

Name:

# Digestive System Web Quest

Name:

Visit this Website: <http://tinyurl.com/digestivewebquest1>

## Part I: Introduction & Background Information:

The digestive system is the series of tube-like organs that convert our meals into body fuel. In all there's about \_\_\_\_\_ (9 meters) of these convoluted pipeworks, starting with the \_\_\_\_\_ and ending with the \_\_\_\_\_. Along the way, food is broken down, sorted, and reprocessed before being circulated around the body to \_\_\_\_\_ cells and supply \_\_\_\_\_ to our muscles.

Food on the plate needs to become a mashed-up, gooey liquid for the digestive system to be able to split it up into its constituent parts: \_\_\_\_\_. Our teeth start the process by chewing and grinding up each mouthful, while the tongue works it into a ball-shaped \_\_\_\_\_ for swallowing.

Moistening saliva fed into the mouth from nearby glands starts the process of chemical digestion using specialized proteins called \_\_\_\_\_. Secreted at various points along the digestive tract, enzymes break down large molecules of food into smaller molecules that the body is able to absorb.

Once we swallow, digestion becomes \_\_\_\_\_. Food passes down the throat to the \_\_\_\_\_, the first of a succession of hollow organs that transport their contents through muscular contractions known as \_\_\_\_\_.

The esophagus empties into the \_\_\_\_\_ a large, muscular chamber that mixes food up with digestive juices including the enzymes \_\_\_\_\_, which targets proteins, and \_\_\_\_\_, which works on fats. \_\_\_\_\_ likewise helps to dissolve the stomach contents while killing potentially harmful bacteria. The resulting semifluid paste- \_\_\_\_\_-is sealed in the stomach by two ring-like \_\_\_\_\_ muscles for several hours and then released in short bursts into the \_\_\_\_\_.

The first of three sections of the small intestines, the \_\_\_\_\_ produces large quantities of \_\_\_\_\_ to protect the intestinal lining from acid in the chyme. Measuring about \_\_\_\_\_ (6 meters) in length, the small intestine is where the major digestion and \_\_\_\_\_ of nutrients take place. These nutrients are taken into the bloodstream, via millions of tiny, fingerlike projections called \_\_\_\_\_, and transported to the \_\_\_\_\_.

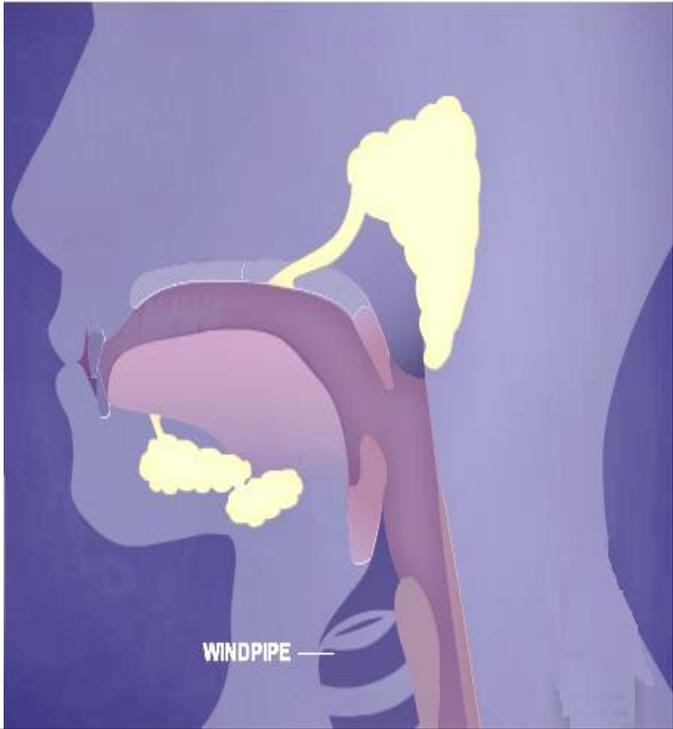
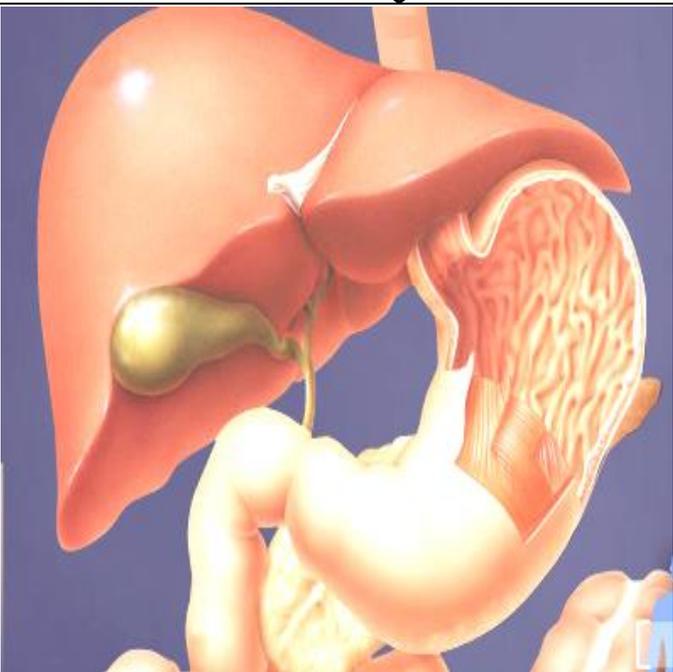
What's left in the digestive tract passes into the \_\_\_\_\_, where it's eaten by billions of harmless \_\_\_\_\_ and mixed with dead cells to form solid \_\_\_\_\_. \_\_\_\_\_ is reabsorbed into the body while the feces are moved into the rectum to await expulsion.

