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The Glovely Digestion Model

Student Handout

In the following handout, students will be required to:

- Label the human digestive system
- Understand the different functions of the organs of digestion
- Differentiate between mechanical and chemical digestion processes

Provided in this document are sample answers (pages 2-4) and a blank handout (pages 5-7). The blank handout should be made available to each group prior to the activity.

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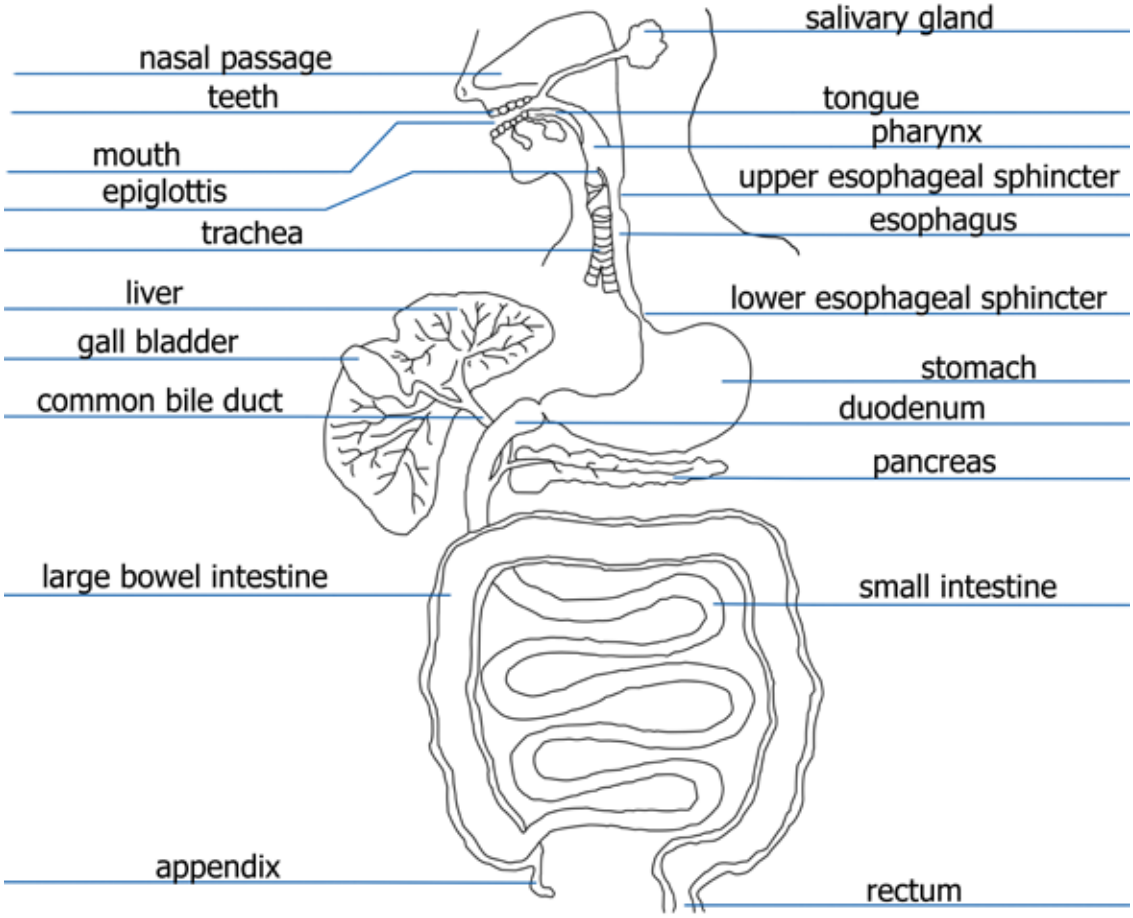
The Glovely Digestion Model - Handout Answers

