

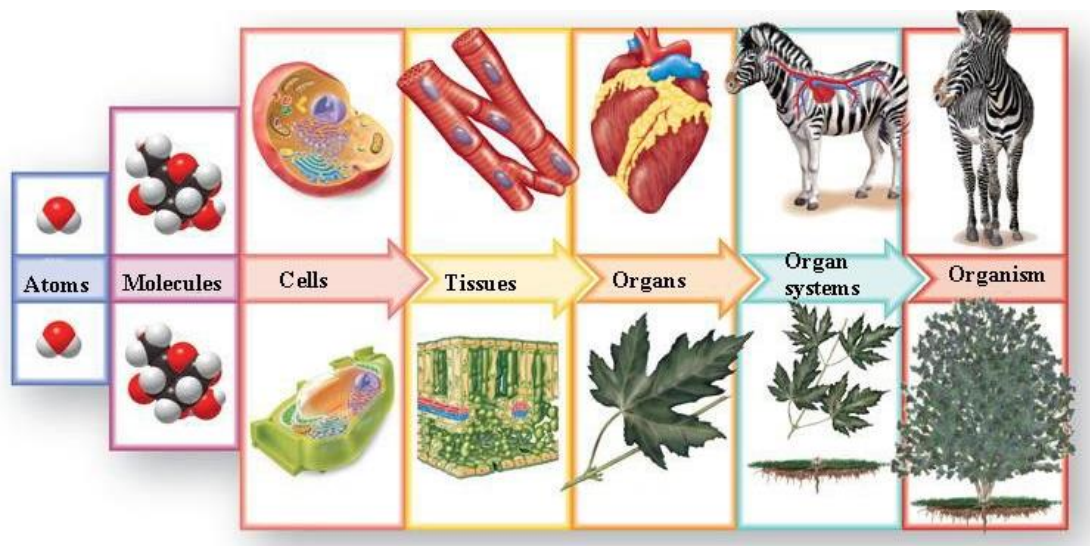


COLEGIO NACIONES UNIDAS I.E.D.  
PREPARATORY WORKSHOP  
III TRIMESTER  
SCIENCES 5°

This workshop must be solved in the science notebook, as a requirement to take the competency test.

Delivery date: November 10

Levels of internal organization of living beings



Living beings are highly organized systems, which we generally refer to as “biological systems.” They are made up of smaller parts which, in turn, are made up of other smaller parts and so on. These “parts” are not isolated, but are connected to each other, forming more complex organizations that have special characteristics, some exclusive and others that result from the sum of the characteristics of the parts that compose them.

1. What are “biological systems”?
2. How are tissues formed?
3. How are organisms formed?
4. What is the smallest unit of living things?

**The Digestive Apparatus or System** is the set of organs in charge of the digestion process. Digestion is the process by which the food we eat is broken down into small parts to provide us with the energy and nutrients we need to live.

**Basic functions of the digestive system**

**Ingestion:** food is introduced into the body through the mouth. Here, chewing, performed by the teeth and jaw, crumbles and crushes food into smaller pieces. The tongue helps in mixing food with saliva. Finally, the resulting bolus is swallowed and passes through the esophagus to the stomach through peristaltic movements.

**Digestion:** Digestion is the process of breaking down food into smaller, simpler molecules, suitable for being absorbed and used by the body. Mechanical digestion: mixing and grinding food in the stomach through muscle contractions. Chemical digestion: Enzymes and digestive juices secreted by the salivary glands, stomach, liver, pancreas, and small intestine break down food to make it easier to absorb.

