

OAKLAND CUSD #5

ANATOMY
MAY 1 1-15, 2020

DEBRA WELCH

Week #6: May 11-May 15, 2020

High School Science

Debra Welch

Hello students! I hope all of you are staying healthy. I just want everyone to know that I am thinking you and miss having school as normal. Remember to keep your immune systems strong! Basic directions are: You need to complete one lesson a week for only the class you were currently enrolled in and choose from the 3 choices. Choices 1 & 2 are for review of material we have already covered this year. I will start at the beginning and go through the year's material. Choice #3 will always be new work using your textbook or other handouts I include. I will make every effort to keep your work simple to do, considering that we are not learning together in the classroom. Your work should be turned in as a hard (paper) copy to the office or through email in a word or google document. My email is: debra.welch@oakland5.org. Please be sure all work has your name! If you have not turned in the assignment by the following Monday, I will need to email your parents and/or place a phone call home. Please be diligent to turn work in on time. I suggest you set up a schedule just as if you were at school and allow for the normal time period. Most assignments I send you will take less time than our normal 40 minutes. Comments will be made on paper copies and returned to you. If you send in homework answers as an email I will reply to your email and give my comments/reflections of your work. I will be supplying you with the necessary notes or you will need to use your book to find the answers. If you have any questions feel free to email me and I will get back to you by email during my office hours. If you can't email feel free to call the office and leave me a message. Good Luck and stay healthy!

Anatomy: for those of you who wanted to continue learning throughout the body systems I will be including notes and sending you powerpoints to use with Choice #3. If you plan to go into a medical field I advise you to go ahead and complete the Enrichment on the body systems we could not study due to school closure.

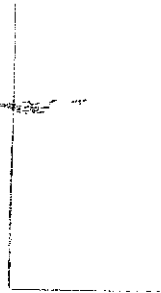
Lesson Choices on next page:

Class	Choice 1	Choice 2	Choice 3 (Enrichment)
Biology	<p>Classification of Animals (Ch17)</p> <p><i>Use Study guide notes attached AND your textbook.</i></p> <p>Do #14 & give correct Kingdom; Do 1-10 matching of Animal Phylums & Plants 1-6</p>	<p>Classification of Animals (Ch17)</p> <p><i>Use your textbook & previous notes.</i></p> <p>Mix & Match-Classify Match up the correct answer from the wordlist included for 1-18.</p>	<p>Refer to Ch24 & do Section 24-1 & 24-2 on Animals.</p> <p><i>Use your textbook to answer the questions about what characterizes an Animal.</i></p> <p>Do p 13-15 (all)</p>
Anatomy	<p>Questions over the Bones: p1-3 (#1-30)</p> <p>Do ALL pages 1-3</p> <p><i>Refer to Ch7 in your text or the notes from class OR the powerpoint notes sent to you on Bones last semester.</i></p>	<p>Marieb Review Questions p224 Do 1-24 (all)</p> <p><i>Use text and/or powerpoint sent to you last semester on the bones.</i></p>	<p>Chap 15 The Digestive System</p> <p><u>Act #1</u>-Organs of the Digestive System, do the entire packet p. 1-10.</p> <p><i>Use your textbook and/or powerpoint I am sending you on the Digestive System.</i></p> <p><i>(I am including packets like this for those who want to continue their education in the rest of the body systems we could not cover due to COV-19.)</i></p>

D Welch (Anat)
Wk 6 Choice 1

1/8/15

ANATOMY _____
SKELETON PART I
NAME _____
DATE _____



1. Which of the following is NOT a step in the formation of endochondral bone?
 - A) Hyaline cartilage develops into the shape of the future bone.
 - B) Periosteum forms from connective tissue on the outside of the developing bone.
 - C) Hyaline cartilage changes to adipose tissue.
 - D) Osteoblasts deposit osseous tissue in place of disintegrating cartilage.

2. An osteocyte is a
 - A) bone building cell.
 - B) bone destroying cell.
 - C) bone cell surrounded by matrix.
 - D) bone marrow cell.

3. Red bone marrow functions in the formation of
 - A) red blood cells only.
 - B) white blood cells only.
 - C) red and white blood cells only.
 - D) red and white blood cells and platelets.

4. Bone that develops between sheetlike layers of connective tissue is called
 - A) endochondral bone.
 - B) intra membranous bone.
 - C) cartilaginous bone.
 - D) osteoclastic bone.

5. The microscopic bony chambers that house mature bone cells are called
 - A) lacunae.
 - B) osteonic canals.
 - C) osteonic systems.
 - D) communicating canals.

