LABORATORY ACTIVITY NO. 16
THE DIGESTIVE SYSTEM and METABOLISM

Scope of Laboratory Activity
This laboratory activity consists of four (4) worksheets:

Worksheet No. 1 Anatomy of the Digestive System
Worksheet No. 2 The Gastrointestinal Tract
Worksheet No. 3 Accessory Organs in Digestion: The Liver, Pancreas, and Gallbladder
Worksheet No. 4 Food breakdown in the digestive tract

Overview

The digestive system processes food that can be absorbed and used by the body's cells. The digestive organs are responsible for food ingestion, digestion, absorption and elimination of undigested remains from the body (Marieb, 2002).

Food and other nutrients undergo six activities which process food into molecules that can be absorbed and utilized by the cells of the body starting with (1) Ingestion, wherein food is taken by mouth and then by (2) Mechanical Digestion, broken by a process of mastication into smaller pieces that can be acted upon by saliva and various enzymes. The (3) Chemical

Digestion transforms the compound molecules of carbohydrates, proteins, and fats into minute ones through a process called hydrolysis which uses water and other enzymes, which hasten the very slow process of digestion. Particles then move down the esophagus to the stomach where mixing and (4) Peristaltic Movements, which are repetitive and rhythmic waves of contraction occur. These result in simpler molecules that can pass through cell membranes of the lining in the small intestine into the blood and lymph capillaries by (5) Absorption. The final step is (6) Elimination, which is the removal or evacuation of indigestible food molecules or waste products from the body.

Objectives

After completing this laboratory activity, the student will be able to:

1. Identify the anatomy of the digestive system.
2. Identify the gastrointestinal tract.
3. Classify the accessory organs in digestion.
4. Describe the food breakdown in the digestive tract.

Worksheet No. 1 Anatomy of the Digestive System

1.1 Complete the following statements by inserting your answers in the answer blank.

The digestive system is responsible for many body processes. Its function begins when food is taken into the mouth or (1) _____. The process called (2)_____ occurs as food is broken down both chemically and mechanically. For the broken-down foods to be made available to the body cells, they must be absorbed through the digestive system walls into the (3)_____. Indigestible food remains are removed, or (4)_____, from the body in the form of (5) _____ . The organs forming a continuous tube from the mouth to the anus are collectively called the (6)_____ . Organs located outside the digestive tract which secrete their products into the digestive tract, are referred to as (7)_____ organs of the digestive system.