Student Handout - Answers

Mouth to Rectum

Label the diagram of the digestive system, from mouth to rectum, with the following terms:

nasal passage, teeth, mouth, epiglottis, trachea, liver, gall bladder, common bile duct, large bowel intestine, appendix, salivary gland, tongue, pharynx, upper esophageal sphincter, esophagus, lower esophageal sphincter, stomach, duodenum, pancreas, small intestine, rectum



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The Glovely Digestion Model - Handout Answers

Describe the role played by each of the following body parts in digestion:

Mouth **Where food enters the body.**	Upper esophageal sphincter **A ring-shaped muscle between the mouth and the esophagus. It opens when you swallow to allow food to pass from the mouth into the esophagus.**
Salivary Gland **Secretes saliva into the mouth. Salivary enzymes chemically break down food.**	Esophagus **A muscular tube which contracts to move food from the pharynx to the stomach.**
Teeth **Help to mechanically digest food through biting and chewing. Some teeth are best for cutting (incisors, canines) and others are best for grinding (premolars, molars).**	Lower esophageal sphincter **A ring-shaped muscle between the esophagus and the stomach, which opens to let food pass into the stomach and closes to prevent food from reentering the esophagus.**
Tongue **Move food around in the mouth, assisting in chewing and swallowing.**	Stomach **Food is mostly digested in the stomach. Stomach muscles contract every few seconds to stir up the acids and enzymes which convert the food into a thick liquid called chyme.**
Pharynx **The space between the mouth and the esophagus. Food enters the pharynx when it is swallowed.**	Rectum **Where food waste exits the body.**

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The Glovely Digestion Model - Handout Answers

Answer the following questions:

Explain how food moves through the digestive system.

Mechanical and chemical digestion begin when food is placed into the mouth. Mechanical digestion is carried out by the teeth which cut and chew the food into smaller pieces. Chemical digestion is carried out by salivary enzymes which break the food down into smaller chemical components, for instance amylase converts starches into sugars. The tongue is used to move food around and assists in swallowing by pushing the food toward the throat. The act of swallowing causes the upper esophageal sphincter to open, allowing the food to pass from the mouth into the esophagus, a tubular muscle which contracts to push food down toward the stomach. Food enters the stomach through the lower esophageal sphincter. Once the food has entered the stomach, the lower sphincter closes to prevent backflow into the esophagus. In the stomach, the food is further digested by the acidic stomach juices and by the mechanical action of stomach contractions. The resulting thick liquid is called chyme. After the food is broken down, the stomach contents enter the small intestine through the duodenum. Indigestible parts of the food enter the large intestine through the cecum and exit through the rectum. Muscles move the waste through the colon, where salts, fluids and other substances are absorbed by bacteria until only the waste remains.

Give an example of chemical digestion and an example of mechanical digestion.

Amylase, an enzyme found in saliva, chemically converts food starches into sugar. Teeth are used for mechanical digestion by cutting and chewing food into smaller pieces.

Describe how the digestion of a piece of meat might differ from the digestion of a cookie.

In comparison to a cookie, digestion of a piece of meat will require more mechanical action by the teeth. Cookies are composed of carbohydrates, which are sugars, whereas meat is composed of protein. Different enzymes will be needed to chemically degrade the food, and it will take longer for the meat to be digested, since the sugars in the cookie are already broken down.