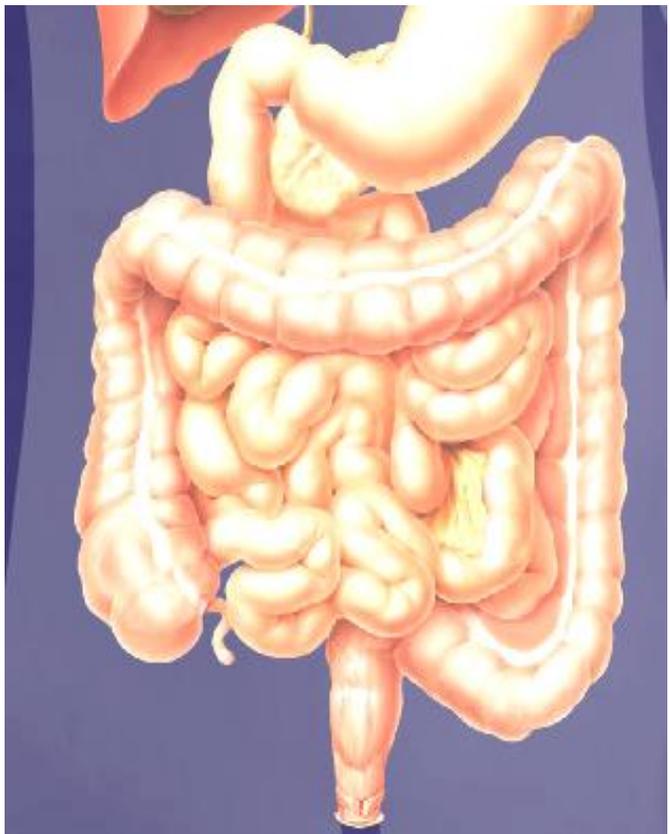
Other organs that play a key role in digestion include the \_\_\_\_\_.

The \_\_\_\_\_ is a gland organ located behind the stomach that manufactures a cocktail of enzymes that are pumped into the duodenum. A duct also connects the duodenum to the \_\_\_\_\_. This pear-shaped sac squeezes out \_\_\_\_\_, a waste product collected from the liver that contains acids for dissolving \_\_\_\_\_.

The \_\_\_\_\_ itself is the body's main chemical factory, performing hundreds of different functions. It processes nutrients absorbed into the \_\_\_\_\_ by the small intestine, creating energy-giving \_\_\_\_\_ from sugary \_\_\_\_\_ and converting dietary \_\_\_\_\_ into new proteins needed for our blood. These are then stored or released as needed, as are essential \_\_\_\_\_. The liver also breaks down unwanted chemicals, such as any \_\_\_\_\_ consumed, which is detoxified and passed from the body as waste.

