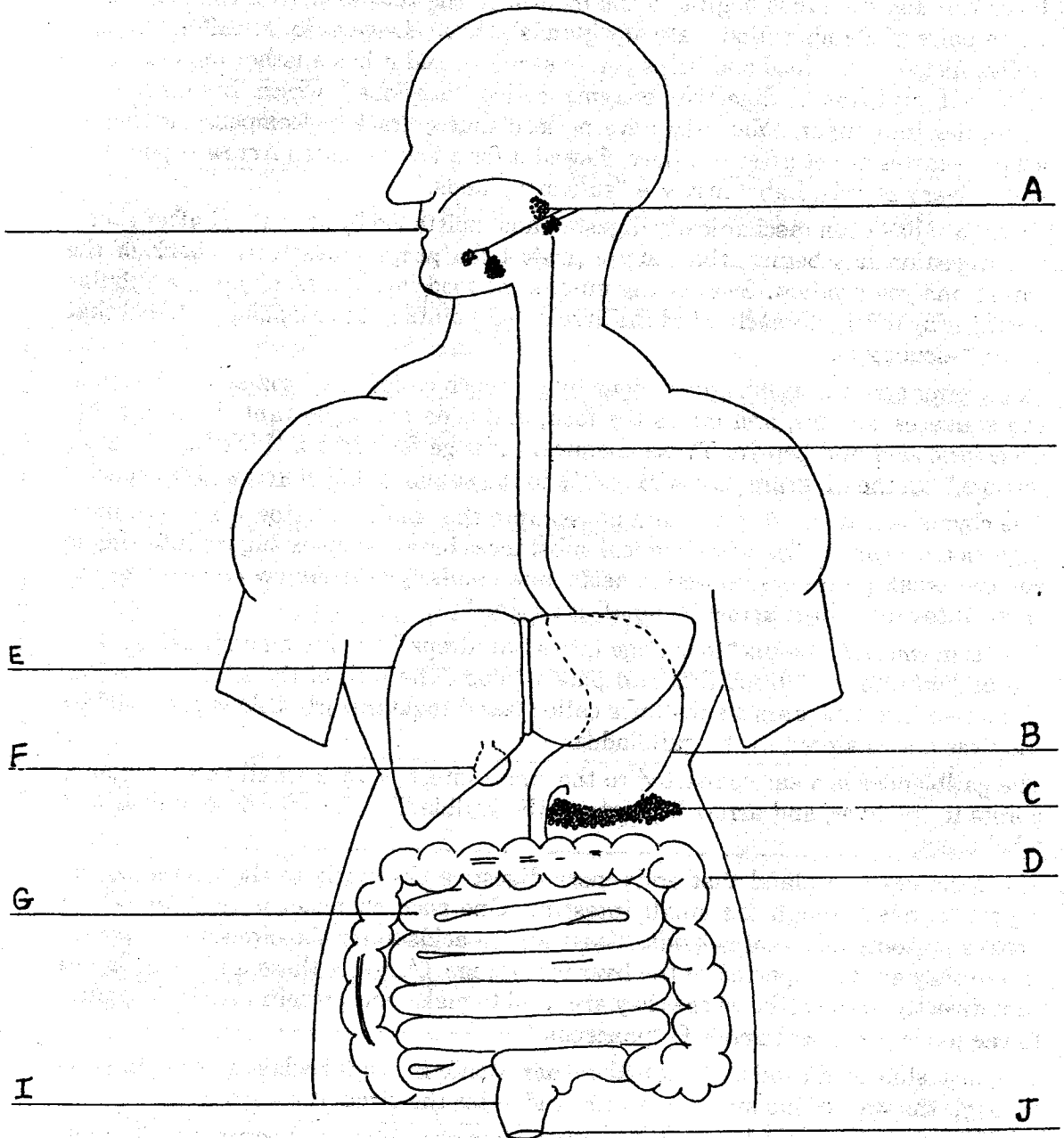


9-2. THE ANATOMY OF THE HUMAN DIGESTIVE SYSTEM

Instructions: (1.) Read the text and the descriptions. (2.) Use the text and the descriptions to help you to label the diagram and to answer the questions.



The job of your digestive system is to take nutrients from the foods you eat so that the cells of your body can use them. If for some reason your digestive system could not do this, you would become malnourished and your health would deteriorate.