1.2 Label the structures in Figure 1. Write your answer in the space provided below.

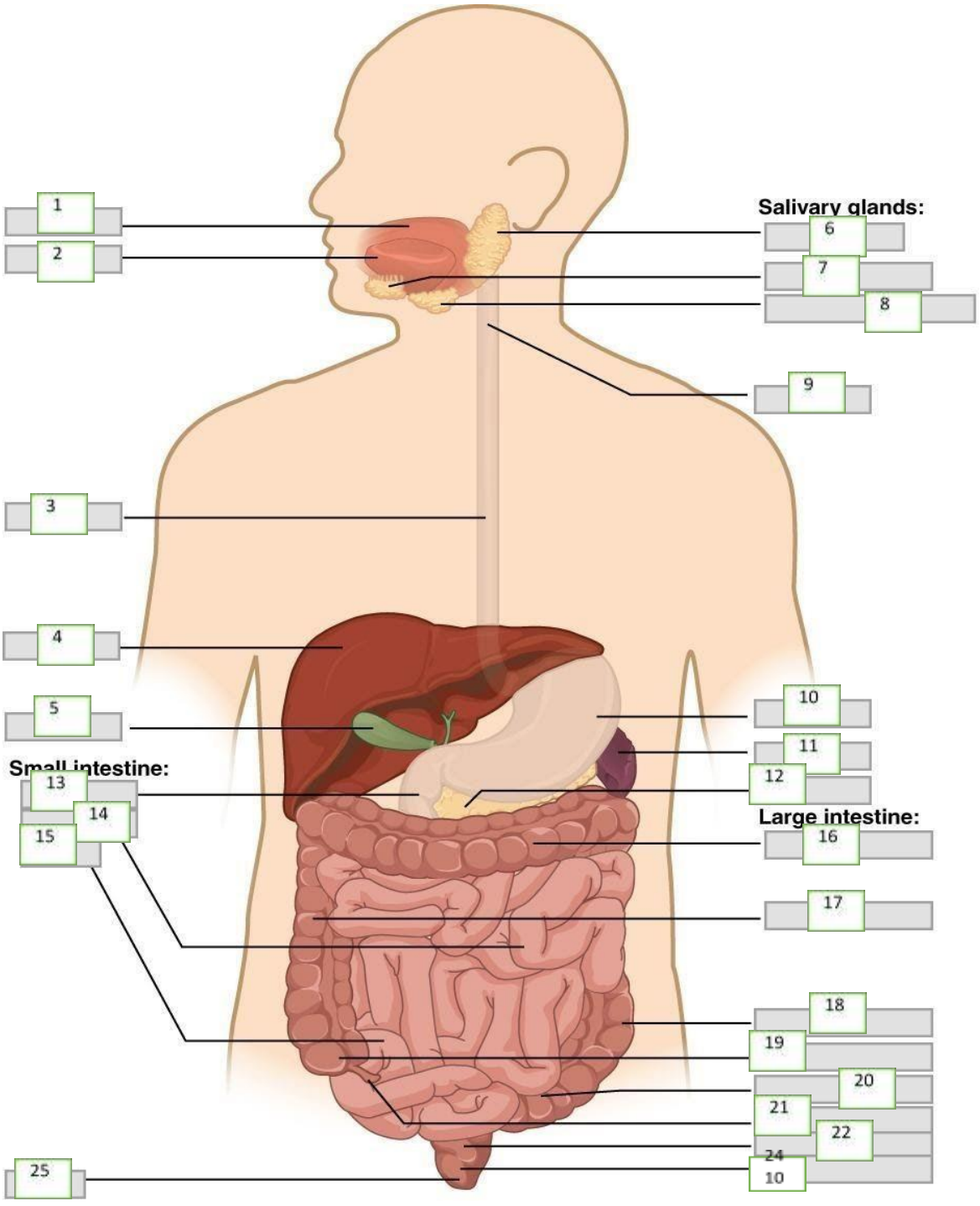

Figure 1. Organs of the Digestive System

1.	12.
2.	13.
3.	14.
4.	15.
5.	16.
6.	17.
7.	18.
8.	19.
9.	20.
10.	21.
11.	22.

Worksheet No. 2 The Oral Cavity and Gastrointestinal Tract.