Part 2: Click on "Digestive System Anatomy"

Mouth organs	Functions	Label the Diagram
Salivary Glands		
Teeth		
Tongue		
Hard Palate		
Soft Palate		
Uvula		
Epiglottis		
Esophagus	Functions	Label the Diagram
Upper Esophageal Sphincter		
Lower Esophageal Sphincter		
Stomach	Function	Label the Diagram
Pyloric Sphincter		
Gastric Folds		
Muscular Walls		
Greater Curvature		
Lesser Curvature		
Liver		
Gall Bladder		
Pancreas		

Intestines	Function	Label Diagram
Duodenum		
Jejunum		
Ileum		
Ascending Colon		
Transverse Colon		
Descending Colon		
Rectum		
Anus		

Part 3: Click on Feed the System: Summarize the digestion of the foods listed below. Highlight the differences between how these 4 foods get digested in the body.

Bread	Steak	Broccoli	Ice Cream

## Part 4: Inner Body Digestive System:

### Click on Teeth:

The teeth are a group of hard organs found in the oral cavity. We use teeth to \_\_\_\_\_ (or chew) food into tiny pieces. They also provide \_\_\_\_\_ to the mouth and face and are important components in producing \_\_\_\_\_.

A tooth can be divided into two main parts: the \_\_\_\_\_ and \_\_\_\_\_. Found above the gum line, the crown is the enlarged region of the tooth involved in chewing. Like an actual crown, the crown of a tooth has many \_\_\_\_\_ on its top surface to aid in the chewing of food. Below the gum line is the region of the tooth called the root, which \_\_\_\_\_ the tooth into a bony socket known as an \_\_\_\_\_.

Roots are \_\_\_\_\_ structures resembling the roots of plants, and each tooth may have between one to three roots. The exterior surface of the root is covered in a bone-like mixture of \_\_\_\_\_ fibers known as cementum. Cementum provides \_\_\_\_\_ for the periodontal ligaments that anchor the root to the surrounding alveolus.

Each tooth is an organ consisting of three layers: \_\_\_\_\_.

- The pulp of the tooth is a \_\_\_\_\_ region of soft connective tissues in the middle of the tooth. Tiny \_\_\_\_\_ enter the pulp through small holes in the tip of the roots to support the hard outer structures. Stem cells known as odontoblasts form the dentin of the tooth at the edge of the pulp.
- Surrounding the pulp is the dentin, a tough, \_\_\_\_\_ layer of tissue. Dentin is much harder than the pulp due to the presence of \_\_\_\_\_ and \_\_\_\_\_, a calcium phosphate mineral that is one of the strongest materials found in nature. The structure of the dentin layer is very \_\_\_\_\_, allowing nutrients and materials produced in the pulp to spread through the tooth.
- The \_\_\_\_\_ - the white, outer layer of the crown - forms an extremely hard, \_\_\_\_\_ cap over the dentin. Enamel is the hardest substance in the body and is made almost exclusively of hydroxylapatite.

Teeth are classified into four major groups: \_\_\_\_\_.

- Incisors are \_\_\_\_\_ found in the front of the mouth and have a flat apical surface for cutting food into smaller bits.
- Canine teeth, also known as \_\_\_\_\_, are sharply pointed, cone-shaped teeth that are used for \_\_\_\_\_ tough material like meat. They flank the incisors on both sides.
- Premolars (\_\_\_\_\_) and molars are large, flat-surfaced teeth found in the back of the mouth. Peaks and valleys on the flat \_\_\_\_\_ surface of premolars and molars are used for chewing and grinding food into tiny pieces.

Babies are born without teeth, but grow a temporary set of twenty \_\_\_\_\_ teeth (\_\_\_\_\_ incisors, \_\_\_\_\_ canines, and \_\_\_\_\_ molars) between the ages of \_\_\_\_\_ months and \_\_\_\_\_ years. Baby teeth fill the child's tiny jaws and allow the child to chew food while larger, stronger adult teeth develop inside the \_\_\_\_\_ and \_\_\_\_\_ bones.

