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Government of Sindh



# Teacher Training Module: **Science** Learning Cycle Nineteen

## Human Organ Systems

Sindh Technical Assistance –  
Development through  
Enhanced Education  
Programme  
(STA-DEEP)



THE AGA KHAN UNIVERSITY

School Education & Literacy Department (SE&LD)

Government of Sindh.

## Introduction and Rationale of the Training

### **Dear Teachers!**

Welcome to the School Education & Literacy Department (SE&LD) Government of Sindh's Teachers Continuous Professional Development (CPD) Program. This school Cluster-based Teachers' Continuous Professional Development (CPD) program has been developed and is being implemented under the revised School Clustering Policy of 2021 and CPD Model of 2022.

This Content-Based Learning Cycles (CBLCs) series, consisting of cycles 11 to 20, has been developed to further enhance your knowledge and skills in content-based classroom teaching practices. The initial 10 Learning Cycles (LCs) focused on improving pedagogical skills to create interactive, participative, and enjoyable classrooms for students. Building upon these skills, CBLCs 11 to 20 will provide learning opportunities in Mathematics, Science, English, Urdu, and Sindhi for students in grades 1-8 will equip you with modern teaching strategies and subject knowledge to effectively manage classroom situations.

### **CPD Program vision**

The CPD program aims to improve the quality of teaching practices in schools all over Sindh so that students become active and collaborative learners, problem solvers, and critical thinkers who approach tasks creatively and confidently. These CBLCs would help students clearly understand the subject knowledge and connect learned knowledge and acquired skills to the world around them. To make this possible, teachers must be better prepared for the classroom teaching requirements of pedagogy and the subjects' content. Moreover, this program provides specialised training to teachers at the school level through School Cluster-based CPD to make an impact and substantially increase students' learning outcomes.



## **CPD Program Teaching Philosophy**

The CPD training sessions, including this one, adhere to a participatory teaching philosophy. This approach encourages participants to actively engage in collaborative learning while fostering self-reflection and peer reflection, ultimately creating a community of practice. The main goal is to enhance teaching practices and promote an understanding of the subject content theory and the strategies that enable students to confidently and effectively apply the learned knowledge in their daily lives.

## **Supporting You**

The training module is designed to support you in your classroom teaching instruction practices. It will introduce you to the subject content and some approaches for use in the classroom. This will make your teaching more manageable and help you grow as a skilled teacher.

## **Online CPD portal for teachers**

An online CPD portal has been developed for teachers to ask questions to experts, exchange ideas, and share personal learning experiences and difficulties in rolling out the CBLCs. The online CPD portal would help teachers connect with other teachers from all the districts and subject experts to share and learn as a community of teachers. Online portal: <https://stadeep-cpd.com/>

**Note:** CBLCs have been developed in alignment with the School Education & Literacy Department (SE&LD), Government of Sindh notified curriculum and textbooks of English subject from grades 1-8 under STEADA and PITE supervision. English textbooks of Grade 1-8 have been used in this LC as a reference.

**CBLCs: 1-20:** Please refer to the last page of this LC to see the complete list of topics for 1-20 LCs.



## Acknowledgement

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## Human Organ Systems

**Learning Objectives:** By the end of the session, the teachers will be able to:



Explain the structure and function of major human organ systems, and relate them to the basic biological processes required to sustain life.




