of the data collected from Lesson 8’s exploration on heart rates. Calculate how many times our hearts beat and how many breaths we take in an hour, a day, a week, a month, a year, and 50 years.</p> <p><b>Social Studies:</b> Research the history of the first heart transplant, blood transfusion, artificial heart, and pacemaker. Learn about Dr. Charles Drew—the man who developed the concept of the blood bank. Research the history of underwater diving.</p> <p><b>Art:</b> Depict the human body in motion. View famous works of art that show the human body in motion.</p> <p><b>Music:</b> Demonstrate how controlled breathing is important for singing</p>	<p><b>Cross-Curricular Extensions</b></p>