

Nutrition, Food and Fitness  
Chapter 3  
"How Nutrients Become You"  
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Learning about health and nutrition requires some knowledge of chemistry and biology.

Terms to Know

Matter is anything that takes up space and has a measurable quantity.

Elements are the simplest substances from which all matter is formed.

## Nutrient

A nutrient is a basic component of food that nourishes the body.

### The Six Categories (Groups) of Nutrients

1. carbohydrates
2. fats
3. proteins
4. vitamins
5. minerals
6. water

## 4 characteristics of nutrients

1. These nutrients are obtained from the food you eat.
2. Each has a specific job.
3. Each, in recommended quantities, is vital to good health.
4. Without adequate amounts of these nutrients over time your risk of various health problems will increase.

## The Functions of Nutrients

Essential nutrients are used to:

1. build and repair body tissues
2. regulate all body processes
3. provide energy

Function 1 - Build and Repair Body Tissues

All cells come from preexisting cells

your body needs adequate amounts of nutrients to make new cells

Function 2 - Regulation of All Body Processes

- Nutrients keep body processes running smoothly.
  - circulation of body fluids
  - maintaining the correct acid-base level in the blood

### Function 3 - Provide Energy

Food is to your body what gasoline is to your car.

- The quality of the food you eat affects how well your body functions.
- Your body needs energy to breathe, pump blood, move muscles and provide heat.
- If you go without food too long, your body will not have the energy to operate vital organs.
- The more active you are, the more energy you need.

Chemical reactions that take place in cells release energy from the nutrients you get from the food you eat.

carbohydrates }  
fats } — two main nutrients for energy

proteins }  
-may be used for energy but the body prefers to save them for other vital functions (build & repair tissues)

vitamins }  
minerals }  
water } -do not provide energy

 <https://www.youtube.com/watch?v=i5MH6ddyi74>

## DIGESTION

 [https://www.youtube.com/watch?v=zr4onA2k\\_LY](https://www.youtube.com/watch?v=zr4onA2k_LY)



The Process of Digestion

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Digestion is the process by which your body breaks down food and the nutrients in food into simpler substances.

mechanical digestion - happens as food is crushed and churned

chemical digestion - food is mixed with acids and enzymes

Enzymes are a type of protein produced by cells that cause specific chemical reactions.

# How Nutrients Become You

## Food Breakdown

Activity A  
Chapter 3

Name \_\_\_\_\_  
Date \_\_\_\_\_ Period \_\_\_\_\_

Trace the steps in the process of digestion as food is broken down into simpler substances that can be used the body. For each step, fill in the blanks with the correct word or words.

### Step I: In the Mouth

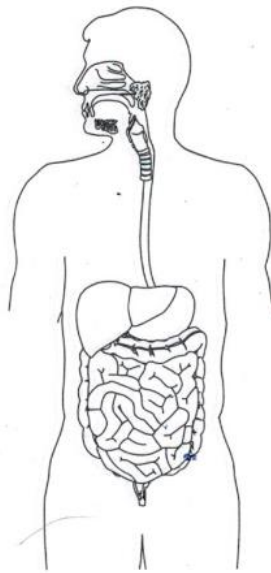
- Another word for chewing is mastication.
- Good food smells cause secretion of saliva.
- The chemical salivary amylase helps break down food starches.

### Step III: In the Stomach

- The stomach produces gastric juices to help digest food.
- When these juices combine with food the result is chyme.
- The gastric enzyme that begins to digest protein is pepsin.

### Step V: In the Large Intestine

- Another name for the large intestine is the colon.
- The main function of the large intestine is to prepare undigested food for elimination.
- Solid wastes that result from digestion are called feces.



### Step II: In the Esophagus


- Through the esophagus, food passes from the mouth to the stomach.
- The epiglottis prevents swallowed food from entering the windpipe.
- The squeezing actions of muscles in the esophagus help food move through. This squeezing is known as peristalsis.