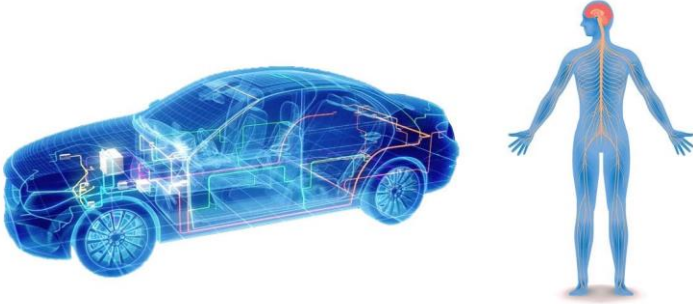




Identify common disorders of human organ systems



## Session Plan

### Instructional strategies/activities

Time	Objective/purpose of the activity	Activities/learning experiences	Materials/resources
 10 mins	<p><b>Welcome</b> Remind the rules of the workshop.</p> <p>The facilitator will help teachers connect with their experience of the last learning cycle</p>	<p>Quick recall of the rules of the workshop.</p> <p>Ask each participant to share one key takeaway from classroom implementation of the previous learning cycle.</p>	Sticky notes/paper chits
 10 mins	<p><b>Warm-up</b></p>  <p>The facilitator aims to trigger teachers' understanding of the concept of human organ systems using an analogy.</p>	<p>The facilitator will show the picture below and pose a question how human body is analogous to car:</p>  <p>Ask the teachers to Think- Pair-Share at least one similarity between car and human body in terms of its structure and function. Ask them to not repeat the point shared by another pair. Facilitator will summarize the key similarities.</p>	Board Markers, sticky notes

 <p>30 mins</p>	<p style="text-align: center;"><b>Input</b></p>  <p>Facilitator will engage the teachers in the discussion and reflect on the topic by engaging them in circus format stations.</p>	<p>The facilitator will brief the teachers about different human organ systems referring to the textbooks of grade 7 and 8 of STBB.</p> <p>Facilitator will ask teachers to visit 4 hands-on/Minds-on stations set-up in the room with sample activities and try to identify the main hands-on/Minds-on tasks highlighted in each one. Divide teachers into four groups. Allow the groups to rotate through each station, using their science notebooks to record their observations.</p> <p><b>Station 1:</b> What happened to your body when you used two filled water bottles of 1 liter each instead of one? Practice curling your arm with just one filled water bottle of 1 liter in your hand. Then curl both arms after placing one filled water bottle of 1 liter in each hand. Write down in your notebook anything you observe and what body systems are used during this type of exercise.</p> <p><b>Station 2:</b> What happens to the lungs as you breathe? What happens to your lungs when you take deep breaths? Think about this as you model what the lungs do while breathing. Write down in your notebook what happens when you blow into a paper bag.</p> <p><b>Station 3:</b> What is required in order for the body to function properly? Place the images of muscles in the human leg, the human heart, and the human brain on a table. Have teachers write down what they see and list what body system they belong to. Ask what do you see in each image? Write your answer in the notebook. As you look at the images think about how these individual body</p>	<p>Multimedia, Board, Marker, Science textbook of grade 7 &amp; 8 Notebook.</p> <p>Filled water bottle of 1 liter (2 bottles), Paper bags (4), Photos of human leg, heart and brain.</p>
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parts work together to help the body function. Allow students to sketch different body systems working together.



**Station 4:** What happens to the entire body if one body system fails to function properly?  
How do our body systems work together? Give examples of multiple systems working together to perform a task. Imagine of one of those systems failed, what would be the result on the body?

Facilitator will facilitate group discussion to draw out key messages.

