



Unit 6 OUR BODY SYSTEMS



NOTES

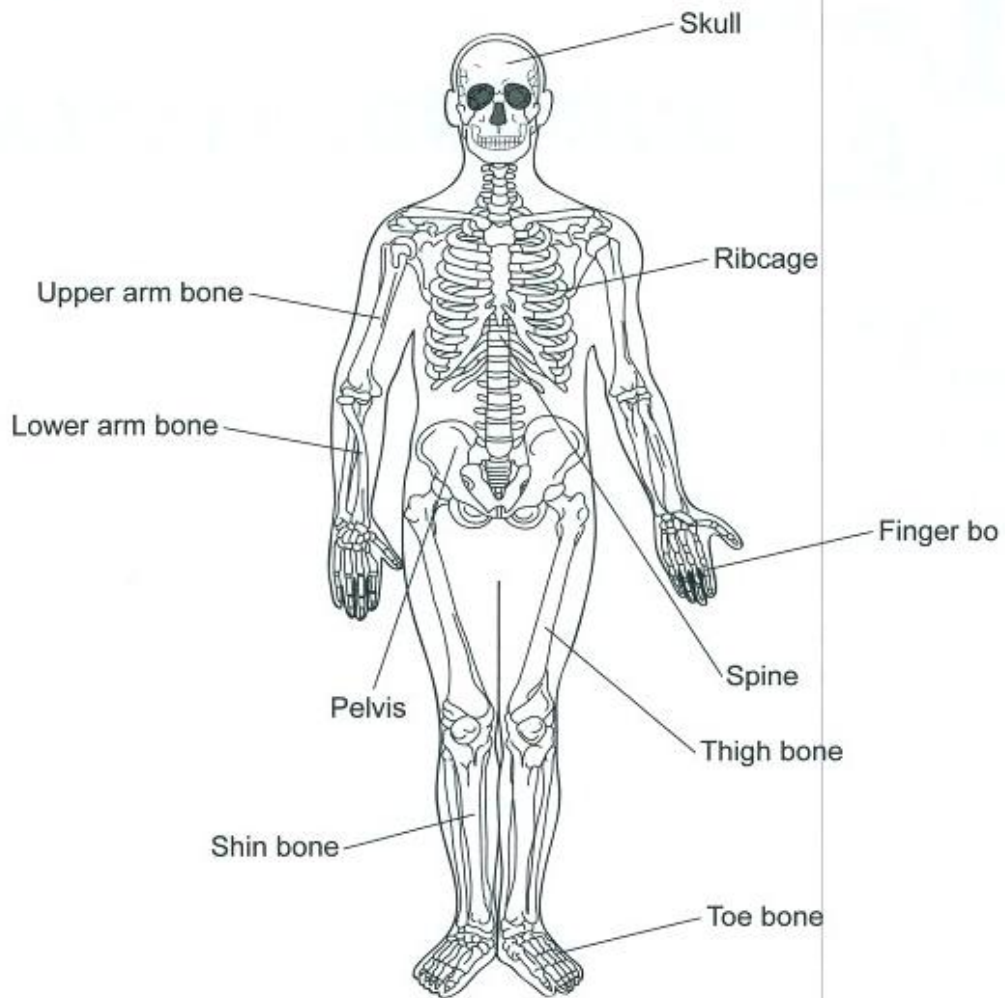
LEARNING OUTCOMES:

1. Identify the organ systems in humans;
 - Skeletal
 - Muscular
 - Respiratory
 - Circulatory
 - Digestive
2. Identify the organs in the human digestive system and describe their functions.

WHAT IS A SYSTEM?