6. The salts that form tiny crystals in the intercellular matrix of bone tissue consist largely of
 - A) calcium phosphate.
 - B) calcium chloride.
 - C) calcium carbonate.
 - D) calcium sulfate.

3 of 15

7. The cells responsible for removing excess bone tissue after the fracture repair process are

- A) fibroblasts
- B) chondrocytes
- C) osteoblasts
- D) osteoclasts

8. A sternal puncture is often employed to obtain a sample of

- A) fibroblasts.
- B) osteoblasts.
- C) blood-forming tissue.
- D) yellow bone marrow.

9. Most bone cancers increase the activity of

- A) osteoblasts.
- B) osteoclasts.
- C) Both osteoblasts and osteoclasts.
- D) Neither osteoblasts nor osteoclasts.

TRUE or FALSE

10. Osteoclasts are large cells that cause the breakdown of osseous tissue.

11. Vitamin D is needed for the proper absorption of calcium in the small intestine.

12. Osteocytes become osteoblasts when they are completely surrounded by bony matrix.

Fill in the blank

13. _____ are large cells that can cause the breakdown of bone tissue.

14. The tough, fibrous tissue that encloses a long bone is called the _____.

15. A long bone grows in thickness as bone tissue is deposited beneath its _____.

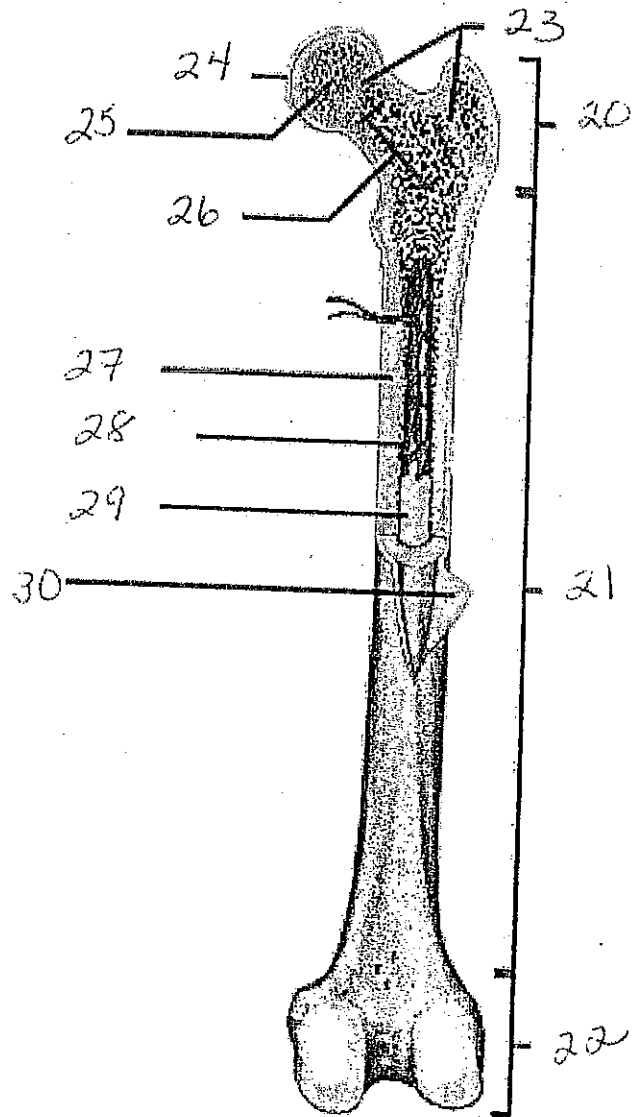
16. _____ is the process of blood cell formation.

17. Name 3 functions of a bone.

18. Name 2 examples of how bones provide support and protection.

19. Distinguish between the periosteum and the endosteum.

- 20. _____
- 21. _____
- 22. _____
- 23. _____
- 24. _____
- 25. _____
- 26. _____
- 27. _____
- 28. _____
- 29. _____
- 30. _____



D Welch (Anat)
wk 6 choice 2

Spinal Curvature p. 212

- The spinal column has four **spinal curves**. The **thoracic** and **sacral curves** are called **primary**, or **accommodation, curves**; the **lumbar** and **cervical curves** are known as **secondary**, or **compensation, curves**. (Figure 7-16)

Vertebral Anatomy p. 213

- A typical vertebra has a **body (centrum)** and a **vertebral arch** and articulates with adjacent vertebrae at the **superior** and **inferior articular processes**. (Figure 7-17)
- Adjacent vertebrae are separated by **intervertebral discs**. Spaces between successive **pedicles** form the **intervertebral foramina**. (Figure 7-17)