 <p>40 mins</p>	<p style="text-align: center;"><b>Practice 1</b></p>  <p>Facilitator will engage teachers in group work, and explanation of the human organ system (digestive system, respiratory system and excretory system) Each group will present their assigned task in the class</p>	<p>The facilitator will distribute the teachers into six groups. Each group will be assigned a different task to perform (They can refer to handout 19.1 for more background knowledge on human organ systems).</p> <ul style="list-style-type: none"> <li>• <b>Group 1:</b> The group will be asked to discuss and later present the digestive system and its components with help of diagram.</li> <li>• <b>Group 2:</b> The group will discuss the disorders of the digestive system. Later will present the ailment of constipation and diarrhea along with its remedy through a role play.</li> <li>• <b>Group 3:</b> The group will discuss and later present the respiratory system and its components through a model</li> <li>• <b>Group 4:</b> The group will discuss the disorders of the respiratory system and its remedies through roleplay and later present.</li> <li>• <b>Group 5:</b> The group will be asked to discuss and later present the excretory system, structure of kidney and its role in excretory system and its components with the help of diagram</li> <li>• <b>Group 6:</b> The group will investigate the causes for malfunctions of the kidney and suggest their solutions and present to rest of the groups.</li> </ul> <p>Each group will share their learning.</p>	<p>Handout 19.1, Science textbook of grade 7 &amp; 8, Charts, colour pencils, markers, ruler, sharpener and eraser, balloons, plastic bottles, straws</p>
 <p>10 mins</p>	<p style="text-align: center;"><b>Conclusion</b></p>  <p>The facilitator will provide guiding prompts to teachers to summarize their learning</p>	<p>The facilitator will provide guiding prompts to teachers to summarize their learning:</p> <ol style="list-style-type: none"> <li>a) What are the main components of human digestive system?</li> <li>b) What is the role of mouth in human digestive system?</li> <li>c) Define the role of stomach in digestive system?</li> <li>d) Lungs play a vital role in respiratory system; how do we prevent lungs from any disorder?</li> <li>e) Define the function of kidney?</li> <li>f) What are the main causes of kidney malfunction?</li> </ol>	<p>Sticky notes/paper chits</p>

 <p>20 mins</p>	<p style="text-align: center;"><b>Assessment</b></p>  <p>Facilitator will assess the learning through a worksheet</p>	<p>Facilitator will provide a worksheet (Handout 19.2) to assess teachers' understanding of human body systems and the common disorders associated with it.</p>	<p>Handout 19.2</p>
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## Handout 19.1

**Cells Teaming Up**  
Organ Systems at Work

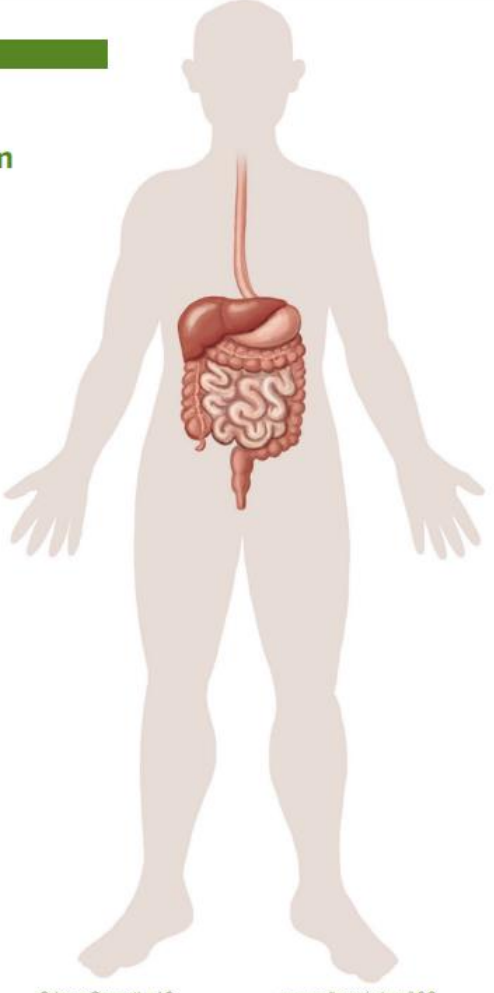
## Digestive system

**Function**

- \* Breaks down food.
- \* Absorbs food's useful substances nutrients—to be used by cells throughout the body for energy and building materials.
- \* Gets rid of food waste.

