

TOPIC: INTRODUCTION TO THE DIGESTIVE SYSTEM

Organs of the Digestive System

◆ Organs of the digestive system can be divided into ____ groups:

- _____ **Canal / Gastrointestinal (GI) tract:** muscular _____ from mouth to anus.
- **Accessory Organs:** additional structures & organs that ____ in digestion.

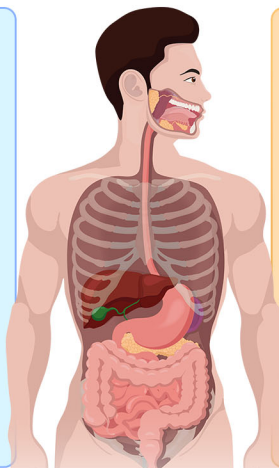
Alimentary Canal: _____

◆ **Mouth** ◆ **Pharynx** ◆ **Esophagus**

◆ **Stomach:** chemical digestion by _____
& enzyme pepsin.

◆ **Small Intestine:** chemical digestion by _____
& nutrient absorption.

◆ **Large Intestine:** _____ absorption &
waste excretion.



Accessory Organs: ____ part of the tube.

◆ **Teeth** ◆ **Tongue**

◆ **Salivary Glands:** saliva wets food and
contains _____ amylase.

◆ **Liver:** produces _____.

◆ **Gallbladder:** _____ bile.

◆ **Pancreas:** secretes buffers, _____,
& hormones.

◆ **Lumen:** hollow _____ inside the GI tract that food can occupy.

EXAMPLE

Some of the organs and accessory structures of the digestive system are listed below. For each organ, write a “GI” if the organ makes up part of the gastrointestinal tract/alimentary canal; if the organ is an accessory organ of the digestive system, write an “A”. Then, for each or structure, write a “Y” if the organ comes in direct contact with the food you eat as it passes through the gastrointestinal tract, or write an “N” if it does not.

	Part of GI Tract or Accessory organ?	Direct contact with food?
Gallbladder		
Large intestine		
Liver		
Mouth		
Pancreas		
Pharynx		
Salivary glands		
Small intestine		
Tongue		

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Four organs are listed below. During food's path through the alimentary canal, the partially digested food passes through the lumen of each of these organs *except*:

-
- a) Stomach. b) Gallbladder. c) Small intestine. d) Large intestine.

PRACTICE

True or False: if false, choose the answer that best corrects the statement.

While the accessory organs contribute important digestive enzymes and fluids, all digestions and absorption of nutrients takes place in the alimentary canal/GI tract.

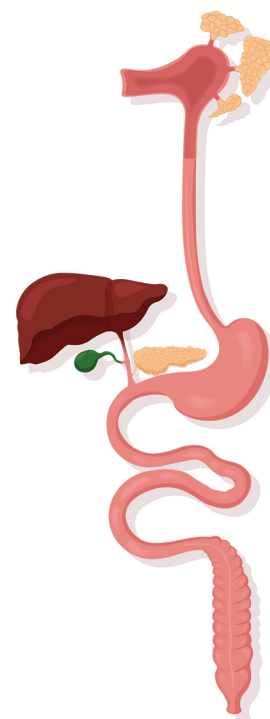
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- a) True.
- b) False, while most absorption occurs in the GI tract, the pancreas also absorbs vitamin B₁₂.
- c) False, both the organs of the GI tract and the accessory organs contribute to producing digestive fluids and absorbing nutrients.
- d) False, water is absorbed in the GI tract, but nutrients are absorbed by the accessory organs.

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Functions of the Digestive System

◆ Activity of the GI tract can be broken into several distinct functions.

- ▶ **Ingestion:** food and water _____ through the mouth.
- ▶ **Propulsion:** food moves _____ the canal.
 - *Swallowing*: movement of food out of the mouth.
 - *Peristalsis*: muscular _____ that pushes substances through the canal.
- ▶ **Digestion:** breaking food into _____ molecules.
 - **Mechanical Digestion:** physical breakdown of food through chewing, wetting, churning, and segmentation (mixing by non-adjacent contractions).
 - ____ surface area.
 - **Chemical Digestion:** uses acid or enzymes.
- ▶ **Absorption:** movement of nutrients and water into the blood or _____.
- ▶ **Defecation:** elimination of waste products as _____.



EXAMPLE

Fiber is any complex carbohydrate for which the body does *not* have enzymes to break down. Starches are large carbohydrates that the body *can* break down using the enzyme amylase. Fredo drinks 500 ml of water with 10 g of powdered fiber mixed in. Sabina drinks 500 ml of water with 10 g of powdered starch mixed in. Based on just this information, say whether you think Fredo or Sabina will perform more of each particular function listed below.

Write a “<”, “>”, or “=” sign between Fredo and Sabina’s names to indicate your answer. The first answer has been filled in for you.

Ingestion: Fredo = Sabina

Propulsion: Fredo ____ Sabina

Mechanical Digestion: Fredo ____ Sabina

Chemical Digestion: Fredo ____ Sabina

Absorption: Fredo ____ Sabina

Defecation: Fredo ____ Sabina

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Which of the following are true for digestion:

- I. Chemical digestion begins in the stomach.
- II. Digestion involves breaking down food both physically and chemically.
- III. Mechanical digestion increases the surface area of ingested food.

- a) I & II. b) I & III. c) II & III. d) I, II, & III.

PRACTICE

Which is more essential to life and why: chemical digestion or mechanical digestion?

- a) Mechanical digestion: mechanical digestion breaks down food molecules into their absorbable components.
- b) Mechanical digestion: mechanical digestion increases the surface area of consumed food, so that it may be absorbed.
- c) Chemical digestion: chemical digestion breaks down food molecules into their absorbable components.
- d) Chemical digestion: chemical digestion increases the surface area of consumed food, so that it may be absorbed.

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Of the following functions of the digestive system, which function is the responsibility of only one organ?

- a) Absorption. b) Propulsion. c) Digestion. d) Defecation.

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Names for Food as it Moves

◆ As food moves through the GI tract, we call it _____ names.

◆ **Bolus:** lump of chewed food mixed with _____.

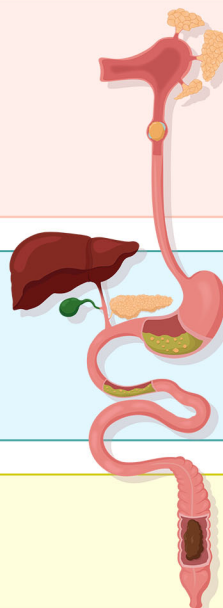
▸ Mouth, _____.

◆ **Chyme:** _____ digested food mixed with gastric juices, pancreatic juices, bile, and intestinal juices.

▸ _____ & small intestine.

◆ **Feces:** fully digested _____ product w/ _____ water content.

▸ Large intestine.



EXAMPLE

For each description below, write a “B” on the line if the description applies to a bolus. Write a “C” on the line if it applies to chyme, and write an “F” on the line if it applies to feces. You may write more than one letter on a line if appropriate.

- _____ Found in the large intestine.
- _____ Largely undigested food.
- _____ Contains the most active digestive enzymes.
- _____ High nutrient content.
- _____ Present in the small intestine.
- _____ Highest water content.
- _____ Low nutrient content.



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A bolus is found in which alimentary tract organ or organ(s)?

- a) Small intestine. b) Esophagus. c) Stomach. d) Both A and C are correct.

PRACTICE

In which the following would you expect the most chemical digestion to occur?

- a) A bolus. c) Chyme.
b) Feces. d) Chemical digestion would occur equally in all three.