1. A system is made up of more than one part.
2. The parts of a system work together to perform a certain function.
3. Different systems carry out different functions.
4. Humans have the following systems;
 - Skeletal system
 - Muscular system
 - Respiratory system
 - Circulatory system
 - Digestive system

SKELETAL SYSTEM



1. The skeletal system is made up of bones;
 - Spine
 - Ribcage
 - Skull
 - Arm bones
 - Leg bones
 - Hip bone (Pelvis)

2. The functions of the skeletal system:
 - Works closely with the muscular system to enable us to move.
 - Gives us our body shape
 - Supports our body

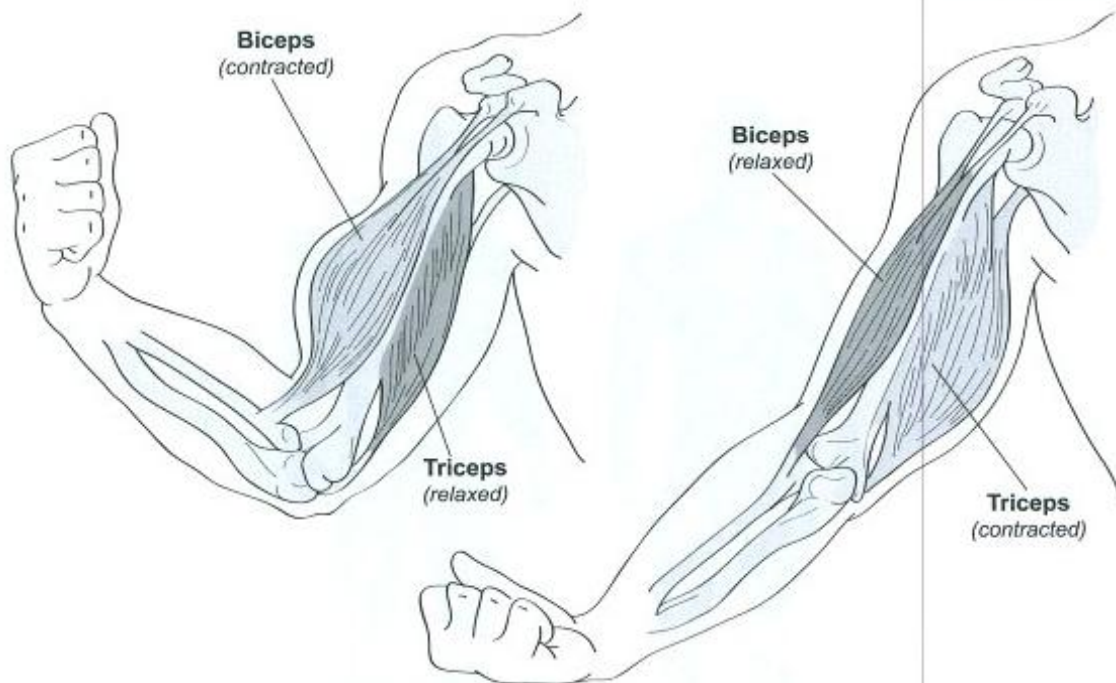
- Protects important organs in our body.
 - ◆ The skull protects the brain.
 - ◆ The ribcage protects the heart and the lungs.
 - ◆ The spine protects the spinal cord.
- 3. The joints in the skeletal system enable us to move.
 - Hinge joint (e.g. elbow and knee)
 - Ball and socket joint (e.g. shoulder and hip)
 - Pivot joint (e.g. neck)

MUSCULAR SYSTEM



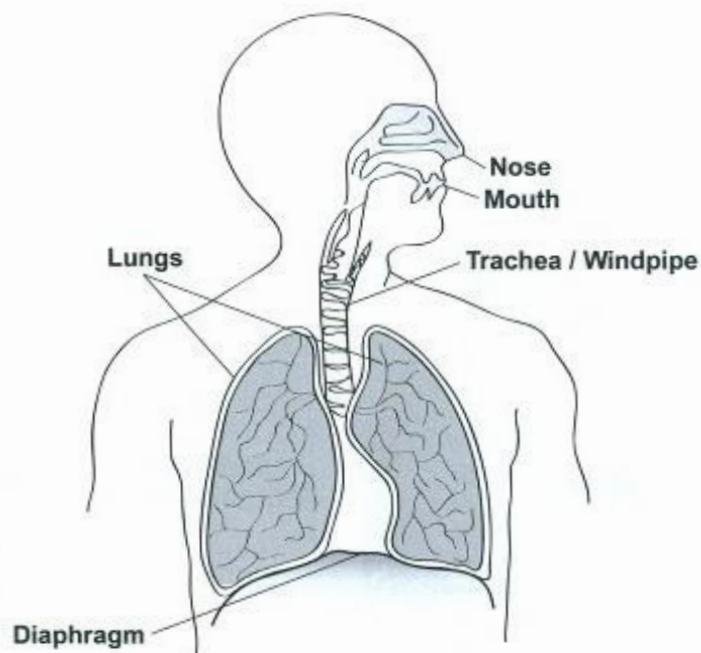
1. The muscular system is made up of muscles.
2. There are three main types of muscles;
 - **Smooth muscle**
 - ◆ Smooth muscles can be found in organs like the stomach and bladder.
 - ◆ They cannot be controlled by us.