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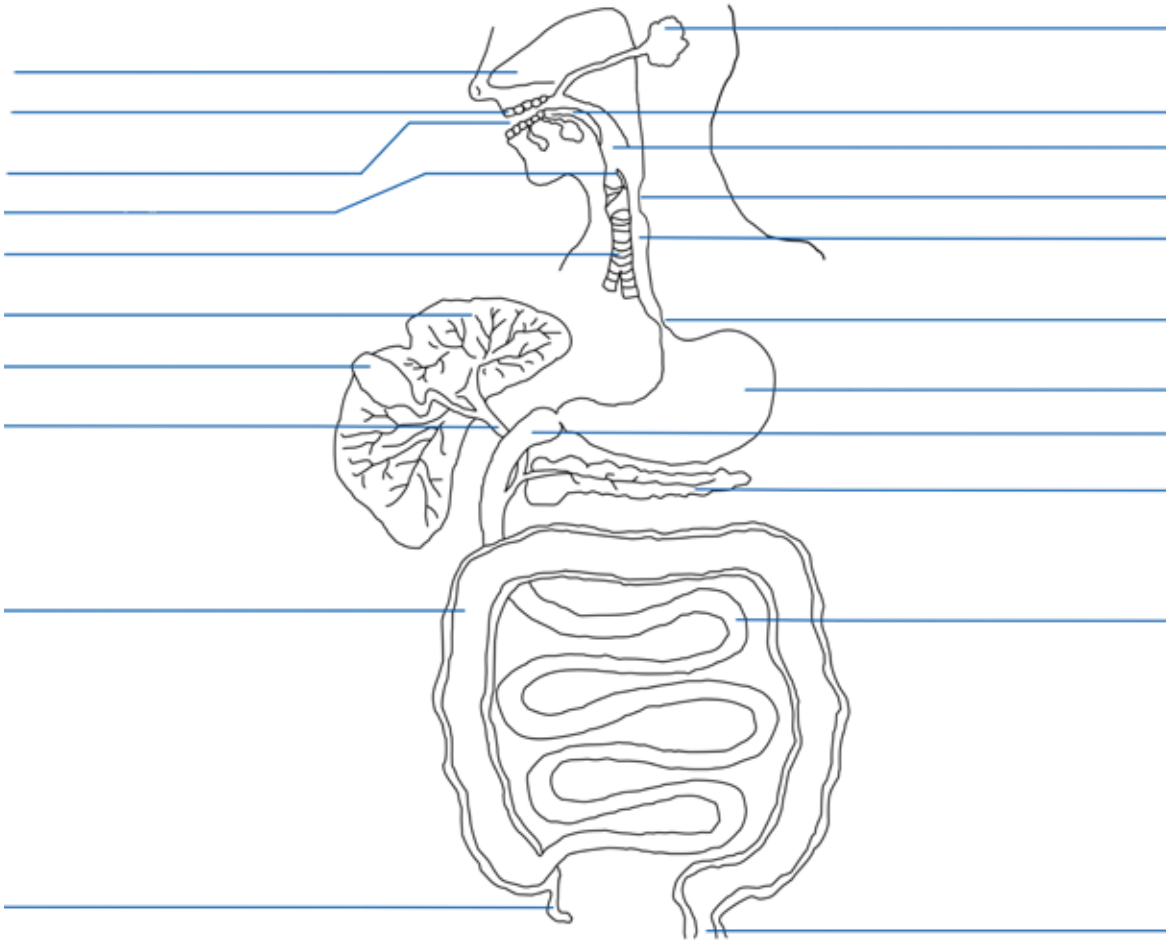
The Glovely Digestion Model - Student Handout

Student Handout

Mouth to Rectum

Label the diagram of the digestive system, from mouth to rectum, with the following terms:

nasal passage, teeth, mouth, epiglottis, trachea, liver, gall bladder, common bile duct, large bowel intestine, appendix, salivary gland, tongue, pharynx, upper esophageal sphincter, esophagus, lower esophageal sphincter, stomach, duodenum, pancreas, small intestine, rectum



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The Glovely Digestion Model - Student Handout

Describe the role played by each of the following body parts in digestion:

Mouth	Upper esophageal sphincter
Salivary Gland	Esophagus
Teeth	Lower esophageal sphincter
Tongue	Stomach
Pharynx	Rectum

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The Glovely Digestion Model - Student Handout

Answer the following questions:

Explain how food moves through the digestive system.

Give an example of chemical digestion and an example of mechanical digestion.

Describe how the digestion of a piece of meat might differ from the digestion of a cookie.