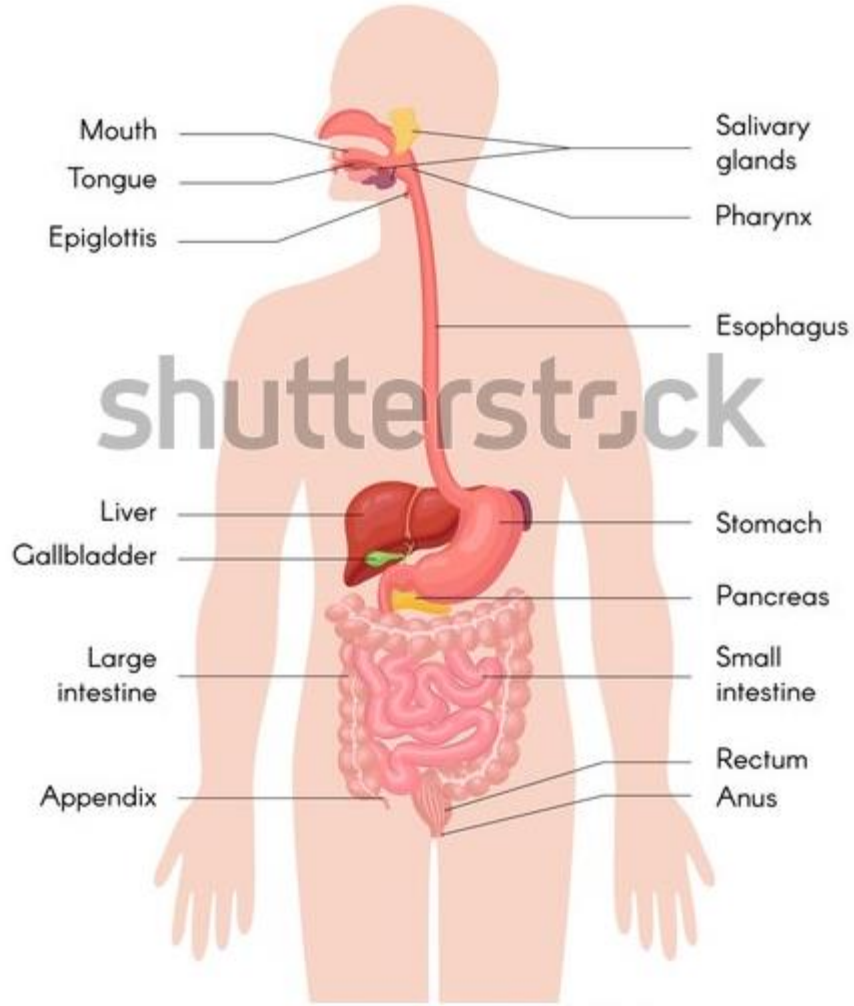
**Absorption:** The broken down nutrients pass through the walls of the small intestine and are transported to the blood or lymphatic stream.

**Transport:** Once absorbed, nutrients are transported by the bloodstream or lymphatic system to different parts of the body, where they will be used to carry out various functions.

**Excretion:** The elimination of waste and unabsorbed substances is a crucial function of the digestive system, not everything in food is useful, so what is not useful passes to the large intestine where water is absorbed and feces are formed. Feces accumulate in the colon and are transported to the rectum, where they are stored until the defecation reflex occurs. During defecation, the muscles of the rectum and anal sphincter relax, allowing feces to be expelled from the body through the anus.

5. What is the function that food plays in our body?
6. Name and describe the two types of digestion that exist
7. How is the digestive system connected to the circulatory system?
8. Why do animals and humans defecate?
9. How do you think you can take care of the Digestive System?

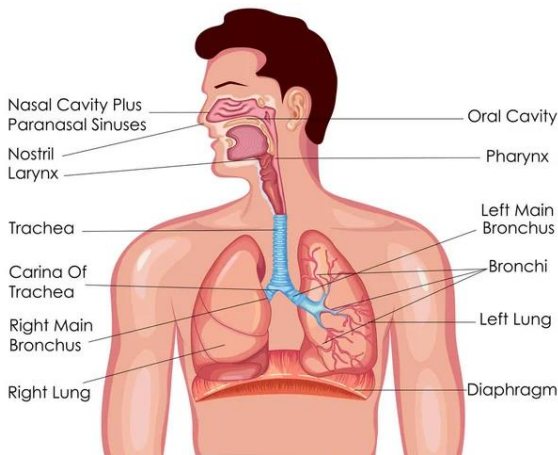
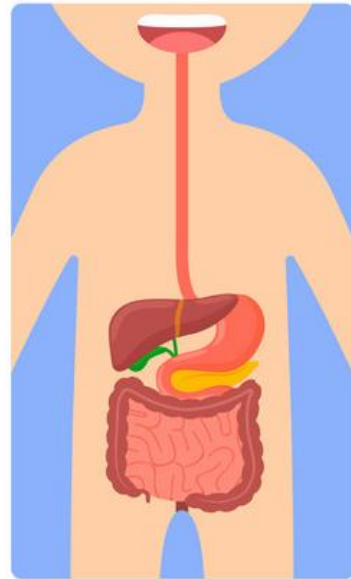
### PARTS OF THE DIGESTIVE SYSTEM



10. Encuentra las palabras indicadas



- pancreas
- mouth
- liver
- gallbladder
- large intestine
- appendix
- rectum
- esophagus
- stomach
- small intestine



**The respiratory system**, also called the respiratory system, is made up of multiple organs that work together to oxygenate the body through the process of breathing. This process is possible thanks to the inhalation of air and its conduction to the lungs, where gas exchange occurs. During gas exchange, oxygen enters our blood and is exchanged for carbon dioxide, which leaves our body during exhalation.