- **Cardiac muscle**
 - ◆ Cardiac muscles are found only in the heart
 - ◆ They cannot be controlled by us.
- **Skeletal muscle**
 - ◆ Skeletal muscles are attached to bones.
 - ◆ They can be controlled by us.
 - ◆ They work in pairs.
 - ◆ When one muscle relaxes, the other muscle contracts and vice versa.



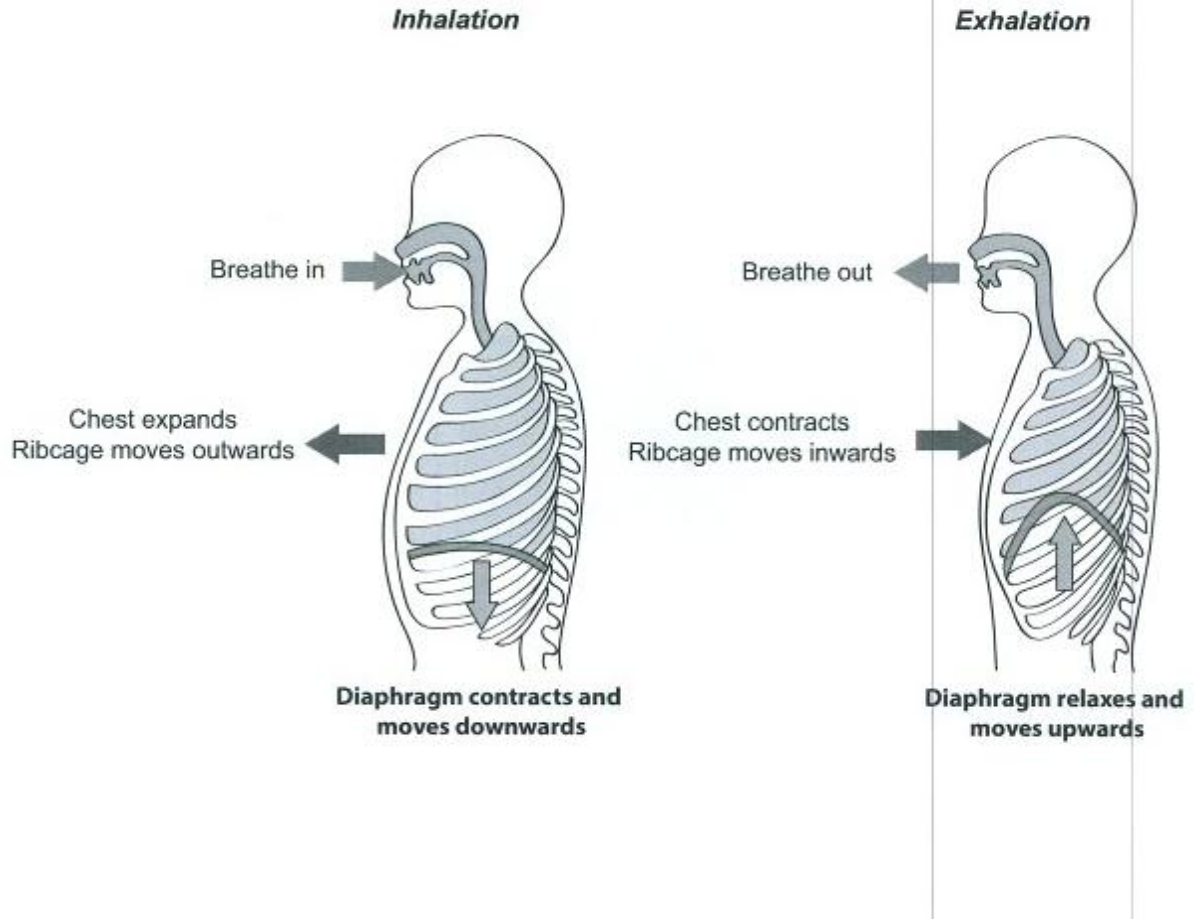
3. The main function of the muscular system is to work together in the skeletal system to enable us to move.