7 **Vertebral Regions** p. 214

- Cervical vertebrae are distinguished by the shape of the body, the relative size of the vertebral foramen, the presence of **costal processes** with **transverse foramina**, and notched **spinous processes**. These vertebrae include the **atlas**, **axis**, and **vertebra prominens**. (Figure 7-18; Table 7-2)
- Thoracic vertebrae have a **distinctive heart-shaped body**; a long, slender spinous processes; and articulations for the ribs. (Figures 7-19, 7-22; Table 7-2)

- The lumbar vertebrae are the most massive and least mobile; they are subjected to the greatest strains. (Figure 7-20; Table 7-2)
- The sacrum protects reproductive, digestive, and urinary organs and articulates with the pelvic girdle and with the fused elements of the coccyx. (Figure 7-21)

THE THORACIC CAGE p. 219

- The skeleton of the **thoracic cage** consists of the thoracic vertebrae, the ribs, and the sternum. The **ribs** and **sternum** form the **rib cage**. (Figure 7-22)

The Ribs p. 219

- Ribs 1-7 are **true**, or **vertebrosternal, ribs**. Ribs 8-12 are called **false ribs**; they include the **vertebrochondral ribs** and two pairs of **floating (vertebral) ribs**. A typical rib has a **head**, or **capitulum**; a **neck**; a **tubercle**, or **tuberculum**; an **angle**; and a **body**, or **shaft**. A **costal groove** marks the path of nerves and blood vessels. (Figures 7-22, 7-23)

The Sternum p. 222

- The sternum consists of the **manubrium**, **body**, and **xiphoid process**. (Figure 7-22)

↓ PO all

REVIEW QUESTIONS

LEVEL 1 REVIEWING FACTS AND TERMS

Match each numbered item with the most closely related lettered item. Use letters for answers in the spaces provided.

- | | |
|----------------------------|------------------------|
| ___ 1. foramina | a. skullcap |
| ___ 2. sinuses | b. tear ducts |
| ___ 3. sutures | c. atlas |
| ___ 4. calvaria | d. lumbar and cervical |
| ___ 5. auditory ossicles | e. air-filled chambers |
| ___ 6. hypophyseal fossa | f. axis |
| ___ 7. lacrimal bones | g. ear bones |
| ___ 8. accommodation curve | h. ribs |
| ___ 9. compensation curve | i. passageways |
| ___ 10. costae | j. sella turcica |
| ___ 11. C ₁ | k. thoracic and sacral |
| ___ 12. C ₂ | l. immovable joints |

- The axial skeleton consists of the bones of the
 - pectoral and pelvic girdles
 - skull, thorax, and vertebral column
 - arms, legs, hands, and feet
 - limbs, pectoral girdle, and pelvic girdle

- The appendicular skeleton consists of the bones of the
 - pectoral and pelvic girdles
 - skull, thorax, and vertebral column
 - arms, legs, hands, and feet
 - limbs, pectoral girdle, and pelvic girdle

- Which list contains *only* bones of the cranium?
 - frontal, parietal, occipital, sphenoid
 - frontal, occipital, zygomatic, parietal
 - occipital, sphenoid, temporal, lacrimal
 - mandible, maxillary, nasal, zygomatic

- The facial bones include the
 - lacrimal, nasal, maxillary, mandible
 - frontal, lacrimal, zygomatic, sphenoid
 - maxillary, mandible, ethmoid, sphenoid
 - ethmoid, sphenoid, temporal, parietal

- The boundaries between skull bones are immovable joints called
 - foramina
 - fontanelles
 - lacunae
 - sutures

- The major sutures of the skull are the
 - frontal, parietal, occipital, sphenoid
 - frontal, lambdoidal, occipital, coronal
 - lambdoidal, coronal, sagittal, squamous
 - coronal, sagittal, frontal, parietal

- Of the following bones, which is unpaired?
 - vomer
 - maxillary
 - palatine
 - nasal

- The cribriform plate, crista galli, and superior conchae are parts of the
 - parietal bone
 - occipital bone
 - sphenoid bone
 - ethmoid bone

- The bone that houses the inner ear structures associated with hearing and balance is the
 - temporal
 - occipital
 - parietal
 - sphenoid

- The bony enclosure that forms a prominent depression on the superior surface of the sphenoid bone and houses the pituitary gland is the
 - clinoid process
 - sella turcica
 - external auditory canal
 - auditory tube

- The hyoid bone
 - forms the inferior portion of the skull
 - is attached to the zygomatic bone
 - does not articulate with any other bone
 - is a cartilaginous structure

- The membranous areas between the cranial bones of the fetal skull are
 - fontanelles
 - sutures
 - Wormian bones
 - foramina