**Parts**

- Mouth
- Esophagus
- Stomach
- Liver
- Small intestine
- Large intestine
- Rectum
- Anus



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Reference: <https://serpmedia.org/scigen/assets/l6.3-printable-human-organ-systems-layers.pdf>

**Cells Teaming Up**  
Organ Systems at Work

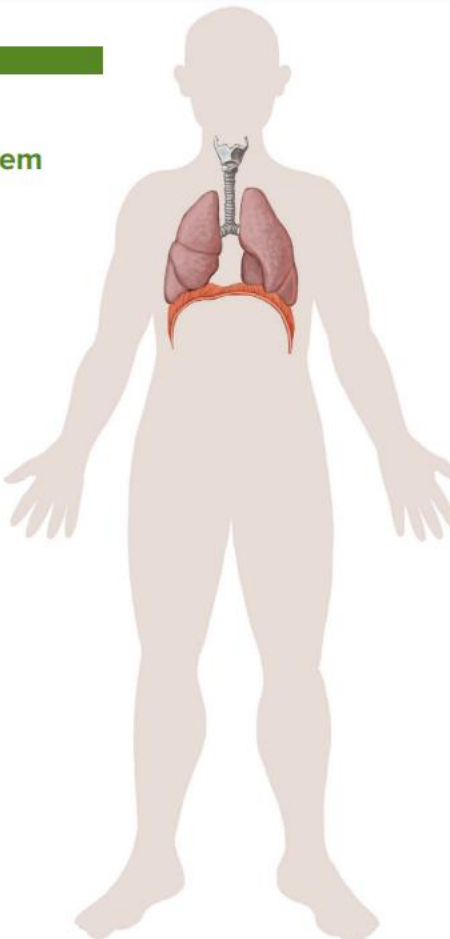
## Respiratory system

**Function**

- \* Inhales oxygen and allows it to be dissolved into the bloodstream.
- \* Removes carbon dioxide from the bloodstream and exhales it.

**Parts**

- Nose
- Larynx
- Trachea
- Bronchi
- Lungs
- Diaphragm (the muscle that works the lungs)



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Reference: <https://serpmedia.org/scigen/assets/l6.3-printable-human-organ-systems-layers.pdf>

**Cells Teaming Up**

Organ Systems at Work

## Cardiovascular system

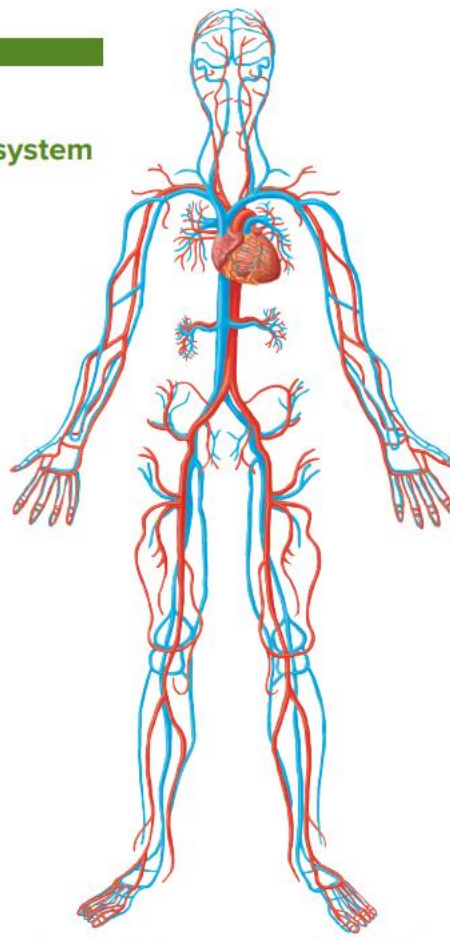
**Function**

- \* Delivers oxygen and nutrients to cells throughout the body.
- \* Carries waste materials away from all the cells.
- \* The main distribution system for all sorts of chemical signals, and for white blood cells that travel around the body fighting infectious diseases.
- \* Helps regulate body temperature by controlling how much blood flows near the body's surface at different times.