2.1 Label the structures in Figure 2. Write your answer in the space provided below. (Not included)

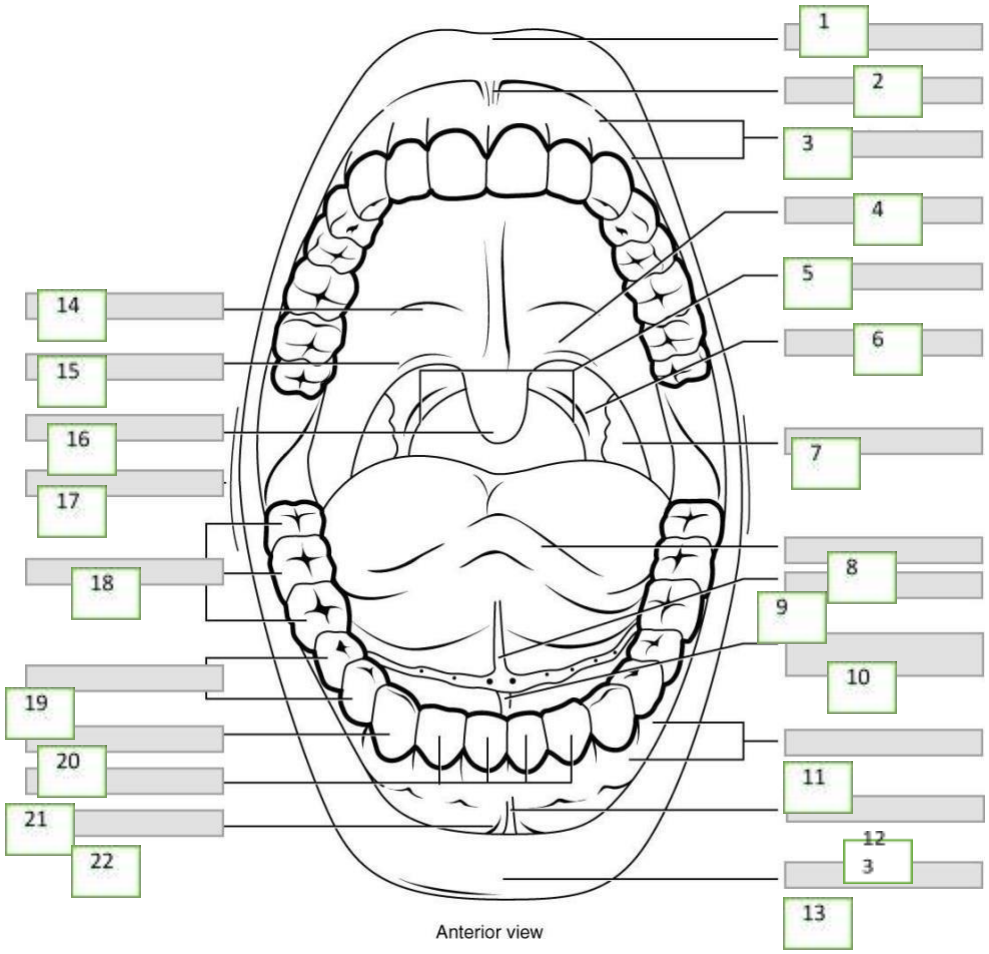

Figure 2. The Mouth

1.	12.
2.	13.
3.	14.
4.	15.
5.	16.
6.	17.
7.	18.
8.	19.
9.	20.
10.	21.
11.	22.