DWelch (Anatomy)
WK 6 , Choice 3
DO ALL p1-10

BIOLOGY II
DIGESTIVE SYSTEM
ACTIVITY #1

NAME _____

DATE _____ HOUR _____ 6 of 15

ORGANS OF THE DIGESTIVE SYSTEM

OBJECTIVES:

1. List and describe the major activities of the digestive system. (p. 464)
2. Identify and give the functions of the organs in and along the digestive tract. (pp. 467 - 485)

MAJOR ACTIVITIES OF THE DIGESTIVE SYSTEM

The major activities of the digestive system involve the following processes:

1. **Ingestion** – the intake of food into the digestive tract through the mouth.
2. **Mechanical processing** – the physical manipulation of solid food including the chewing of food in the mouth and the mixing of food along the digestive tract.
3. **Digestion** – the chemical breakdown of food into its building blocks. Proteins are chemically broken down into amino acids. Carbohydrates are chemically broken down into monosaccharides (simple sugars) and lipids are chemically broken down into glycerol and fatty acids.
4. **Secretion** – the release of water, acids, enzymes, and buffers by cells in the digestive tract wall and by cells in the accessory organs.
5. **Absorption** – the movement of small organic molecules (amino acids, monosaccharides, glycerol, and fatty acids), water, electrolytes, and vitamins from the lumen of the digestive tract into the blood stream.
6. **Defecation** – formation and removal of feces (waste products).
7. **Defense** – the high acidity, action of enzymes, and the macrophages found in the lymph nodes along the digestive tract help prevent the invasion of foreign organisms.
8. **Peristalsis** – the involuntary, sequential contractions of smooth muscle tissue in the wall of the digestive tract that move food materials through the tract.

ORGANS OF THE DIGESTIVE TRACT:

The digestive system consists of the digestive tract or alimentary canal and various accessory organs. By following a mouthful of food through the digestive tract, we can observe the organs of the tract, the various accessory organs, and how each structure contributes to the digestive process.

Food enters the digestive system through the mouth or **oral cavity**. In the oral cavity, the teeth tear, cut, and grind the food into smaller pieces. While the food is being chewed, saliva from the salivary glands is added to the food. The saliva, which is mostly water, moistens and softens the food. Saliva also contains an enzyme (salivary amylase) that starts the break down of large carbohydrate molecules into smaller sugar molecules. Many buccal and minor salivary glands as well as the three largest pair of **salivary glands (parotid, submandibular, and sublingual)** produce the saliva.

The **tongue** helps move food around the mouth and along with the lips and cheeks, form the food into a **bolus**. During swallowing, the **soft palate** is raised to prevent the bolus from entering the nasopharynx and nasal cavity. The tongue is then thrust backward, pushing the bolus into the oropharynx. The **epiglottis**, a flap of cartilage, is pushed from a vertical to a horizontal position, and covers the opening to the larynx. This action helps to keep food from entering the trachea.

Once food enters the oropharynx, peristalsis propels the bolus into the **esophagus** and down the esophagus to the stomach. When the bolus reaches the junction between the esophagus and stomach, the **lower esophageal (cardiac) sphincter** relaxes allowing the bolus to enter the stomach.

The **stomach** stores ingested food until it is released into the small intestine. The smooth muscle layers in the wall of the stomach contract, churning the ingested food, mixing the food with gastric juices, and forming a soupy liquid mixture called **chyme**. Specialized cells in the lining of the stomach secrete hydrochloric acid (HCl) and enzymes that begin protein digestion. The high acidic levels in the stomach also kill most of the bacteria and other pathogens found on the food we eat.

After 1 to 3 hours in the stomach, the chyme begins to move into the small intestine. Strong peristaltic waves propel the chyme through the pyloric canal toward the pyloric orifice (the opening between the stomach and small intestine). The **pyloric sphincter** controls the rate and the amount of chyme entering the small intestine.

The **small intestine** is divided into three sections – duodenum, jejunum, and ileum. The first section of the small intestine is called the **duodenum**. The duodenum is C-shaped and about 10 inches long. The presence of acidic chyme in the duodenum stimulates the released of pancreatic secretions from the **pancreas** into the duodenum. Pancreatic secretions are clear, slightly alkaline, and contain mostly water, several enzymes or precursors of enzymes, and sodium bicarbonate. The alkaline secretions help to neutralize the acid in the chyme.

The **liver** constantly produces bile that is dumped into the duodenum. Excess bile backs up through various ducts into the **gall bladder** where it is stored in a concentrated form until is needed for fat digestion. Bile is an alkaline solution that contains water, sodium bicarbonate, bile salts, bile pigments, and cholesterol. Bile contains do digestive enzymes but is required for fat digestion. Bile emulsifies fat, breaking large fat droplets into smaller droplets so enzymes can digest the fat into its building blocks.