11. What is the main function of the respiratory system?
12. What are the two moments in which the S.R. is divided?
13. How is the respiratory system connected to the circulatory system?
14. How do we take care of our S.R.?
15. What diseases do you know that are related to S.R.?

**The Circulatory System** is what transports oxygen, carbon dioxide, nutrients and waste substances through the blood. It is made up of three components: blood, blood vessels (arteries, veins and capillaries) and the heart.

**Blood** collects oxygen from the lungs (alveoli) and nutrients from the small intestine and transports them to all the cells in the body. In the same way, it collects carbon dioxide and waste substances and takes them to the respiratory system and excretory system so that they can be eliminated outside (sweat glands and urine). Blood is liquid, red in color and is made up of 3 types of cells that float in a liquid called blood plasma.

The three types of cells are:

- Red blood cells: they are the most numerous cells. They transport oxygen and give the blood its red color.
- White blood cells: they are the body's defense cells. They eliminate bacteria, viruses and other foreign bodies that enter the body.
- Platelets: they form clots in blood vessels when they break to clog them.

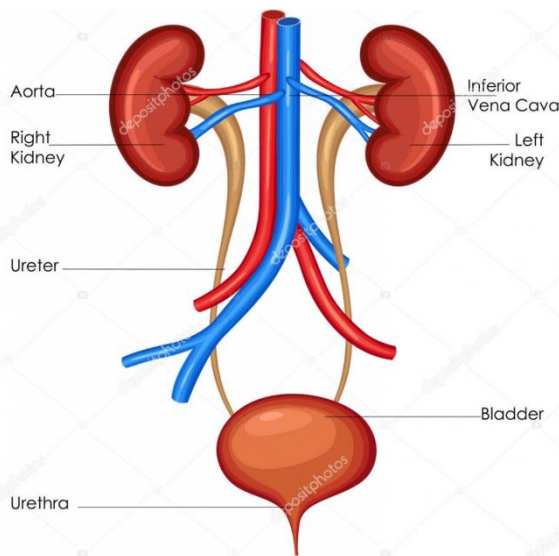
Blood plasma: liquid formed by water with dissolved salts and nutrients, carbon dioxide and other waste substances.

**Blood vessels** are like tubes through which blood circulates. There are three types:

- Arteries: carry blood from the heart to the rest of the body.
- Veins: carry blood from the entire body back to the heart.
- Blood capillaries: they are very fine. They connect the arteries with the veins and reach all the cells and organs of our body.

**The heart:** is a muscular and hollow organ. It is the most perfect machine of the human body. It is located in the middle of the rib cage, between the lungs and somewhat displaced to the left and works as a pump to propel blood so that it reaches all the organs of the body.

16. What is the Circulatory System responsible for?
17. How is the Circulatory System composed?
18. What is the importance of red blood cells?
19. What can happen if I have few white blood cells?
20. How can I take care of my heart?



**The excretory system**, also called the human urinary system, is a set of organs and other structures that are responsible for eliminating urine and sweat, which are liquids that have diluted substances that cannot be used by the human body.

**The kidneys** are two organs whose function is to filter blood and produce urine.

**The excretory tracts** are ducts and cavities through which urine passes and is eliminated. Basically there are three:

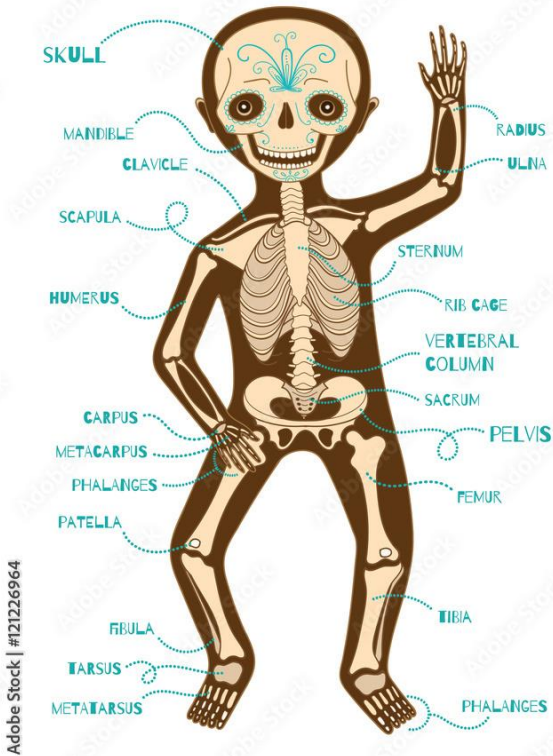
1. The ureters are two long tubes that connect the renal pelvis with the bladder. They are responsible for regulating the passage of urine to the bladder.
2. The bladder is a hollow organ where urine is stored. It is an elastic organ, capable of modifying its size to store a large amount of liquid (up to one liter).
3. The urethra is the last tube through which urine passes before being eliminated, it is located at the bottom of the bladder.