2.2 Label the structures in Figure 3. Write your answer in the space provided below.

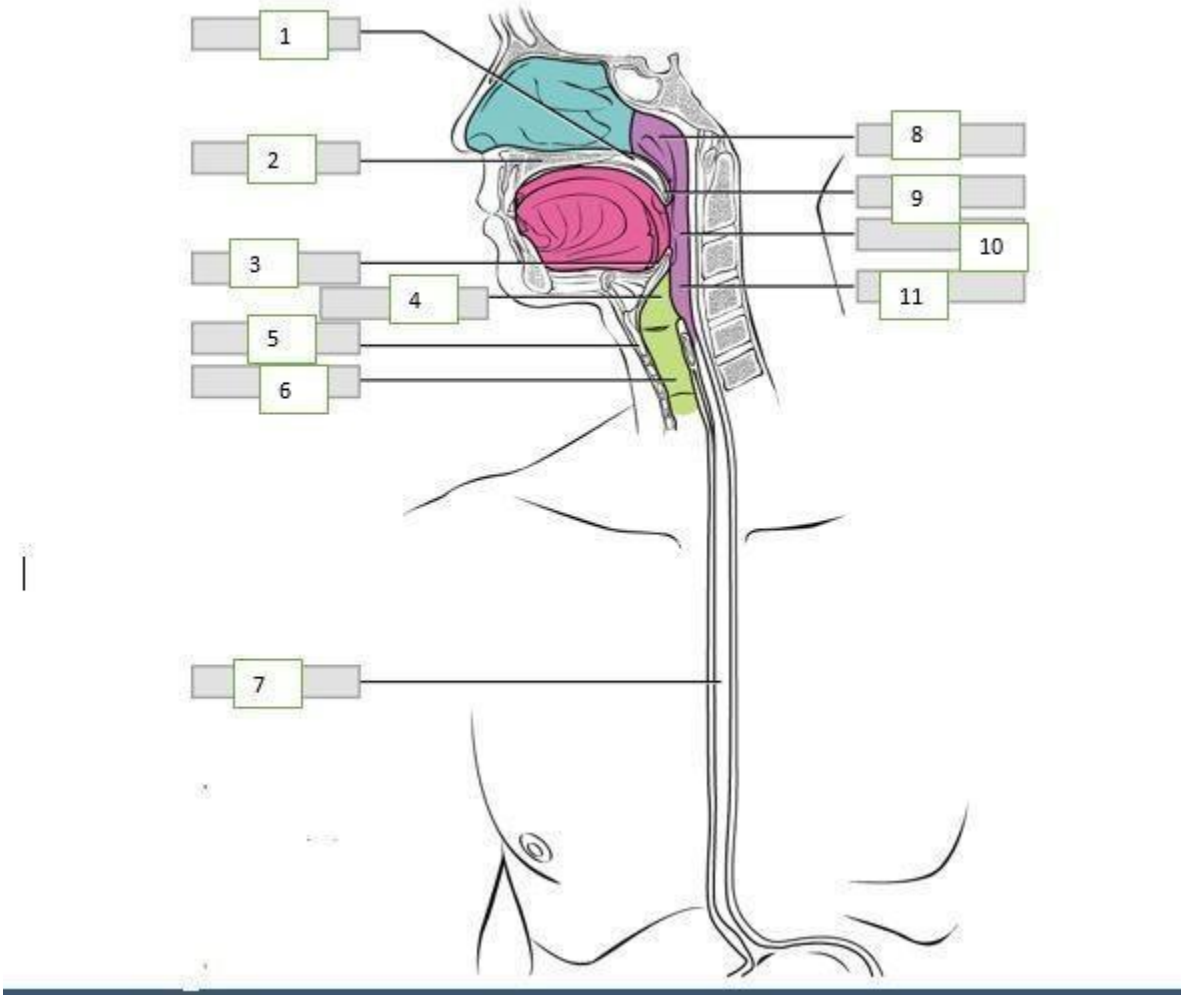

Figure 3. The Pharynx

1._____
2. _____
3. _____
4. _____
5._____
6._____
7._____
8._____
9._
10._
11. _____