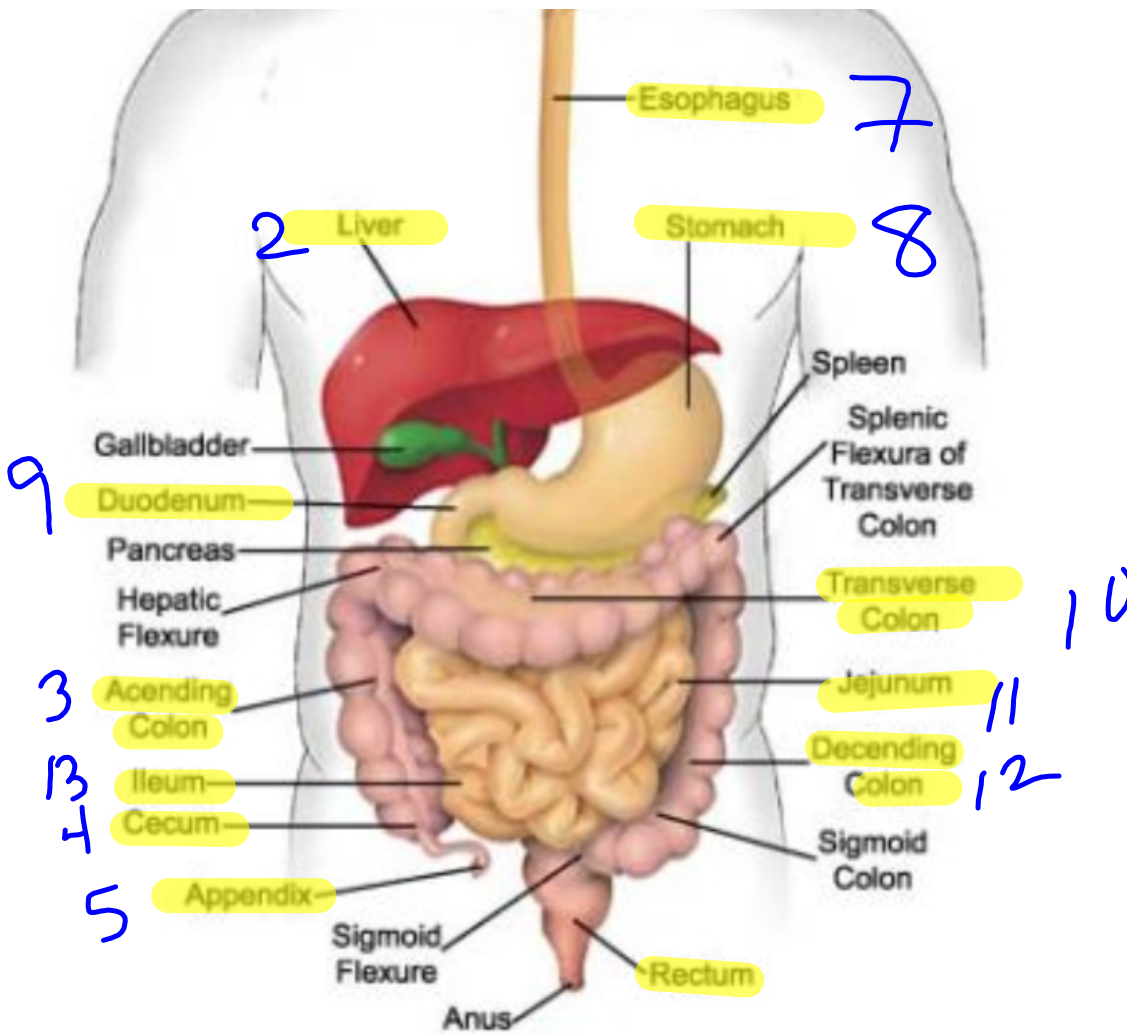
### Step IV: In the Small Intestine

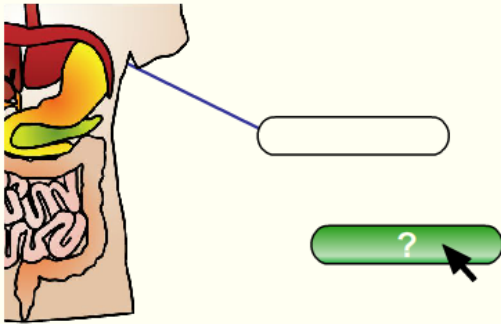
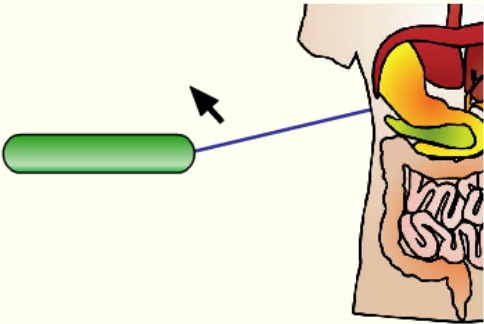

- The small intestine has three parts: the duodenum, the jejunum, and the ileum. Here, about 95 percent of digestion occurs.
- The pancreas produces enzymes that break down fats, carbohydrates, and proteins.
- The liver produces a digestive juice called bile, which aids digestion of fats.

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 <http://img.webme.com/pic/m/medscribe/digestive-system-diagram.jpg>

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1\\_anatomy\\_worksheets/digestive\\_system\\_unlabeled\\_l.jpg](http://wc1.smartdraw.com/examples/content/examples/10_healthcare/1_anatomy_worksheets/digestive_system_unlabeled_l.jpg)





