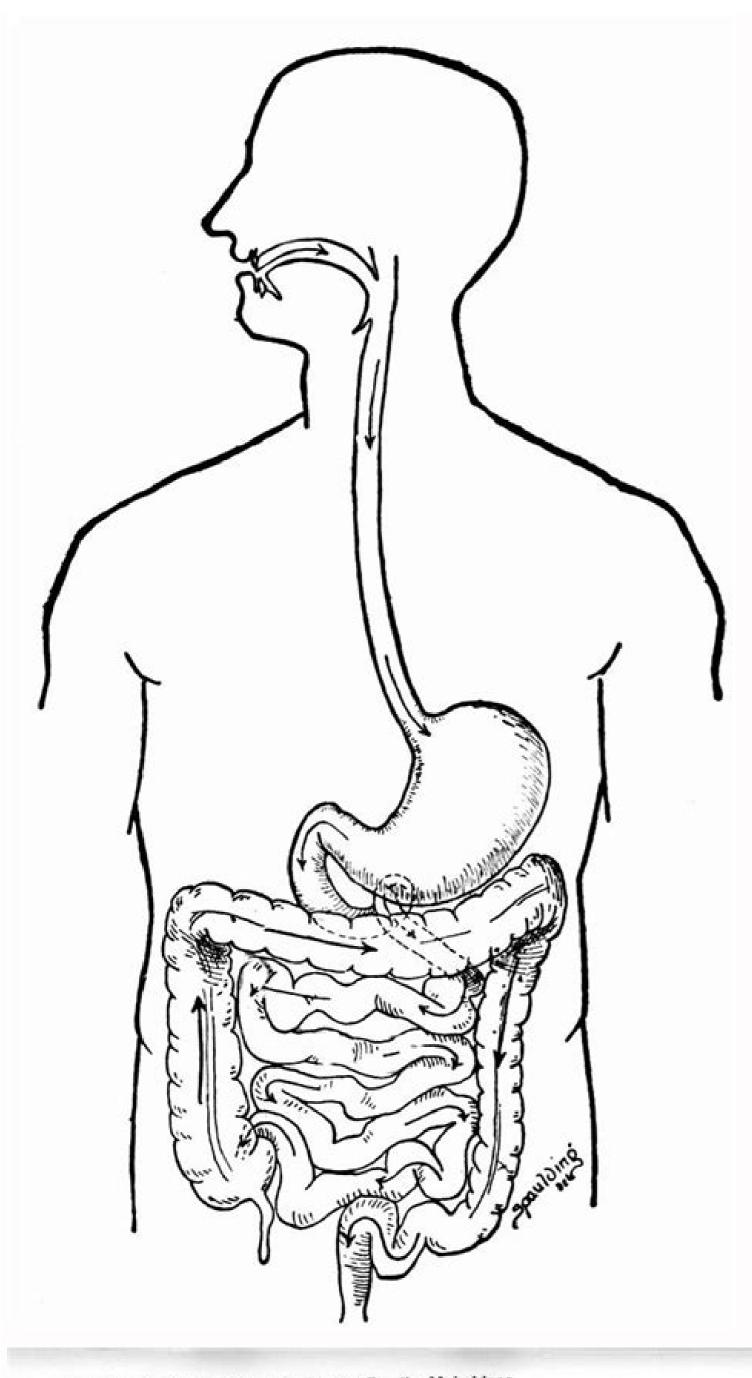
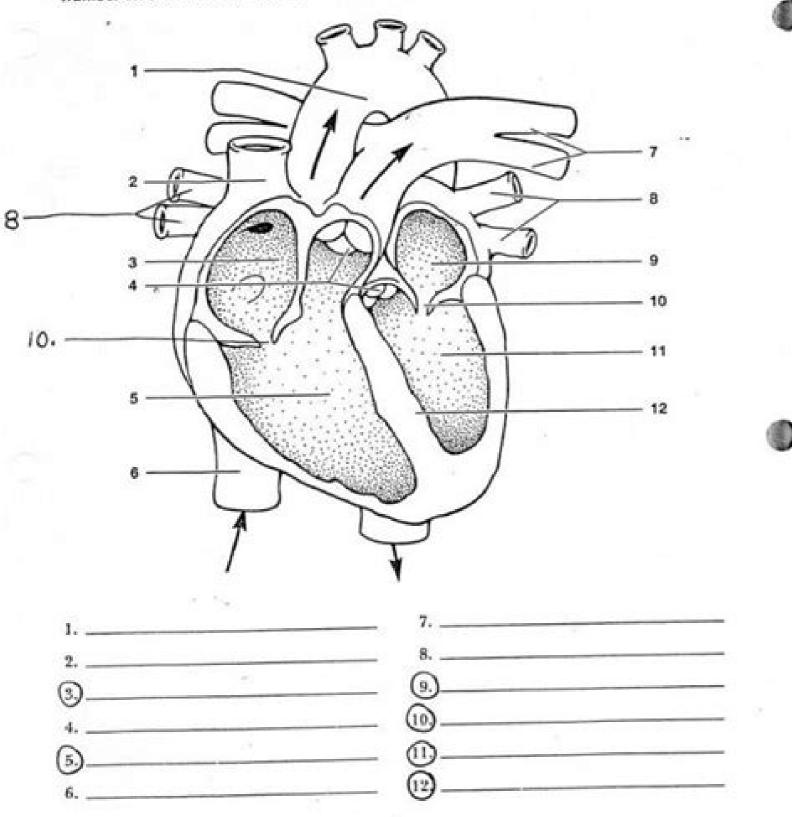
Interrelationships of body systems worksheet