RESPIRATORY SYSTEM

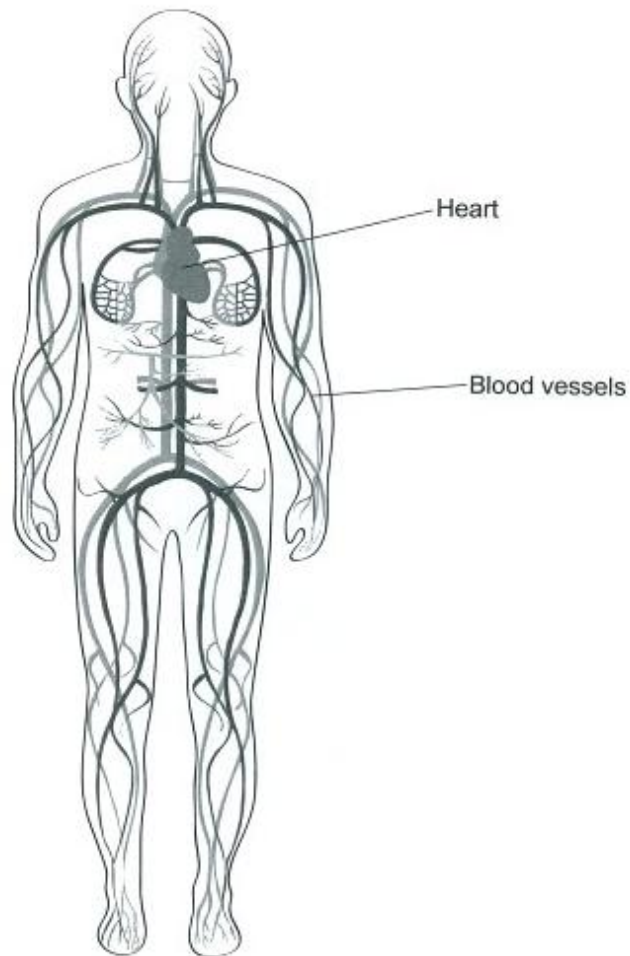


1. The respiratory system is made up of
 - Nose
 - Windpipe
 - Lungs
 - Diaphragm
2. The nose hair in the nose helps to trap dust particles in the air.
3. The windpipe transports air from the nose to the lungs.
4. The lungs allow gaseous exchange to take place.
 - Blood transports oxygen in the lungs to the heart, then to the other parts of the body.
 - Blood transports carbon dioxide produce by the body back to the heart, then to the lungs, so that it can be exhaled out of the body.