At about \_\_\_\_\_ years of age the deciduous teeth are slowly shed one at a time and replaced by permanent adult teeth.

Adult teeth develop while hidden within the maxilla and mandible after the deciduous teeth have erupted. When an adult tooth erupts, it triggers the roots of the deciduous tooth above it to \_\_\_\_\_ This causes the baby tooth to become loose and eventually fall out.

The new permanent tooth slowly pushes up through the gums to replace the baby tooth. Eventually, a total of \_\_\_\_\_ permanent adult teeth form and erupt. The adult teeth are arranged in both the upper and lower jaws from the midline of the mouth as follows: \_\_\_\_\_

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The first \_\_\_\_\_ adult teeth are fully erupted by the age of \_\_\_\_\_ to \_\_\_\_\_ with the third molars, known as \_\_\_\_\_, erupting in the back of the jaw several years later in early adulthood. Sometimes the wisdom teeth become \_\_\_\_\_ when they grow and become wedged at an abnormal position in the jaws and fail to erupt. In some cases there is not enough room in the jaw to accommodate a third set of molars. In both cases the wisdom teeth are \_\_\_\_\_, as they are not needed to properly chew food.

Mastication, or chewing, is the main function of the teeth. The teeth are aligned in the jaws so that the \_\_\_\_\_ of one tooth align with the \_\_\_\_\_ of its counterpart on the other jaw. Every bite forces food into the interface of the teeth to be chopped, while lateral motion of the jaw is used to grind food in the premolars and molars.

Tooth decay and cavities are important health concerns related to the teeth. The enamel that covers the crown in each tooth can be broken down by \_\_\_\_\_ produced by \_\_\_\_\_ that live in the mouth and assist in digestion of small bits of food. This process of enamel erosion by acids is called \_\_\_\_\_. To prevent decay, good oral hygiene, consisting of daily brushing and \_\_\_\_\_, is necessary. Decay can eventually lead to cavities, also known as \_\_\_\_\_, where \_\_\_\_\_ appear in the enamel and expose the \_\_\_\_\_. Cavities require medical intervention to prevent their growth, usually resulting in the removal of the affected tissue and the filling of the cavity with \_\_\_\_\_ to restore the strength and function of the tooth.

#### Click on Plaque:

Plaque is \_\_\_\_\_ and their products, which form a sticky, concentrated film that adheres to the teeth. The part of the tooth next to the sulcus is extremely difficult to keep free of bacterial plaque, and if not removed constantly, or left undisturbed for a few days, will form \_\_\_\_\_ - a rough, hard material that adheres to teeth. Plaque and tartar build-up constitute the primary cause of periodontal disease.

#### Click on Gingivitis:

Gingivitis is gum \_\_\_\_\_. It's also the first stage in periodontal disease. The gums may become reddish or purple and slightly swollen. They may be tender and they may bleed easily. You may have a \_\_\_\_\_, and your breath may be \_\_\_\_\_. You may have no symptoms.

Part 6: Once Upon A Life...Digestion: Summarize what happened in each of the 3 clips:

Part 1: <http://tinyurl.com/digestionwebquest3>

Part 2: <http://tinyurl.com/digestionwebquest4>

Part 3: <http://tinyurl.com/digestionwebquest5>

Clip 1 Summary	Clip 2 Summary	Clip 3 Summary

Visit this website: <http://tinyurl.com/digestivewebquest6>

Part 7: Digestion Video Clip: Watch the following clip on digestion. Tell me one thing you learned or was surprised by:

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Visit this website: <http://tinyurl.com/digestivewebquest7>

### Part 8: Mission Nutrition

1. What drink has the most sugar added?
  - a. How much sugar?
2. Which snack provides the best source of carbohydrates and protein? (Hint: Look in cabinet)
3. Click on the fruit bowl. Tell what nutrition is provided by the following foods:

Oranges	
Grapes	
Apples	
Bananas	

Take the quiz: What other foods contain lots of vitamin C?

Visit the following website: <http://tinyurl.com/digestivewebquest8>

Part 9: Build a Digestive System: Place the organs in the proper place and draw your finished product (Use "palmbeach" as both a login and a password if prompted)