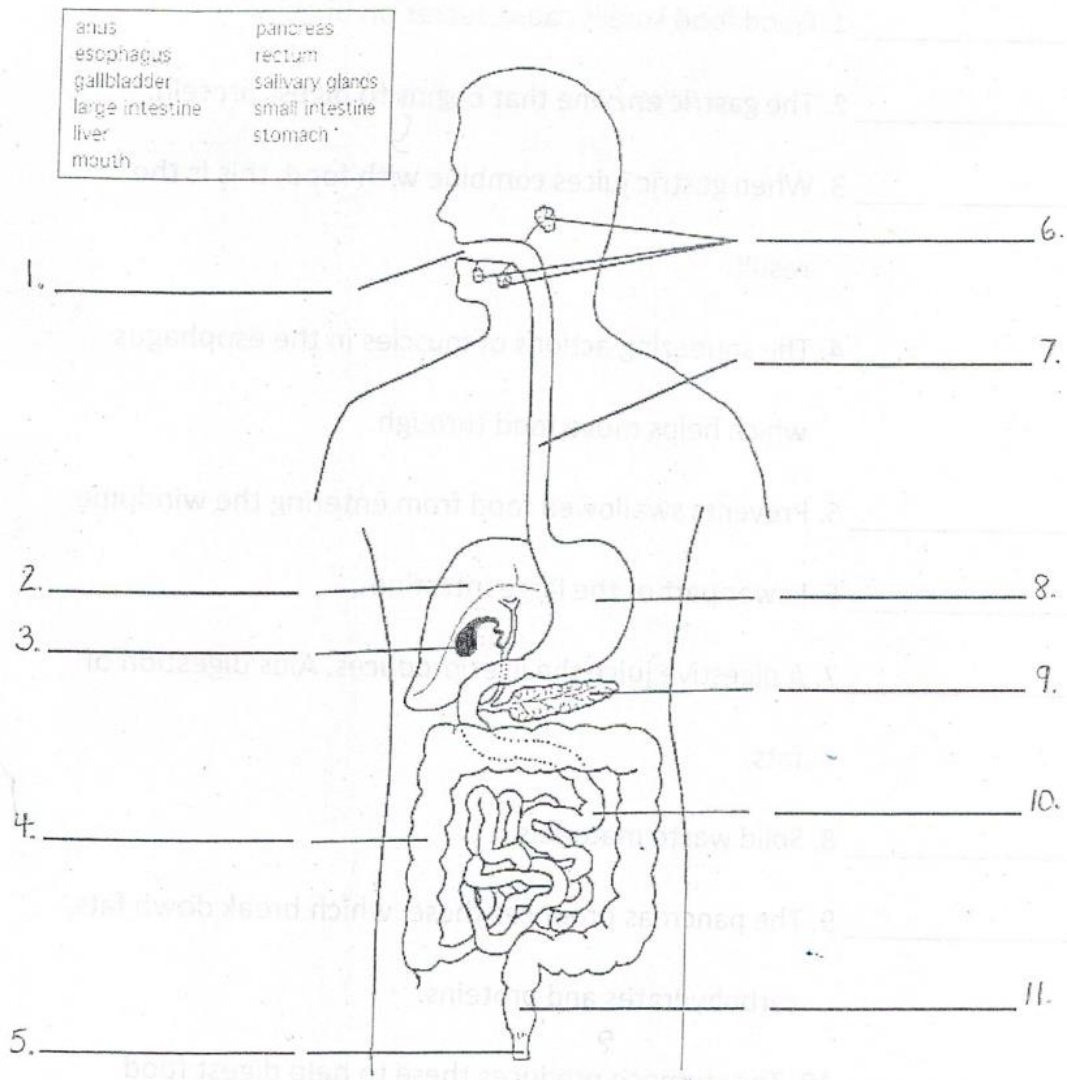
**Click and reveal**

**Drag and drop**

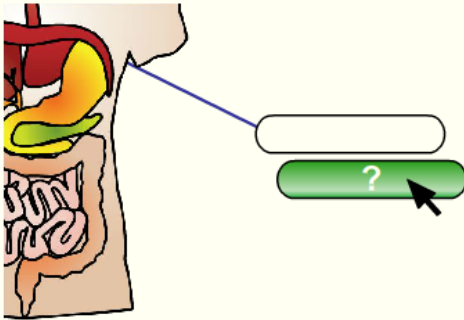
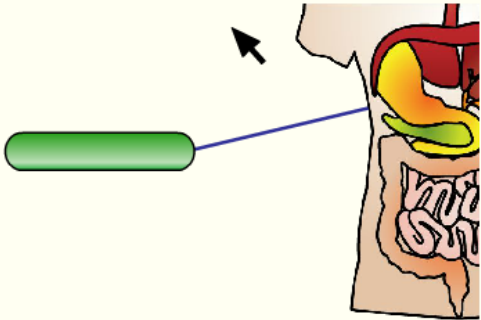

Choose the activity by selecting 'Click and reveal' or 'Drag and drop'

Review the steps of digestion as well

1. In the mouth Mastication breaks the food down, saliva contains enzymes, for example Amylase to break down starches
2. from the mouth the food passes by the epiglottis(prevent food in wind pipe) through the esophagus by peristalsis to the stomach.
3. The gastric juices in the stomach help digest food, making chyme. Gastric enzymes pepsin begins to digest protein.
4. Small Intestines - starts with the duodenum, then the jejunum at last the ileum. Pancreas produces enzymes to break down carbs, fats and proteins. Liver produces digestive juice bile to aid in digestion of fats.
5. Large intestine- The colon prepares undigested food for elmination in the solid waste form of feces.



Digestive System



Click and reveal

Drag and drop

Choose the activity by selecting 'Click and reveal' or 'Drag and drop'

The image shows a digital interface for an interactive learning activity. It features two anatomical diagrams of the human digestive system. The left diagram has a green bar with a blue line pointing to the stomach and an arrow pointing away from the bar. Below it is a green button labeled 'Click and reveal'. The right diagram has a white bar with a blue line pointing to the stomach and a green bar with a question mark below it, with an arrow pointing to the green bar. Below it is a green button labeled 'Drag and drop'. At the bottom, there is a text prompt: 'Choose the activity by selecting 'Click and reveal' or 'Drag and drop''. The SMART Technologies logo is in the top right corner.