Complete digestion of the food molecules in the chyme occurs in the lumen of the duodenum along the brush borders of the epithelial cells lining the lumen. Most of the absorption of the digested food occurs in the duodenum and **jejunum**. Bile salts and vitamin B₁₂ are absorbed in the **ileum**.

The chyme remains in the small intestine for 1 to 6 hours after which it passes through the **ileocecal valve** and into the cecum. The ileocecal valve is a sphincter located at the junction between the ileum and the large intestine. The **cecum** is the first part of the large intestine. Extending from the cecum is the **vermiform appendix**, commonly called the appendix. Sometimes bacteria and indigestible material become trapped in the appendix, leading to inflammation (appendicitis).

By the time the chyme (mostly indigestible material) enters the cecum digestion is complete and the large intestine functions to remove water and ions from the liquid waste. Removal of water and the action of bacteria convert the liquid waste into a semisolid mixture called feces.

The digestible material moves from the cecum, up through the **ascending colon**, horizontally through the **transverse colon**, down through the **descending colon**, and into the **sigmoid colon**. The ascending, transverse, descending, and sigmoid colon are all divisions of the large intestine. The indigestible material remains in the large intestine for 12 to 36 hours at which time it passes from the sigmoid colon, through the **rectum**, through the **anal canal**, and out the anus in a process called defecation.

QUESTIONS

1. Color the following parts on the diagram below. Use light colors for D, E, T, V, and W. Overlapping portions should receive the color of both parts.

- Oral cavity (A)
- Pharynx (B)
- Esophagus (C)
- Stomach (D)

Small intestine

- Duodenum (E)
- Jejunum (F)
- Ileum (G)

