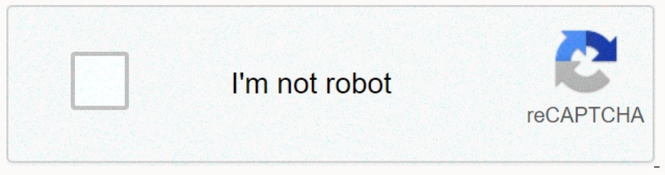

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Digestive system flow chart worksheet answers

Home » Human Anatomy » Human Digestive System Organs, Function and Chart Biology Educational VideosLast Updated July 18, 2020 by Sagar AryalThe Human Digestive System Definition Human Digestive System is a collective name used to describe digestive canals, certain accessory organs, and various digestive processes that occur at different levels of the channel to prepare foods to eat in the diet of absorption. It has a general structure that is transformed at different levels to ensure the processes that take place at each level. The complex of digestive processes gradually breaks down the food to eat until they are in a form suitable for absorption. After absorption, nutrients are used to synthesize body components. They provide raw materials for the production of new cells, hormones and enzymes, as well as the energy needed for these and other processes and waste disposal. The image was created using biorender.com the human digestive system consists of digestive tract and accessories organs. Digestive tract of the human digestive system image source: Mariana Ruiz.Digestive canal begins at the mouth, passes through the thorax, abdomen, and pelvis and ends at the anus. Thus, it is a long tube through which food passes. It has different parts that are structurally very similar. Parts include: MouthPharynxOphagusStomachSmall intestinal gutsRectum and canal.A. The mouth or oral cavity is limited by muscles and bones: anteriorly-with the lips, posteriorly - it is continuous with oropharyngical, laterally -with cheek muscles, superiorly-with bony hard palate and muscle soft palate, inferiorly-with muscle tongue and soft tissue floor. It is lined throughout by the mucous membrane, which consists of a stratified squamous epithelium containing small mucus secretion glands. The palate forms the roof of the mouth and is divided into a plateeven earlier in the hard palate and posterior soft palate. The soft palate is muscular, curves down from the posterior end of the solid palate, and blends with the walls of the throat at the side. Uvula is a convex fold of muscles covered with mucous membranes, hanging from the middle of the free border of the soft palate. It consists of the following important parts:Tongue is a voluntary muscle structure that occupies the floor of the mouth. It is attached to its base to the hyoid bone and with a fold of its mucous membrane cover, called frenulum, on the floor of the mouth. The superior surface consists of a stratified squamous epithelium, with many papillae (little projections) containing nerve endings of taste, sometimes called taste buds. Tongue plays an important role: mastication (chewing) degaution (swallowing) speechtasteZobizobizobi are embedded or nest alveolar ridge lower jaw and maxillary. Each individual has two sets of temporary or leafy teeth, and permanent teeth. At birth, the teeth of both teeth are mature lower jaw and maxillare teeth. There are 20 temporary teeth, 10 in each jaw. They begin to erupt when the child is about 6 months old, and everyone must be present after 24 months. Permanent teeth begin to replace leaf teeth at the age of 6, and this dentition, consisting of 32 teeth, is usually completed by the age of 24. Types and functions of teethSoar and dog teeth are cutting teeth and are used for biting off pieces of food, whereas premolar and molar teeth, with wide, flat surfaces, are used for grinding or chewing food. Image source: scientific animation.B. PharynxFood goes from the oral cavity to the throat, then to the esophageal below, with which it is continuous. The throat is divided into descriptive purposes in three parts, nasopharynx, oropharyngeal, and larynx pharynx. The gasses are important for breathing. Oropharyngeal and larynx are transitions that are common in both respiratory and digestive systems. Function PharynxSarshrine has roles in both the respiratory and digestive systems, and can be seen as a point where these systems differ. For the digestive system, its muscular walls function in the process of swallowing, and it serves as a way to move food from the mouth to the esophageal. The concitula circular muscles of the outer layer of the throat play a major role in peristalsa. The contraction series will help propel swallow food and drink down the intestinal tract safely. The longitudinal muscles of the inner layer, on the other hand, widen the pharynx laterally and lift it upwards, thus allowing to swallow swallow food and drink.C. The esophagealese is about 25 cm long and about 2 cm in diameter and is located in the middle plane of the thorax in front of the spine behind the trachea and heart. It is continuous with the throat above and just below the diaphragm it joins the stomach. The upper and lower end of the esophageal are closed to the sphincter muscles. The upper cricopharyngeal sphincter prevents the air from passing to the esophagus during inspiration and aspiration of the esophageal content. The heart or lower esophageal sphincter prevents reflux of acid in the stomach contents of the esophagus. The functions of the esophageal serve to put food and fluids from the mouth down to the stomach. This is accomplished by periodic contractions (peristalsis). The esophageal is an important connection to the digestive system through the thoracic cavity that protects the heart and lungs. Two sphincter on both sides of the esophageal separate