**Parts**

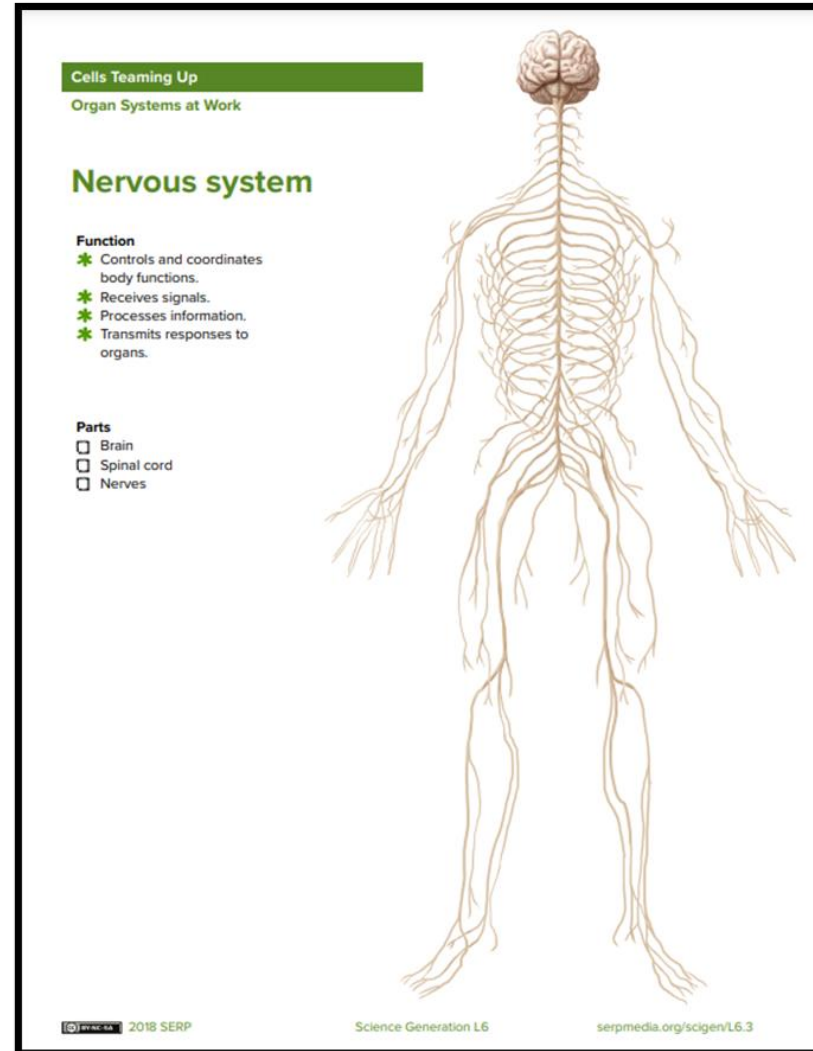
- Heart
- Blood vessels
- Blood

*Weird fact: blood is considered a connective tissue, even though most tissues are solid.*