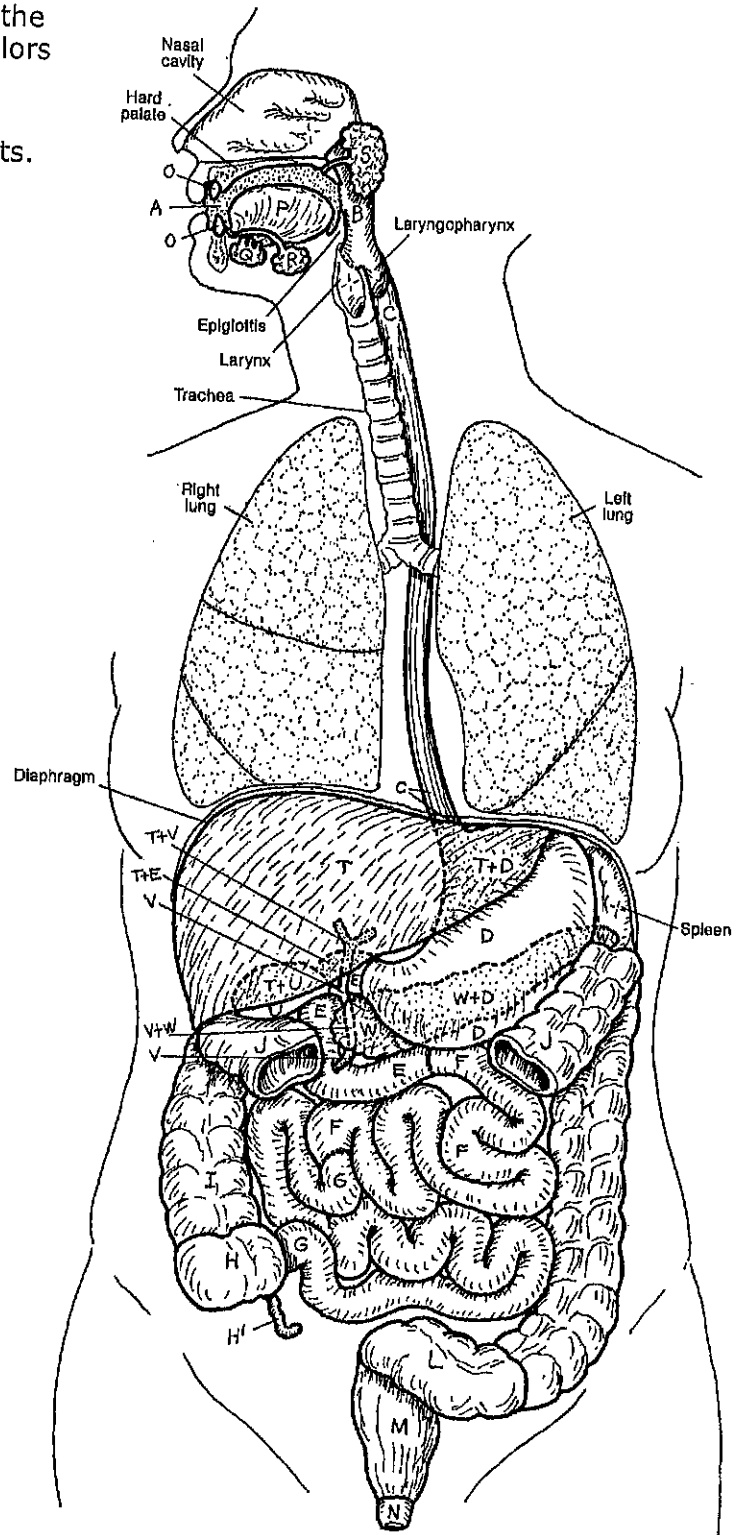
Large intestine

- Cecum (H)
- Vermiform appendix (H¹)
- Ascending colon (I)
- Transverse colon (J)
- Descending colon (K)
- Sigmoid colon (L)
- Rectum (M)
- Anal canal (N)

- Teeth (O)
- Tongue (P)

Salivary glands

- Sublingual (Q)
- Submandibular (R)
- Parotid (S)
- Liver (T)
- Gall bladder (U)
- Bile ducts (V)
- Pancreas (W)



2. Match the structure with its function.

- | | |
|----------------------|----------------------|
| A. Cardiac sphincter | I. Pancreas |
| B. Epiglottis | J. Pyloric sphincter |
| C. Esophagus | K. Salivary glands |
| D. Gall bladder | L. Small intestine |
| E. Large intestine | M. Stomach |
| F. Ileocecal valve | N. Teeth |
| G. Liver | O. Tongue |
| H. Oral cavity | |

_____ Moves food around the mouth, pushes food (bolus) back into pharynx during swallowing

_____ Cut, tear, and grind food

_____ Secrete saliva, a watery mixture that contains mostly water and an enzyme that begins starch digestion

_____ Receives food; site of bolus formation

_____ Closes over the opening to the larynx and helps prevent food from entering trachea

_____ Moves food from the pharynx to the stomach

_____ Mixes food; forms liquid chyme; secretions contain HCl (hydrochloric acid) that disinfects food and enzymes that start protein digestion

_____ Site of most digestion and absorption of digested food

_____ Removes water and ions from liquid waste concentrating the waste into the semisolid feces

_____ Secretes a liquid that contains digestive enzymes and sodium bicarbonate

_____ Secretes bile

_____ Stores bile in a concentrated form

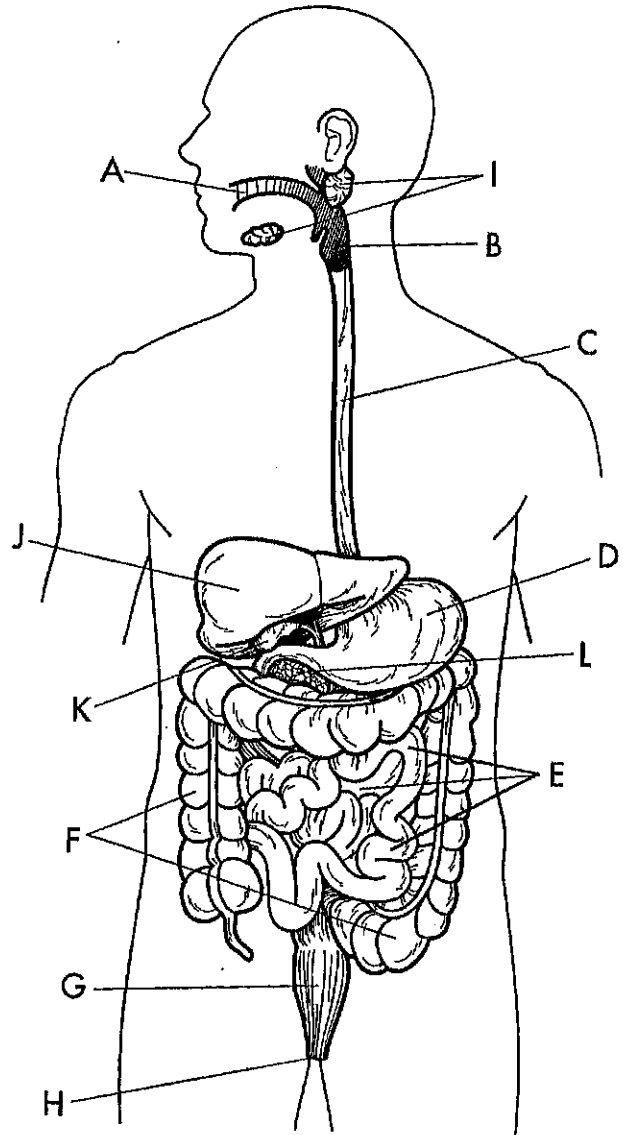
_____ Opens to allow food to enter the stomach; prevents acidic stomach contents from backing up into the esophagus