food in small units known as bolus. D. About the stomach is a J-shaped enlarged part of the digestive tract located in the stomach, navel, and left hypochondriac regions of the abdominal cavity. The stomach is continuous with the esophage at the heart of the sphincter and in the duodenum at the pyloric sphincter. It has two curves. Less curvature is short, located on the posterior surface of the stomach, and is a downward continuation of the posterior wall of the esophageal. Just before the pyloric sphincter, it curves up to complete the J shape. If the esophageal joins the gastric anear region angles acutely upwards, the curves down form a larger curvature, then slightly up on the pyloric sphincter. The stomach is divided into three regions: fundus, body, and antrum. At the distal end of the pyloric antrum is a pyloric sphincter, safeguarding the opening between the stomach and duodenum. The size of the stomach varies depending on the amount of food in its content, which may be 1.5 litres or more of an adult. In the stomach, gastric muscle contraction consists of churning movements that break down the bolus and mix it with gastric juice and peristaltic waves that propel the stomach contents to the spiked. About 2 litres of gastric juice are released daily with special secretions in the mucous membrane. It consists of water, mineral salts, mucus is released into the cup cells glands and on the stomach surface, hydrochloric acid, characteristic factor, inactive enzyme precursors, etc. Image Source: Henry Vandyke Carter/Mysid.Features Stomach Temporary storage allows time for digestive enzymes, pepsins, to handle. Chemical hydrolysis – the conversion of pepsins proteins into polypeptides. Mechanical distribution - three smooth muscle layers allow the stomach to function as a can, gastric juice is added and the contents are liquefied chime. Take limited absorption of water, alcohol and some lipid soluble drugsInactive protection against microbes - provides hydrochloric acid in gastric juice. Iron preparation for absorption further along the track – acid environment in the gastric slanting, which is necessary before iron can be absorbedProduction of the characteristic factors necessary for the absorption of vitamin B12 in the terminal ileumRegulation of the transition of the gastric contents of the duodenum. When the chyme is sufficiently acidified and liquefied, the pyloric antrum forces a small stream of stomach contents through the pyloric sphincter into the duodenum.E. The small intestine of the small intestine is continuous with the stomach at the pyloric sphincter and leads to the colon at the ileocaecal valve. It is a little more than 5 meters long and is located in the abdominal cavity surrounded by the colon. In the small intestine, chemical digestion of food is complete, and most of the absorption of nutrients occurs. Small intestine three main sections continuously with each other: Duodenum: It is about 25 cm long and curves around the head of the pancreas. Secretions of the gallbladder and pancreas are excreted in the duodenum through a joint structure, hepatopancreatic ampulla, and the opening of the duodenum is protected by hepatopancreatic sphincter (from Oddi). Jejunum: It is in the middle section of the small intestine and is about 2 meters long. The ileums, or terminal section, are about 3 meters long and end with an ileocaecal valve that controls the flow of material from the ileums to the caecum, the first part of the colon, and prevents belching. The surface area of the small intestine mucosa is greatly increased by permanent circular folds, fringes, and microvilli. The fringe has tiny finger-like projections of the mucous membrane of the intestinal lumen, about 0.5 to 1 mm long. Their walls consist of columnar epithelial cells, or enterocytes, with tiny microvilli (1 µm long) on their free border. The functions of the small intestine of the small intestine are part of the intestine, where 90% of digestive and absorption food occurs, the other 10% occurs in the stomach and intestines. The main function of the small intestine is the absorption of nutrients and minerals from food. Image source: BruceBlaus.F. ColonIt is about 1.5 meters long, starting from the caecum in the right pelvic fossa and terminates the rectum and canal deep in the pelvis. Its lumen is larger than the small intestine. It forms an arch around the coil-up of the small intestine. The colon is divided into caecum, growing colon, transverse colon, descending colon, sigmoid colon rectum, and canal. Image Source: BruceBlaus.The caecumThis is the first part of the colon. It is an expanded region that is blind at the end inferiorly and is continuous with a growing colon superiorly. Just below the junction of two, the ileocaecal valve opens from the ileums. The Vermiform attachment is a fine tube, closed at one end, leading from the caecum. It is usually about 13 cm long and has the same structure as the walls of the colon, but contains more lymphoid tissue. Ascending colonIt goes up from caecum to the level of the liver, where it curves acutely to the left at the liver flexure to become a transverse colon. Transverse colonIt is a loop of the colon that extends across the abdominal cavity in front of the duodenum and stomach to the area of the spleen, where it forms a spleen flexure and curves acutely down to become a descending colon. Descending colon intestines go down the left side of the abdominal cavity, then curves on the midline. Once it enters the true