2.3 Label the structures in Figure4. Write your answer in the space provided below.(Not Included)

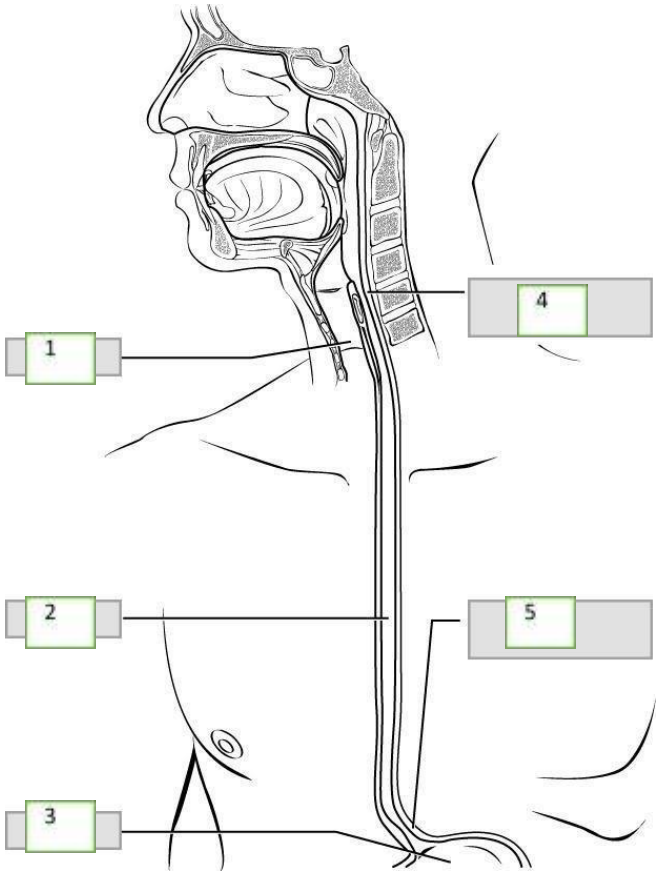

Figure 4. The Esophagus

1._____
2. _____
3. _____
4. _____
5._____

2.4 Label the structures in Figure 5. Write your answer in the space provided below.

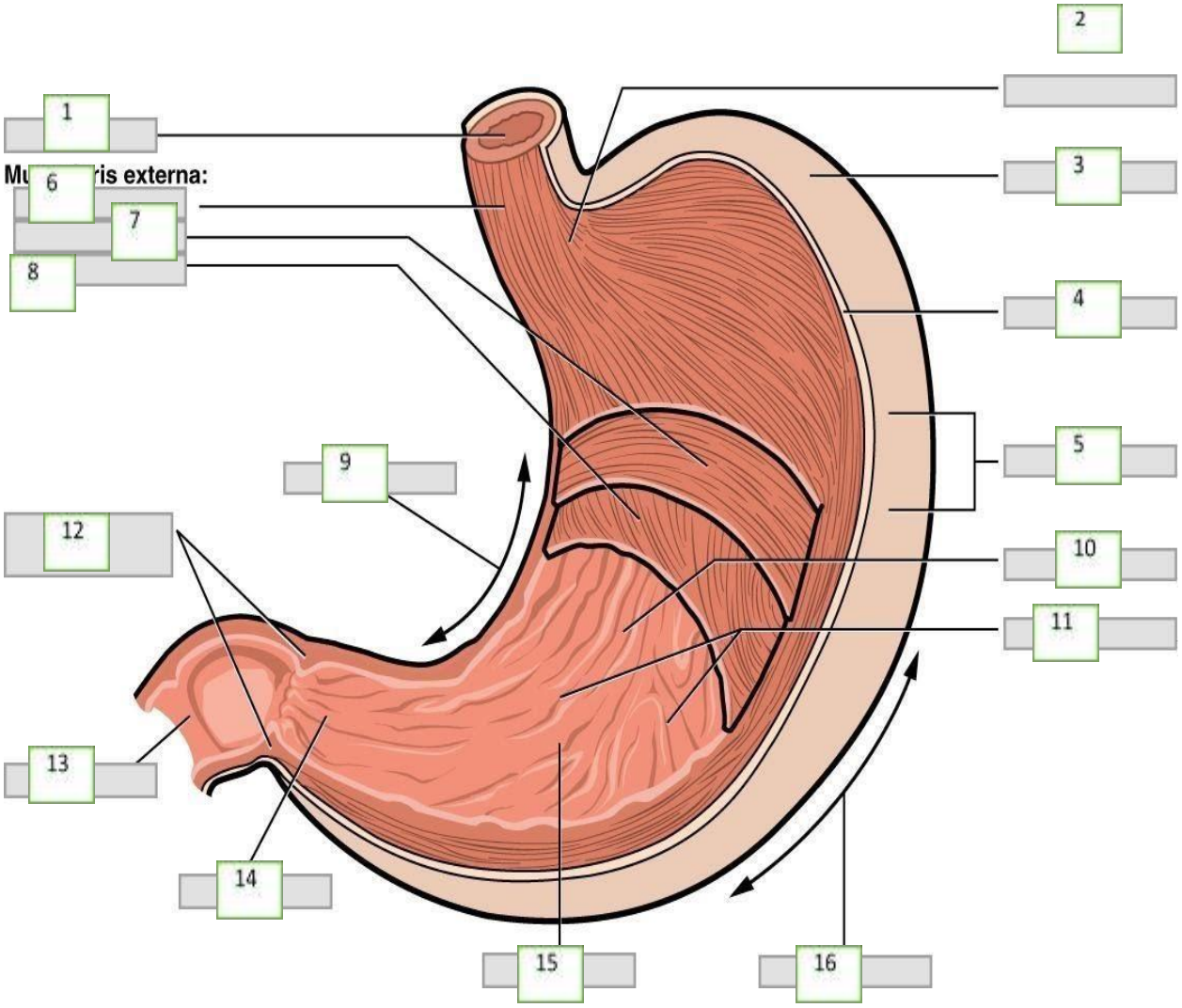

Figure 5. The Stomach

1._____
2. _____
3. _____
4. _____
5._____
6._____
7._____
8._____

9._____
10. _____
11._____
12._____
13. _____
14._____
15. _____
16._____