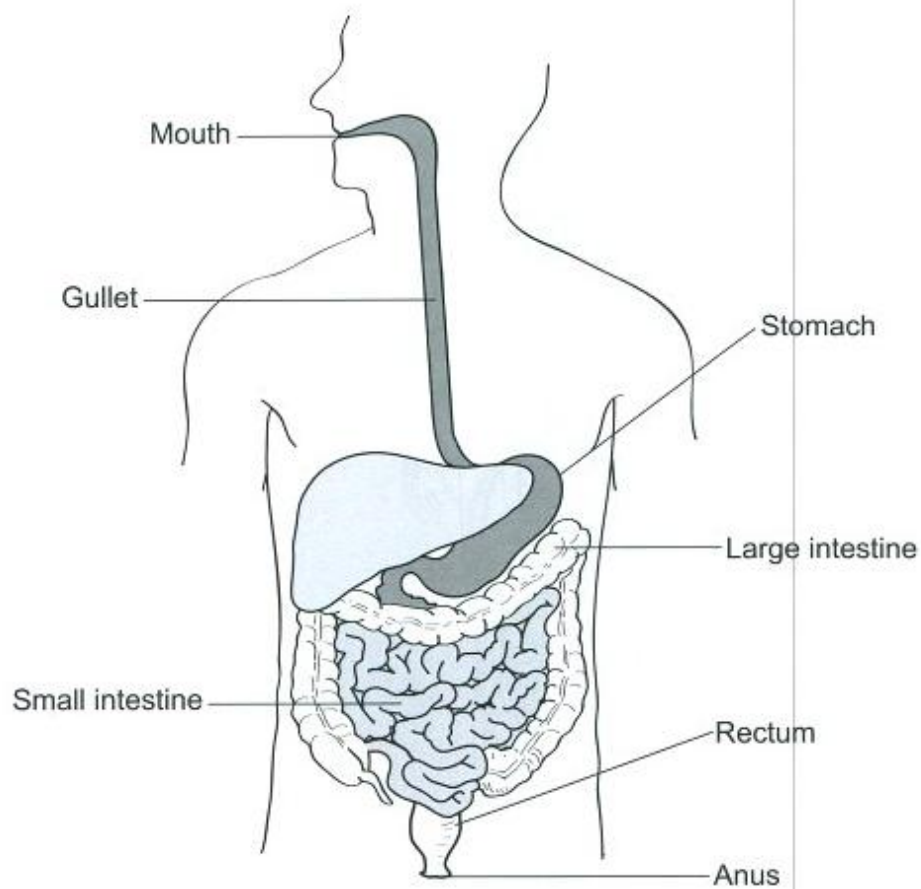
5. The diaphragm is a sheet of muscle that moves upwards and downwards during inhalation and exhalation.



CIRCULATORY SYSTEM



1. The circulatory system is made up of
 - Heart
 - Blood
 - Blood vessels
 - ◆ Veins
 - ◆ Arteries
 - ◆ Capillaries
2. The circulatory system transports digested food, oxygen and water to all parts of the body.
3. It also removes waste materials and carbon dioxide out of the body.
4. The circulatory system works very closely with the digestive system and the respiratory system.

DIGESTIVE SYSTEM

1. The digestive system is made up of
 - Mouth
 - Gullet
 - Stomach
 - Small intestine
 - Large intestine
 - Rectum
 - Anus

2. **Mouth**
 - The teeth in the mouth chew the food into smaller pieces.
 - The saliva (digestive juice) softens and partially digests the food.
 - The tongue rolls the food into small balls so that they can be swallowed easily.

3. Gullet

- The gullet is a muscular tube that transports food from the mouth to the stomach.

4. Stomach

- The food is mixed with digestive juices and digested into simpler substances in the stomach.

5. Small intestine

- More digestive juices are added to the food to further digest it until digestion is complete.
- Digested food is absorbed into the blood stream through the wall of the small intestine.

6. Large intestine

- Undigested food moves from the small intestine into the large intestine.
- Water and mineral salts from the undigested food is absorbed into the bloodstream.

7. Rectum

- Stores waste matter produced in the large intestine that are to be remove from the body.

8. Anus

- The anus is the external opening of the rectum through which waste matter is removed during the act of defecation.

SENSORY SYSTEM

1. The human sensory system is made up of 5 sense organs;
 - **Eyes**
 - ♦ Sense of sight
 - **Ears**
 - ♦ Sense of hearing
 - **Nose**
 - ♦ Sense of smell
 - **Tongue**
 - ♦ Sense of taste
 - **Skin**
 - ♦ Sense of **touch**
 - ♦ The skin is the largest organ in our body
2. These 5 organs gather information which are sent to our brain through the nerves.
3. The brain then decides what to do and sends instructions back to muscles through the nerves.



