Grade 8 Science
Unit 4: “Cells, Tissues, Organs & Systems”

Chapter 11: “Human body cells are organized as tissues, organs and systems.”
Systems...

All systems have the following characteristics:

• Made up of individual parts that work together as a whole
• Often connected to one or more systems
• If one part of a system is missing or damaged, the system will not function well or may not function at all.
Levels of Organization

cells → tissues → Organs → Organ systems → organisms
Tissues

- Groups of similar cells
- Found in all multicellular organisms
- Ex. Muscle tissue, nerve tissue, epithelial tissue, etc.
Histological images of various tissues in the body

Bone
Cartilage

Adipose Tissue
Skin
Intestinal Villi

Neural Tissue
Cardiac Muscle
Skeletal Muscle
Organs

- Groups of tissues. Made up of two or more types of tissues.
- They are distinct structures that perform specific functions.
Ex. Lungs, kidneys, heart, etc.
A group of organs that perform activities that help the body as a whole.

6 examples of organ systems are...
1. Digestive System
Consists of:

<table>
<thead>
<tr>
<th>Mouth</th>
<th>Liver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esophagus</td>
<td>Gall Bladder</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Small Intestine</td>
<td>Large Intestine</td>
</tr>
</tbody>
</table>
Function:

• To take in and break down food, absorb nutrients, and eliminate solid waste.
2. Circulatory System

Consists of:

- Heart
- Arteries,
- Veins
- Capillaries
Function:

- To transport blood, nutrients (chemicals needed for survival), gases and wastes.
3. Nervous System

Consists of:

- Brain
- Spinal cord
- Nerves
- Sense organs
Function:

• To detect changes in the environment and to signal these changes to the body which then carries out a response.
NERVOUS SYSTEM

cerebrum

cerebellum

spinal cord

brachial plexus

intercostal nerve

radial nerve

median nerve

ulnar nerve

lumbar plexus

sacral plexus

digital nerve

sciatic nerve

superficial peroneal nerve

common peroneal nerve
4. Respiratory System

Consists of:

- Nasal cavity
- Trachea
- Lungs
Function:
• To control breathing, and exchange gases in lungs and tissues.
The Human Respiratory System

- Nasal passage
- Oral cavity
- Pharynx
- Larynx
- Trachea
- Bronchi
- Lung
- Heart
- Ribs
5. Excretory System

Consists of:

• Lungs
• Kidneys
• Urinary bladder
Function:

- To remove liquid and gas wastes from the body
6. Muscular System

Consists of:

• Muscle tissue connected to bones throughout the body.
Function:

• To work with the bones to move body parts
Shoulder muscles raise and lower the arms.

Neck muscles hold the head up and move it in all directions.

Triceps straighten the arm.

Biceps bend the arm.

Abdominal muscles move the torso and help with breathing.

Thigh muscles move the lower leg.

Calf muscles pull the heel up and point the toes.

Shin muscles help move the foot up and down and side to side.