2.5 Label the structures in Figure 6. Write your answer in the space provided below

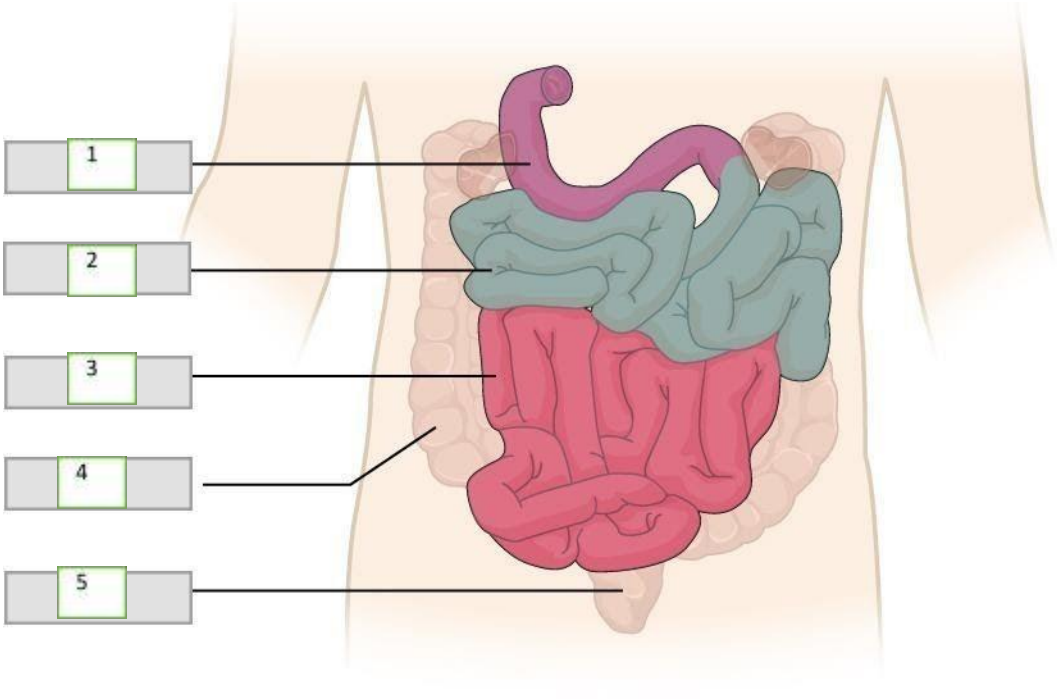

Figure 6. The Small Intestines

1. _____
2. _____
3. _____
4. _____
5. _____

2.6 Label the structures in Figure 7. Write your answer in the space provided below

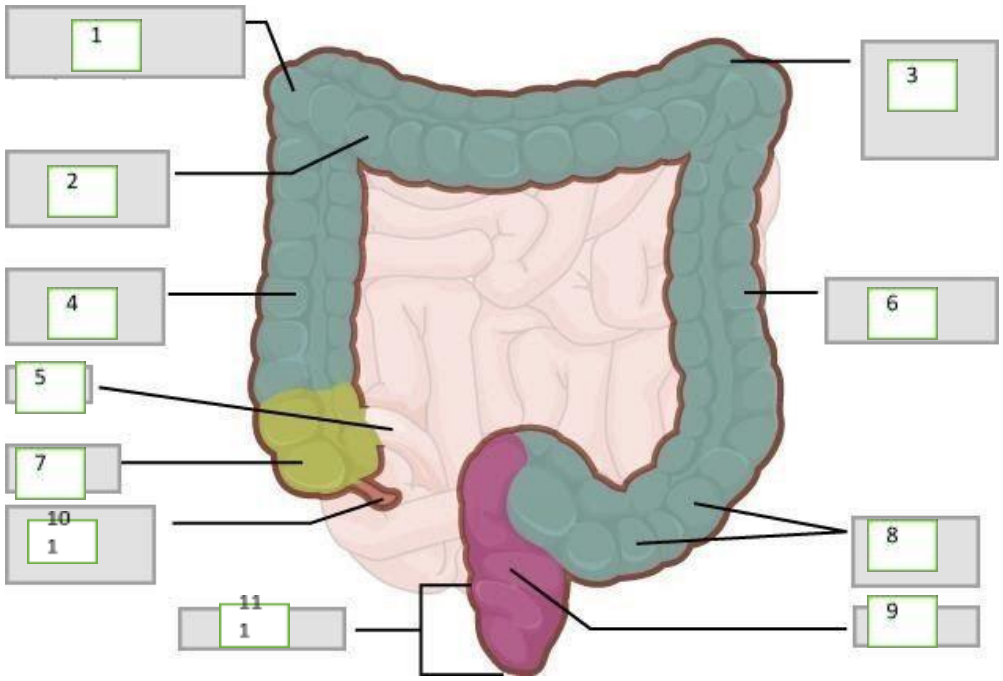

Figure 7. The Large Intestine

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____

Worksheet No. 3 Accessory Organs in Digestion: The Liver, Pancreas, and Gallbladder