EXPERIMENTS

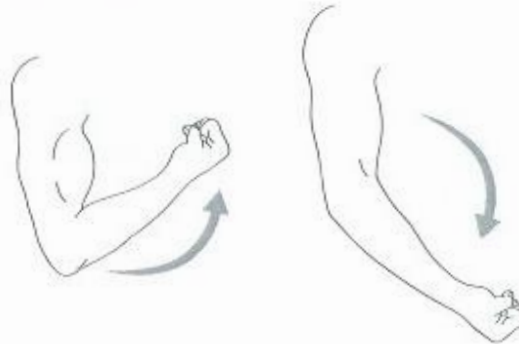
Experiment 1

Materials needed:

- Your arm

Steps:

1. Lift up your forearm.
2. Observe the muscles on the arm.
3. Straighten your forearm.
4. Observe the muscles of the arm again.



- What can be observed about the muscles on the arm?

The biceps contracts while the triceps relaxes when the forearm is lifted.

The triceps contracts while the biceps relaxes when the forearm is straightened.

- What can be concluded from the observation?

Muscles work in pairs.



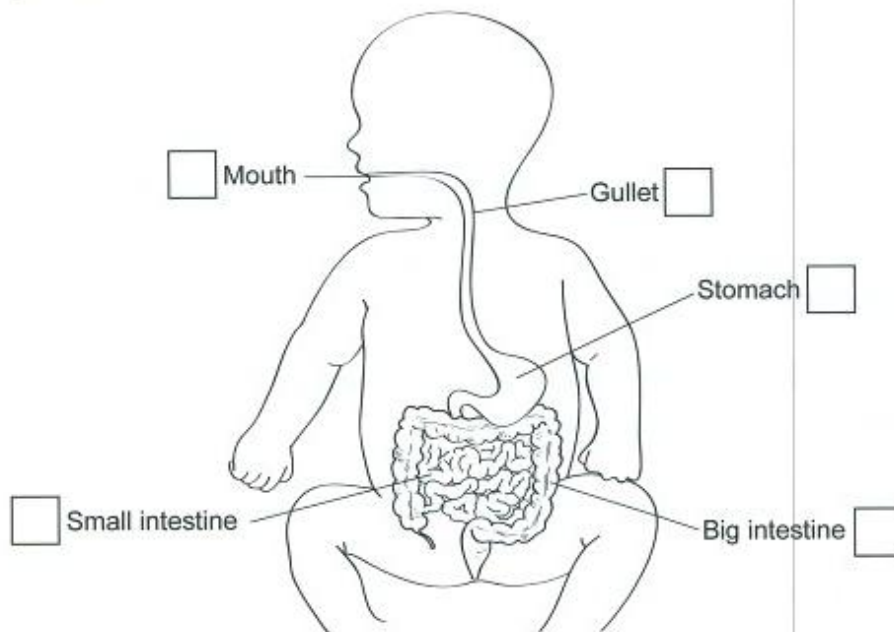
WORKED EXAMPLES

Worked Example 1

Julie blended some solid food for her 7-month-old son with a food processor as shown below.



- (a) Explain why Julie blended the solid food before feeding her son? (1m)
- (b) In the diagram below, put a tick in the boxes where digestion of food takes place, and put a cross in the box where water is absorbed from the undigested food. (2m)





Thought Process:

Topic : Body systems

Key Concept(s) : The teeth in the mouth chew the food into smaller pieces.

