

Name _____

Date _____

The DIGESTIVE SYSTEM

Digestion is the process by which large, complex molecules in food are broken down into smaller molecules that can be used by the body. The **digestive system** is a collection of organs that breaks down food into energy that can be used in cells. The major organs of the digestive system are the mouth, **esophagus, stomach**, pancreas, liver, gallbladder, large and **small intestines**, rectum, and anus. Contractions of smooth muscle in the walls of the organs, along with rings of muscle called **sphincters**, keep food moving in one direction.

Food is broken down into smaller molecules through a combination of mechanical and chemical actions. These actions begin in the mouth, continue in the stomach, and end in the first part of the small intestine. In the mouth, food is chewed, and starches are broken down by salivary amylase. The food is then swallowed and enters the esophagus, where it is kept moving by the action of **peristalsis**. In the stomach, food is churned by smooth muscle contractions and further broken down by gastric juices, HCl, and pepsin. Proteins are broken down in the stomach, but fats and most sugars are broken down in the small intestine. Digestive juices and enzymes turn the partly digested food into a semi-liquid mixture called **chyme**.

The remaining carbohydrates, proteins, and fats are digested only in the duodenum of the small intestine. The food is churned, and enzymes and hormones from the pancreas, liver, and gallbladder flow through ducts into the duodenum. Enzymes released by the pancreas break down starches and split fats into smaller molecules. The liver and gallbladder release a chemical called **bile** to digest fats. Proteins are further broken down into amino acids. The chyme then passes into the rest of the small intestine where molecules are absorbed by the body.

1. What is the main function of digestion?

2. Give an example of chemical and mechanical digestion in the mouth and stomach.

3. How is food kept moving in one direction throughout the digestive system?

4. What organs help to complete digestion in the duodenum?

Choose the letter of the best answer.

- _____ 1. A person whose gallbladder has been removed would want to avoid fatty foods, because his body would be unable to store
- bile.
 - chyme.
 - pepsin.
 - amylase.
- _____ 2. The main purpose of digestion is to
- convert energy.
 - break down food.
 - eliminate wastes.
 - transport nutrients.
- _____ 3. Starches are digested into simpler sugars in the
- small and large intestines.
 - stomach and large intestine.
 - mouth and small intestine.
 - esophagus and duodenum.
- _____ 4. Food moves in only one direction through the digestive system because of
- mechanical digestion.
 - gastric acids and chyme.
 - sphincters and peristalsis.
 - enzymes and hormones.
- _____ 5. Which of the following digestive enzymes are involved in breaking down proteins?
- amylase and lipase
 - maltase and lactase
 - peptidase and trypsin
 - sucrase and pepsin