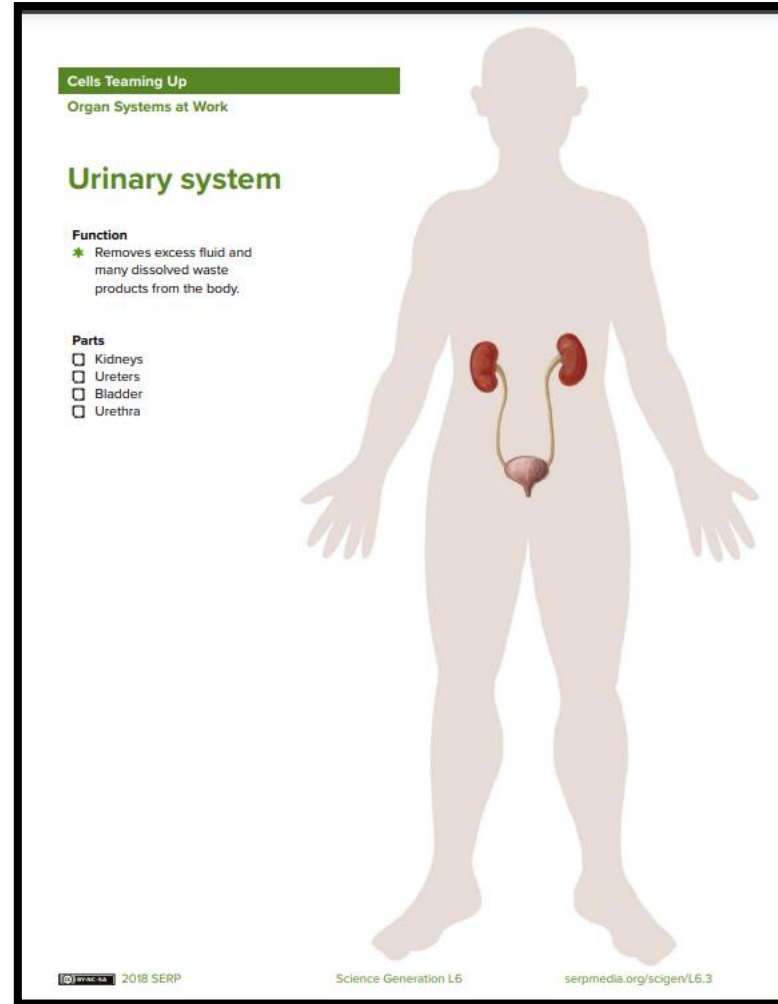


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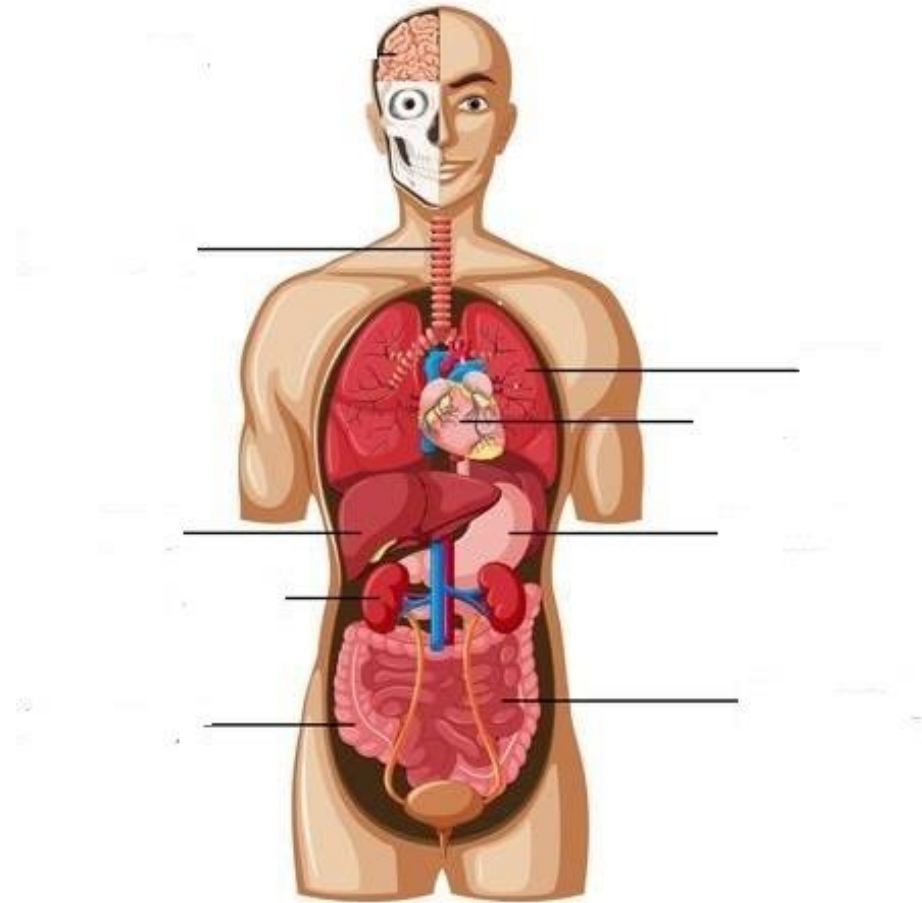