pelvis it is known as the sigmoid colon. Sigmoid colonThis part describes the S-shaped curve in the pelvis, then continues down to rectum.G. Rectum and canalIt is a slightly enlarged part of the colon about 13 cm long. It leads from the sigmoid colon and ends with the canal. The canal is a short fragment of about 3.8 cm long adult and leads from the rectum to the outside. Two sphincter muscles control anju; the internal sphincter, which consists of smooth muscle fibers, is located under the control of the autonomic nervous system and the outer sphincter, formed by skeletal muscle, is under voluntary control. Image source: Armin Kübelbeck.Features colon, rectum and analAbsorptionAusas ileums content that passes through the ileocaecal valve caecum is liquid, even if some water is absorbed into the small intestine. In the colon absorption of water continues until a familiar semi-hard consistency of feces is achieved. Mineral salts, vitamins, and some medications are also absorbed in the blood capillaries of the colon. Microbial activityIn the course of the intestine is severely colonized by certain types of bacteria that produce vitamin K and folic acid. These include Escherichia coli, Enterobacter aerogenes, Streptococcus faecalis, and Clostridium perfringens (welchii). DefaecationUsually, the rectum is empty, but when mass movement forces the contents of the sigmoid colon into the rectum nerve endings its walls stimulates the stretch. Defaecation involves involuntary contraction of muscles in the rectum and relaxation of the internal

sphincter. Contraction of the abdominal muscle and lowering of the diaphragm increases intra-abdominal pressure (Valsalva's maneuver) and such helps the process of defaecation. Video Animation: Human Digestive System – How it Works! (Thomas Schweink) The organs of the accessory to the human digestive systemDifferent secretions are poured into the digestive tract, some organs of the glandular mucosa, such as gastric juices secrete the glands of the mucous membranes of the stomach, and some with glands located outside the tract. The latter is an accessory organs digestion and their secretions pass through the channels to penetrate the tract. They consist of: 3 pairs of salivary glandsPancreasLiver and bile ous. Organs and glands are associated physiologically as well as anatomically.A. Salivary glands Image Source: BruceBlaus.Salivary glands are present in the oral cavity and pour their secretions into the mouth. Saliva is a combined discharge from the salivary glands and small mucus secretion glands of the mucous membranes of the oral cavity. About 1.5 liters of saliva is produced daily and consists of:watermineral saltsenzyme: saliva amilasucuslysozymeimmunoglobulinsmaenation factors. There are three pairs: the yarrow glands, the submandibular glands, and the subsoe glands. The ary glands are on one side of the face under the external acoustic meat. Each gland has a otsus channel opening in the mouth at the level of the second upper molar tooth. Submandibular glandsis located on one side of the face below the angle of the jaw. Two submandibular channels open on the floor of the mouth, one on each side of the frenulum tongue. The subgenus glandsThis glands are located under the mucous floor of the mouth in front of the submandibular glands. They have many small channels that open the floor in the mouth. Features salivary glands and saliva Chemical polysaccharides digestion. Saliva contains the enzyme amylase, which begins to break down complex sugars, reducing them to disaccharide maltose. Food lubrication. Dry food that enters the mouth is moistened and lubricated with saliva before it can be converted into a bolus ready for swallowing. Cleaning and lubrication. An adequate flow of saliva is necessary to clean the mouth and keep its tissue soft, moist and pliable. This helps to prevent mucosal damage with raw or abrasive foods. Non-passive defense. Lysozyme, immunoglobulins and clotting factors combat invading microbes. Taste buds are stimulated only by chemicals in the solution. Dry foods stimulate the sense of taste only after careful mixing with saliva.B. Pancreas Image Source: BruceBlaus.The pancreas is a light gray gland weighing about 60 grams. It is about 12 to 15 cm long and is located in the cone and left hypochondriac regions of the abdominal cavity. It consists of a wide head, body and narrow tail. The head is located in the curve of the duodenum, the body behind the stomach, and the tail is located in front of the left kidney and only reaches the spleen. The pancreas is both exocrine and endocrine glands. Excretin pancreasIt consists of a large number of lobules, consisting of small alveoli, a wall consisting of secretor cells. Each lobule is drenched by a tiny duct and these unite eventually form a pancreatic duct that extends the entire length of the gland and opens to the duodenum. Just before entering the duodenum, the pancreatic duct joins the common bile duct to form a hepatopathic ampulla. The ampulla is controlled by the hepatopankreatic sphincter (from Oddi). Exocrine pancreas function is to produce pancreatic juice, which contains enzymes that digest carbohydrates, proteins and fats. Endocrine pancreasDistuted throughout the gland is a group of specialized cells called pancreatic islets (from Langerhans). The islets have no channels, so hormones disperse directly into the blood. The function of the endocrine pancreas is to secrete the hormone insulin and glucagon, which are mainly associated with