While completing this project, you will learn to name the different parts of the digestive system and learn how these parts work together to utilize the nutrients in the foods you eat.

Descriptions

1. The mouth is the beginning of the digestive system. Its job is to tear and grind food into pieces small enough to swallow. This tearing, grinding, and chewing process is called "mechanical digestion"; the mouth has thirty-two teeth and strong jaws to accomplish it. Find the arrow that points to the mouth. Label that arrow "mouth."
2. Chemical digestion also begins in the mouth. In the tissues within the mouth are three pairs of glands called "salivary glands"; they release a liquid called "saliva." Saliva moistens the food and helps you to swallow, and it has another important job to do: It contains a digestive enzyme called "amylase," which breaks starch molecules into sugar. (You may have noticed that a cracker—composed mostly of starch—tastes sweet after you have chewed it for a few seconds.) Arrow A points to the salivary glands. Label arrow A "salivary glands."
3. After food has been mechanically digested and moistened by saliva and after chemical digestion has begun, the tongue pushes the pulpy mass to the back of the throat and you swallow. Swallowing pushes the food into the esophagus, a tubular passageway to the stomach. Find the arrow that points to the esophagus. Label that arrow "esophagus."
4. At its lower end, the esophagus widens into a pouch called the "stomach." The stomach squeezes, sloshes, and mixes the food, and adds two important chemicals: hydrochloric acid and pepsin. These chemicals change food into a thick liquid called "chyme." On the diagram, arrow B points to the stomach. Label arrow B "stomach."
5. The chyme leaves the stomach and passes into the small intestine where chemical digestion continues. Specific chemical substances break complex sugars into simple sugars, break proteins into amino acids, and emulsify fats. Arrow G points to the small intestine. Label arrow G "small intestine."
6. The term *emulsify* means "to change into small drops." During emulsification, fats are broken into tiny drops that can pass through the wall of the small intestine. The small intestine uses a substance called "bile" to do this job. Bile is produced by the liver and is stored in the gallbladder.
The gallbladder is a sac connected to the small intestine by a small tube. Arrow E points to the liver, and arrow F points to the gallbladder. Locate these arrows and label them.
7. The pancreas is a gland that adds more digestive chemicals to the chyme as the chyme travels through the small intestine. One such chemical is trypsin, which breaks proteins into amino acids. These amino acids enter the circulatory system where they are transported to the liver for storage. (A few of these amino acids are sent directly to the cells, where they are used to make new protein.) Arrow C points to the pancreas. Label arrow C "pancreas."
8. The last step of digestion is called "absorption"; it occurs when nutrients pass through the wall of the small intestine and enter the circulatory system.
Only wastes remain in the small intestine after absorption has occurred. They enter the large intestine, where water is removed from the wastes and returned to the body; this process is called "reabsorption." Arrow D points to the large intestine. Label arrow D "large intestine."
9. After reabsorption, wastes collect in the last four to six inches of the large intestine. This part of the large intestine is called the "rectum"; it has nerve endings that, when stretched, are responsible for the urge to defecate. Defecation occurs when wastes are removed from the rectum through an opening called the "anus." Arrow I points to the rectum, and arrow J points to the anus. Locate and label these arrows.

Level One Questions:

1. The mouth is the _____ of the digestive system.
2. What is mechanical digestion?

3. Where does mechanical digestion take place?

4. Where does chemical digestion begin?

5. How many pairs of salivary glands are within the tissues of the mouth? _____
6. Name the digestive enzyme in saliva. _____
7. Amylase breaks starch molecules into _____.
8. What is the job of the esophagus?

9. What is the job of the stomach?

10. Where does chyme go after it leaves the stomach?

11. What happens to chyme in the small intestine?

12. What does the term *emulsify* mean?

13. Where are fats emulsified?

14. What is bile?

15. What does the gallbladder look like?

16. How is the gallbladder connected to the small intestine?

17. What is the job of the pancreas?

18. How does trypsin digest protein?

19. After proteins have been broken down into amino acids, where do the amino acids go?

20. What does the liver do with amino acids?

21. How do the cells use amino acids?

22. What remains in the small intestine after all the nutrients have passed through its walls?

23. What is the job of the large intestine?

24. What is the job of the rectum?

Level Two Questions:

~~25. Write a short report on the back of this sheet that describes how food passes through the digestive system.~~

26. From what you have learned, name two functions of the liver.