_____ Controls the rate at which chyme from the stomach enters the duodenum

_____ Controls the rate at which the liquid waste enters the cecum

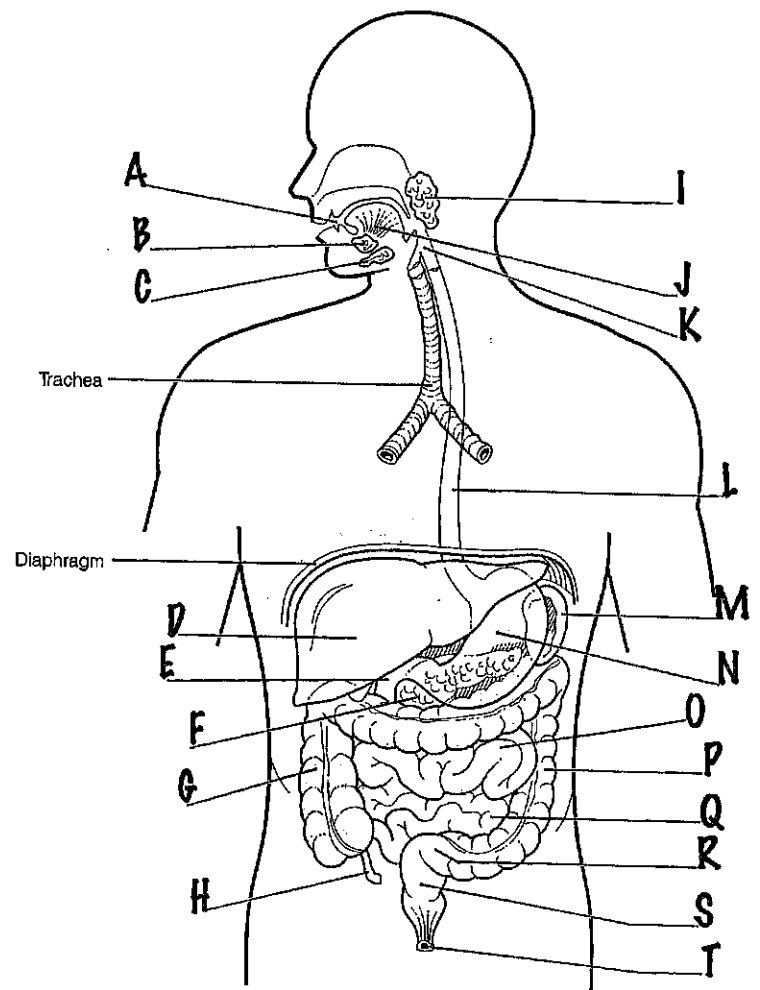
3. Match the structure with the correct letter from the diagram

- _____ Anus
- _____ Esophagus
- _____ Gall bladder
- _____ Large intestine
- _____ Liver
- _____ Oral cavity
- _____ Pancreas
- _____ Pharynx
- _____ Rectum
- _____ Salivary glands
- _____ Small intestine
- _____ Stomach