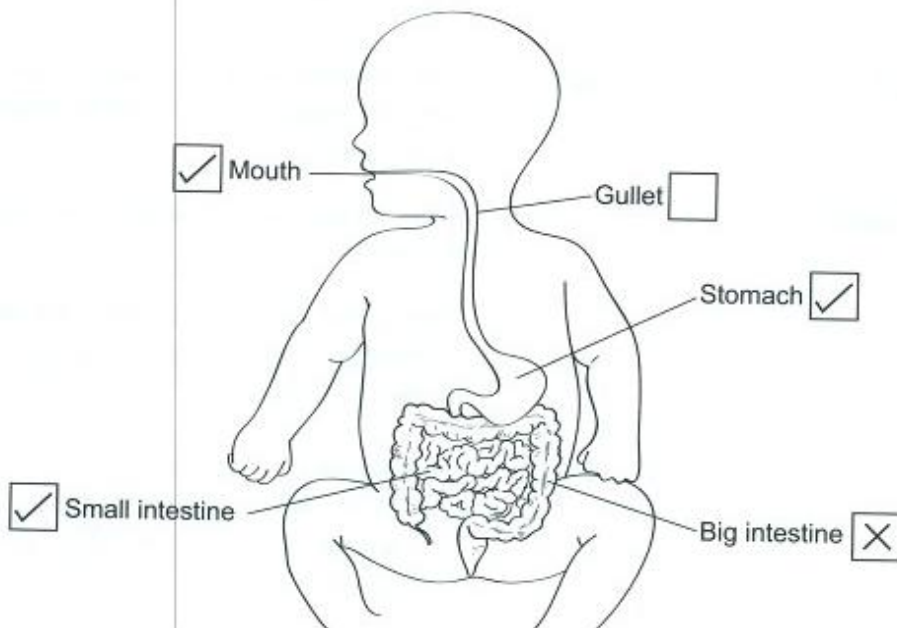
Key Words / : (a) no teeth, cannot chew the food into smaller pieces
(b) –

Process Skills : Observing, Inferring

Answers:

(a) Her son **does not have teeth to chew the food into smaller pieces** before swallowing. (1m)

(b)



Worked Example 2

Billy was eating chicken chop with his fork and knife as shown below.



- Name the two body systems that were involved when Billy was using his cutlery to cut his piece of meat. (1m)
- Billy then talked to his mother while eating his food. Suddenly, he choked and started to cough. Explain why he choked on his food. (1m)



Thought Process:

Topic : Body systems

Key Concept(s) : The skeletal system works closely with the muscular system to enable us to move.

The windpipe transports air from the nose to the lungs.

The gullet is a muscular tube that transports food from the mouth to the stomach.

Key Words / : (a) skeletal, muscular
(b) food went into windpipe, food should travel down the gullet
ground

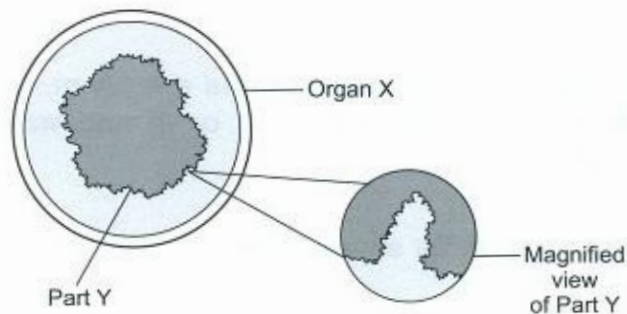
Process Skills : Observing, Inferring

Answers:

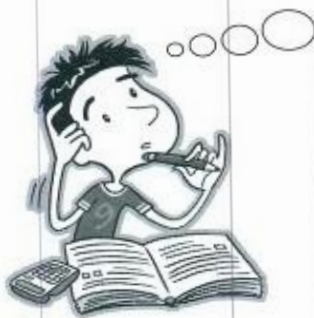
- Skeletal** system and **muscular** system. (1m)
- The **food went into his windpipe instead of the gullet.** (1m)

Worked Example 3

Organ X is a part of the human digestive system where digested food is absorbed into the blood stream. Part Y is found inside Organ X.



- Part Y has many tiny folds. Explain how these tiny folds help in the absorption of digested food. (1m)
- Name Organ X and state another of its function. (1m)

**Thought Process:**

Topic : Body systems

Key Concept(s) : Digested food is absorbed into the blood stream through the wall of the small intestine.

Key Words / : (a) increase surface area, absorb more digested food into the blood stream
(b) small intestine, further digest the food until digestion is complete

Process Skills : Observing, Inferring, Generating possibilities

Answers:

- The tiny folds **increase the surface area** inside Organ X so that **more digested food can be absorbed into the blood stream**. (1m)
- Small intestine**. It **further digests the food until digestion is complete**. (1m)