3.1 Label the structures in Figure 8 Write your answer in the space provided below

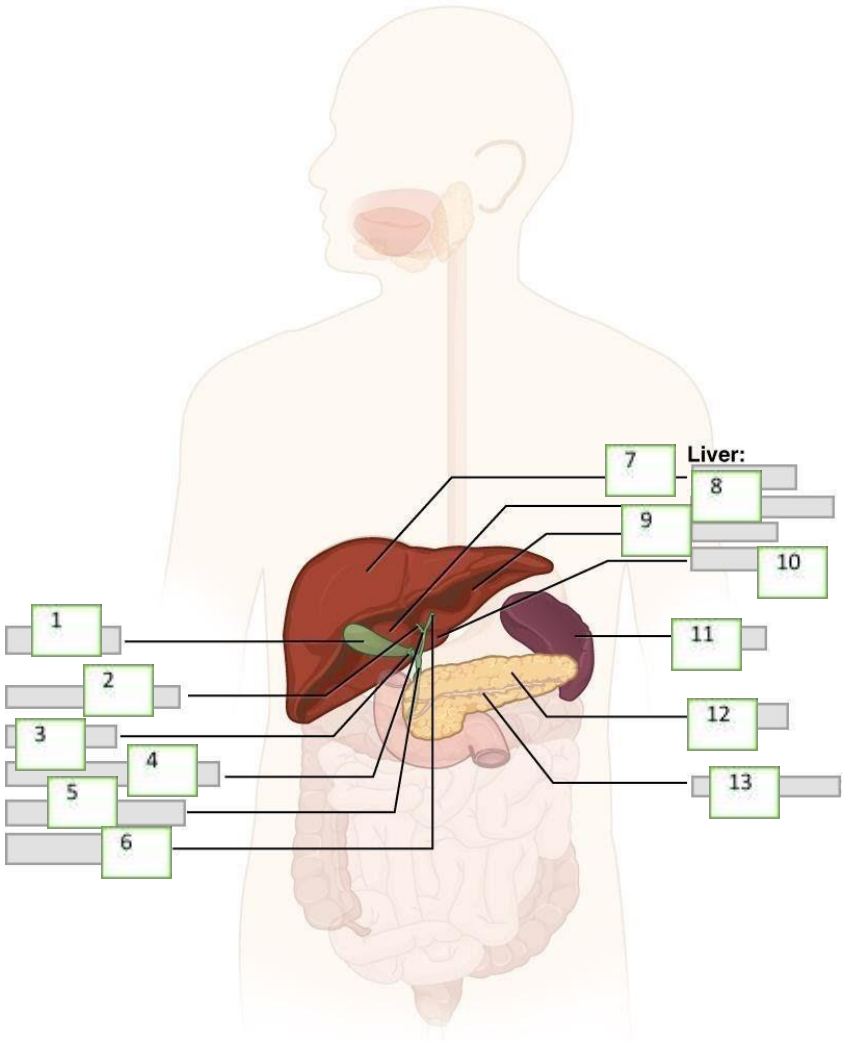

Figure 8. Accessory Organs

1._____
2. _____
3. _____
4. _____
5._____
6._____
7._____

8._____
9. _____
10._____
11._____
12. _____
13._____

Worksheet No. 4: Food breakdown in the digestive tract

Select the appropriate terms to complete the following statements. Insert the correct terms (or letters) in the blank.

A.	Bicarbonate-rich fluid	I. Mechanical stimulus
B.	Bile	J. Mouth
C.	Brush border enzymes	K. Mucus
D.	Chewing	L. Pepsin
E.	Churning	M. Psychological stimulus
F.	HCl	N. Rennin
G.	Hormonal stimulus	O. Salivary amylase
H.	Lipases	

1. Starch digestion begins in the mouth when_____is ducted in by the salivary glands.
2. Gastrin, which prods the stomach glands to produce more enzymes and the HCl represents a_____.
3. The fact that the mere thought of a relished food can make your mouth water is an example of _____.
4. Many people chew gum to increase saliva formation when their mouth is dry. This type of stimulus is a_____.
5. Protein foods are largely acted on in the stomach by_____.
6. For the stomach protein-digesting enzymes to become active_____is needed.
7. Since living cells of the stomach (and everywhere) are largely protein, it is amazing that they are not digested by the activity of stomach enzymes. The most important means of stomach protection is the_____it produces.
8. A milk protein-digesting enzyme found in children but uncommon in adults _____
9. The third layer of smooth muscle found in the stomach wall allows mixing and mechanical breakdown by _____
10. Important intestinal enzymes are the _____.
11. The small intestine is protected from the corrosive action of hydrochloric acid in chime by_____, which is ducted in by the pancreas.
12. The pancreas produces protein-digesting enzymes, amylase, and nucleases. It is the only important source of_____.
13. A nonenzyme substance that causes fat to be dispersed into smaller globules is _____.