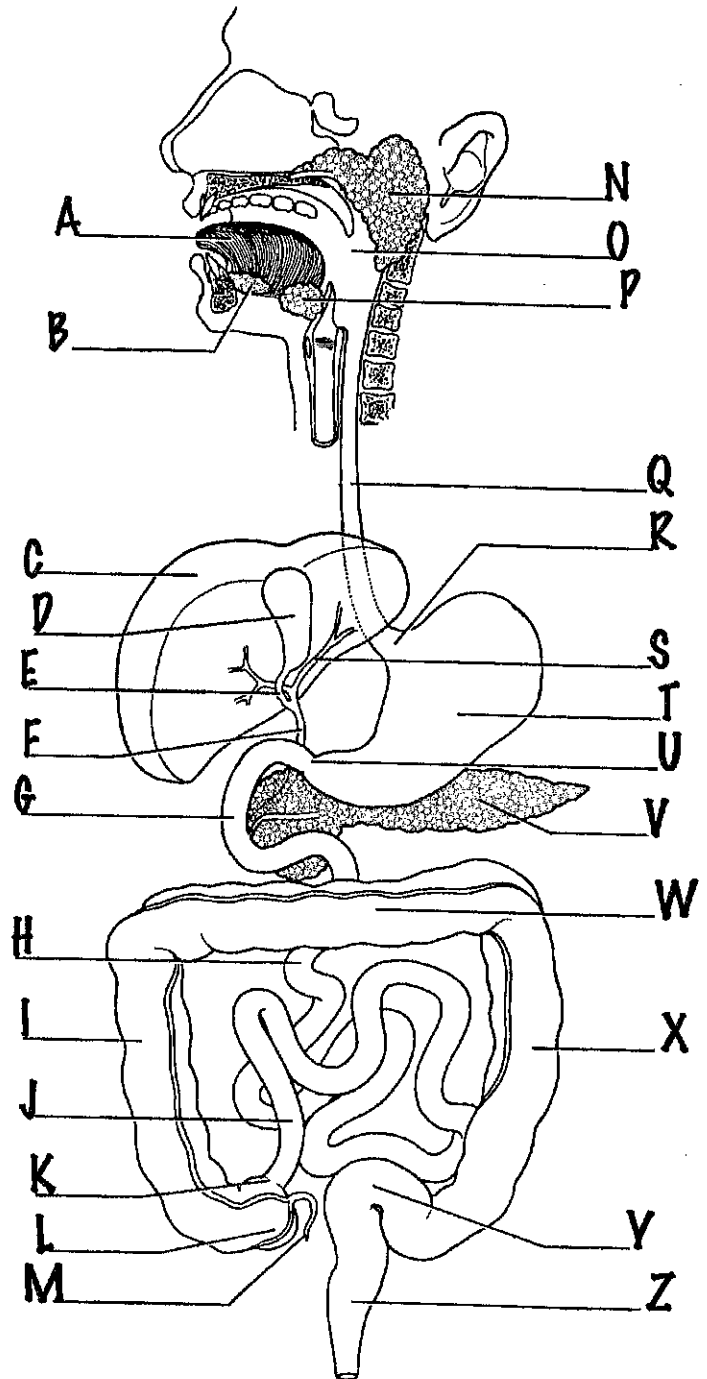
4. Match the structure with the correct letter from the diagram.

- _____ Anus
- _____ Appendix
- _____ Ascending colon
- _____ Descending colon
- _____ Duodenum
- _____ Esophagus
- _____ Ileum
- _____ Jejunum
- _____ Liver
- _____ Oral cavity
- _____ Pancreas
- _____ Parotid salivary glar
- _____ Pharynx
- _____ Rectum
- _____ Sigmoid colon
- _____ Spleen
- _____ Stomach
- _____ Sublingual salivary gland
- _____ Submandibular salivary gland
- _____ Tongue



5. Match the structure with the correct letter from the diagram.

- _____ Appendix
- _____ Ascending colon
- _____ Cardiac sphincter
- _____ Cecum
- _____ Common bile duct
- _____ Cystic duct
- _____ Descending colon
- _____ Duodenum
- _____ Esophagus
- _____ Gallbladder
- _____ Hepatic duct
- _____ Ileocecal valve
- _____ Ileum
- _____ Jejunum
- _____ Liver
- _____ Pancreas
- _____ Parotid salivary gland
- _____ Pharynx
- _____ Pyloric sphincter
- _____ Rectum
- _____ Sigmoid colon
- _____ Stomach
- _____ Sublingual salivary gland
- _____ Submandibular salivary gland
- _____ Tongue
- _____ Transverse colon



6. Match the description with the correct digestive system activity.

- | | |
|----------------|--------------------------|
| A. Absorption | B. Defecation |
| C. Defense | D. Digestion |
| E. Ingestion | F. Mechanical processing |
| G. Peristalsis | H. Secretion |

_____ Involuntary, sequential contractions of the smooth muscle in the wall of the digestive tract that result in the movement of food materials through the tract

_____ Movement of digested food from the intestine into the blood stream

_____ Intake of food

_____ Removal of solid wastes from the body

_____ Action of acid, enzymes, and macrophages in lymph nodes that fight the invasion of foreign organisms

_____ Chemical break down of food into building blocks

_____ Chewing and mixing of food

_____ Release of water, enzymes, acids, and buffers by cells in the digestive tract wall and by cells in the accessory organs

7. Determine if each of the following is true of **Mechanical** or **Chemical** digestion.

_____ Chewing food

_____ Churning of food caused by contraction of muscles in the wall of the stomach

_____ Break down of large pieces of food into small pieces

_____ Break down of food molecules into their building blocks

_____ Requires enzymes

_____ Break down of proteins into amino acids

_____ Break down of carbohydrates into simple sugars (monosaccharides)

_____ Break down of fats into glycerol and fatty acids

8. Why must food be digested before it can be used the body?

9. Name the building blocks for each of the following food molecules.

Proteins: _____

Carbohydrates: _____

Lipids (fats): _____