the control of blood glucose levels. Pancreatic functionsAs, which are part of the exocrine system, the pancreas secrete enzymes that with the bile from the liver and gallbladder to help break down the substance for proper digestion and absorption. Enzymes produced by pancreas digestion include: lipase digesting fatsamylase digest carbohydrateschymotrypsin and triptin digesting proteinsAse the pancreas produces enzymes as soon as the food reaches the stomach. These enzymes travel through a series of channels until they reach the main pancreatic duct. The main pancreatic duct corresponds to the common bile duct, which carries bile from the gallbladder and liver to the duodenum. This meeting place is called vater.Bile ampulla of the gallbladder and enzymes from the pancreas are released into the duodenum to help digest fats, carbohydrates and proteins so that they can be absorbed by the digestive system. Endocrine systemAs part of the endocrine system, the pancreas secretes two main hormones that are essential to regulate glucose (also known as blood sugar) levels: insulin. The pancreas releases this hormone to reduce blood glucose levels when levels become too high. Glucagon: The pancreas releases this hormone to increase blood glucose levels when levels become too low. Balanced blood glucose levels play an important role in the liver, kidneys and even the brain. Proper secretion of these hormones is important to many body systems such as your nervous system and cardiovascular system. Image source: Jiju Kurian Punnoose.C. The liver liver is the largest gland in the body, weighing between 1 and 2.3 kg. It is located in the upper part of the abdominal cavity, which occupies most of the right hypochondriac region, which is part of the hypochondriac region, and stretches into the left hypochondriac region. Its upper and inner surfaces are smooth and convex to fit the underground surface of the diaphragm; its rear surface is irregular in the contour. The liver is placed in a thin, inflexible capsule and imperfectly coated with a peritoneal layer. Folds of peritoneal shape supports the ligament by adding the liver to the inferior surface of the diaphragm. It occurs in a condition partly with these ligaments and partly under the pressure of the organs in the abdominal cavity. The liver has four lobes. The two most obvious are the large right lobe and the smaller, wedge-shaped, left lobe. The other two, caudate and quadrate lobe, have areas on the posterior surface. The lobe of the liver consists of tiny lobules only visible to the naked eye. These lobules have hexagonal contours and form cab-shaped cells, hepatocytes, arranged in pairs of columns radiating from the central vein. Between two pairs of column cells, there are sinusoids (blood vessels with incomplete walls) that contain a mixture of blood from tiny branches of the portal veins and liver arteries. Among the cells that are lining the sinusoids are liver macrophages (Kupffer cells) whose function is to swallow and destroy any foreign particles through the liver. Blood drains from the sinusoids to the central or centrilobular veins. They then join the veins from other loe, forming larger veins until eventually, they become liver veins, which leaves the liver and drain the inferior vena cava just below the diaphragm. Hepatic function Bile secretion. Hepatocytes are synthesized by bile components from mixed arterial and venous blood sinusoids. These include bile salts, bile pigments, and cholesterol. Carbohydrate metabolism. Conversion of glucose to glycogen in the presence of insulin and conversion of liver glycogen back into glucose in the presence of glucagon. These changes are important regulators for blood glucose levels. Fat metabolism. The desasttalation of fat, i.e. the fat stored, is converted into a form in which tissues can be used to provide energy. Protein metabolism. The deamination of amino acids removes the nitrogen part from amino acids that are not necessary for the formation of new proteins; urea is formed from this portion of nitrogen excreted in the urine. It also breaks down the genetic material of worn cells in the body to form uric acid that is excreted in the urine. Transamination – Removes the nitrogen part of the amino acid and binds it to other carbohydrate molecules that make up new non-nenamaminoic acids. Synthesis of plasma proteins and most blood clotting factors from the available amino acids occur in the liver. Breakdown of red blood cells and protection against microbes. It is performed by the phagocytic Kupffer cells (liver macrophagi) sinusoids. Detoxification of drugs and harmful substances. These include ethanol (alcohol) and toxins produced by microbes. Metabolism of ethanol. Hormone inactivation. These include insulin, glucagon, cortisol, aldosterone, thyroid gland and sex hormones. The synthesis of vitamin A from carotene. (Carotene is a provitamin found in some plants, such as carrots and green vegetable leaves). Heat production. The liver uses a significant amount of energy, has a high metabolic rate, and produces a lot of heat. It is the main heat production organ in the body. It is involved in the storage of fat soluble vitamins: A, D, E, Kiron, copper water soluble vitamins such as riboflavin, niacin, pyridoxine, folic acid and vitamin B12. ReferencesWaugh, A., & Grant, A. (2009). Ross and Wilson: anatomy and physiology of health and disease. (11th edition). Churchill LivingstoneHall, J. 1 (2016). 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