**Sweat glands.** Urea is not only excreted through urine, urea can also be eliminated through sweat, it is a liquid composed of water, mineral salts and a little urea, in essence, it is more dilute urine.

In humans, the function of these glands is not only to eliminate substances. It also regulates body temperature, allowing it to perspire by moistening the body surface.

21. Why is the Excretory System important?
22. How is the S.E. composed?
23. What function do sweat glands perform?
24. How is the excretory system connected to the circulatory system?

# Skeletal system



**The Skeletal System** is the complex and complete structure composed of the 206 bones of the human skeleton, as well as the cartilage, ligaments and tendons that allow them to properly connect to the muscles or other bones.

**Bones** are rigid structures, mineralized from calcium and other metals, they are the hardest and most resistant parts of the body of humans and vertebrate animals. Inside, there is also the marrow that fulfills hematopoietic functions (red blood cells are created).

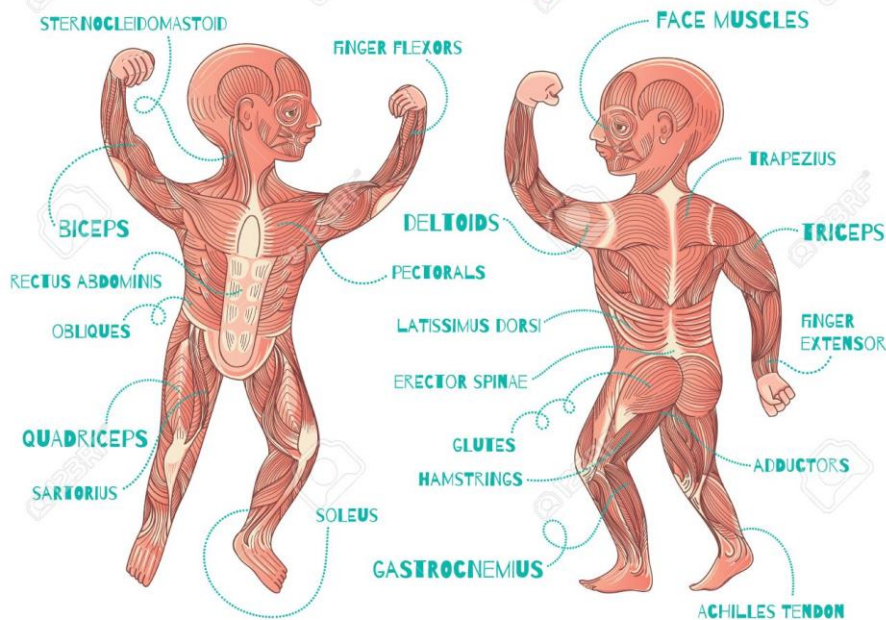
**Cartilage** is found at the ends of the bones, protecting them by serving as cushioning, so that one does not collide with another, thus avoiding wear. These are flexible and thick structures, composed mainly of collagen.

**Ligaments** are very resistant, dense and elastic fibrous tissues that join the bones together at the points of rotation that are the joints. Thus, it is vital for movement, but also to prevent bones from moving out of place or moving unnaturally.

**Tendons**, as well as ligaments, are thick and elastic fibrous tissues that join the muscles to the rigid pieces of the bones, allowing the force of the muscle cells to be transmitted to the bones and thus enabling voluntary movement.

25. How many bones make up the human skeleton? Name 10
26. What function do bones perform?
27. Why can poor posture affect the skeletal system?

# Muscular system



**The muscular system** is a set of more than 650 different muscles that make up the human body, most of which can be controlled at will and which allow us to exert enough force on the skeleton to move. The muscular system constitutes 40% of an adult's weight, also generating most of their body heat. Together with the skeletal system (bones) and the articular system (joints), it constitutes the so-called locomotor system, responsible for the movements and displacements of the body.

- 28. What function does the muscular system perform?
- 29. How is the locomotor system made up?
- 30. Complete the following crossword