Reference: <https://serpmedia.org/scigen/assets/l6.3-printable-human-organ-systems-layers.pdf>



## Handout 19.2

1. Label different parts of the human organs system.



**2. Circle two human organ systems that are at work in the given situations.**

- a. The brain checks up on the amount of carbon dioxide in the blood and adjusts the rate of breathing. The brain “communicates” with the lungs using nerves from the brain to lungs.

Digestive system	Respiratory system	Circulatory system	Nervous System	Excretory System
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- b. The brain tells the stomach, intestines, and liver when to be active and when to rest. Messages to and from the brain decide when it’s time to process food.

Digestive system	Respiratory system	Circulatory system	Nervous System	Excretory System
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- c. Blood vessels deliver nutrients and oxygen for all the intestinal cells to function. Blood in blood vessels picks up nutrients absorbed by the intestines and carries them away to other parts of the body that need them.

Digestive system	Respiratory system	Circulatory system	Nervous System	Excretory System
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**3. Identify the ailments directly linked to the human organ systems.**

- a. \_\_\_\_\_ is passing stool fewer than three times a week and are generally hard, lumpy, or dry, which makes them difficult or painful to pass. Meanwhile, \_\_\_\_\_ involves passing loose, watery stools at least three times a day.
- b. \_\_\_\_\_ is a chronic lung disease affecting people of all ages. It is caused by inflammation and muscle tightening around the airways, which makes it harder to breathe.



## Additional Resources

- <https://expository.edusmart.com/?p=29218>
- <https://serpmedia.org/scigen/l6.3b.html>
- <https://serpmedia.org/scigen/assets/l6.3-printable-human-organ-systems-layers.pdf>

**For reference:**

**List of 1-20 LCs topics**

<b>Learning Cycles (LCs)</b>	<b>Topics</b>
LC-1	Orientation to Science
LC-2	Food and Health
LC-3	Ecology
LC-4	Matter and its States
LC-5	Mixture and Compound
LC-6	Force and Machines
LC-7	Forms of Energy
LC-8	Heat and Temperature
LC-9	Earth and Space
LC-10	STEM
LC-11	Sound
LC-12	Electricity
LC-13	Atomic Structure
LC-14	Microorganisms
LC-15	Pollution
LC-16	Light
LC-17	Chemical Equation
LC-18	Cellular Organisation
<b>LC-19</b>	<b>Human Organ Systems</b>
LC-20	Technology in Everyday Life



<b>Speaker</b>	<b>1</b>	✓									
<b>Plastic ruler</b>	<b>2</b>	✓									
<b>Metallic ruler</b>	<b>4</b>	✓									✓
<b>Rubber band</b>	<b>1 packet</b>	✓									
<b>Wooden ruler</b>	<b>2</b>	✓									
<b>Human ear structure</b>	<b>1</b>	✓									
<b>Aluminum foil sheet</b>	<b>7 meter</b>	✓					✓				
<b>Card stock or construction paper</b>	<b>12</b>	✓									
<b>Straw</b>	<b>24</b>	✓								✓	



<b>Ping pong ball</b>	<b>5</b>	✓									
<b>Bell</b>	<b>2</b>	✓		✓							
<b>Bucket or Tub</b>	<b>2</b>	✓									
<b>Chart</b>	<b>24</b>		✓	✓	✓	✓	✓				
<b>Lemon</b>	<b>6</b>		✓								
<b>Paper clip</b>	<b>2</b>		✓								
<b>Copper wire</b>	<b>1 fold</b>		✓								
<b>Comb</b>	<b>1</b>		✓								
<b>Battery</b>	<b>5</b>		✓								
<b>Small bulb / Led light</b>	<b>3</b>		✓								





Meter tape	3											✓
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