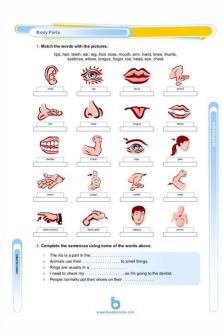


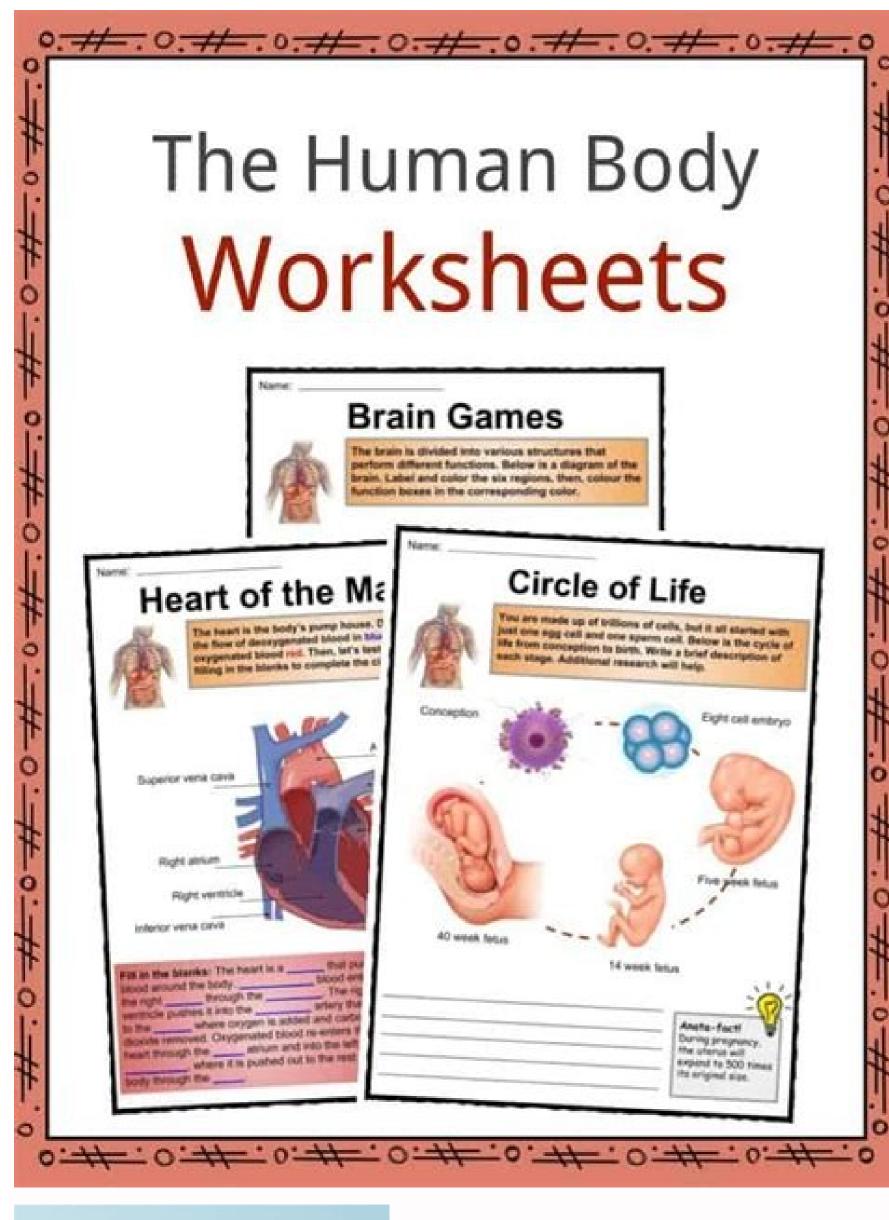
## Structure of the Heart: Understanding the Main Ideas

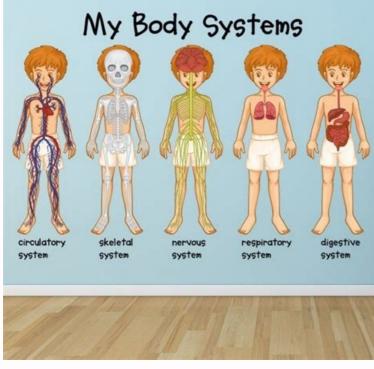
In the space provided, label the parts of the heart that correspond to the number on the illustration below.



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Interrelationships of human body systems worksheet answers. 5 examples of interrelationships between body systems. How body systems work together worksheet. Interrelationships between body systems. Examples of interrelationships between body systems.

If you're seeing this message, it means we're having trouble loading external resources on our website. If you're behind a web filter, please make sure that the domains \*.kastatic.org and \*.kastatic.org and excretory systems A discussion of the organ systems of the human body and their influence on one another. Encyclopædia Britannica, Inc. The human body is composed of many parts. Each part of the body has a specific function. Scientists divide the human body into systems to better understand how its parts. parts that work together to perform a certain job. For example, the skin, hair, and nails are part of a system called the integumentary system, which protects the body. It consists of a complex network of organs, tissues, and cells, such as white blood cells, that help the body recognize and destroy foreign substances and fight off infections. Some body systems work together to provide the body with oxygen and to rid the body of carbon dioxide. The lungs provide a place where oxygen can reach the blood and carbon dioxide can be removed from it. Some body systems share a common organ that performs more than one job. For example, the pancreas serves both the digestive system, the pancreas serves both the digestive system. In the digestive system and the endocrine system. proteins. As part of the endocrine system, the pancreas produces two kinds of hormones--insulin and glucagon--to regulate the amount of glucose, or sugar, in the blood stream to help cells remove glucose from the blood and use it. The hormone glucagon causes the liver to add glucose to the blood. Together the hormones insulin and glucagon--supplied by the pancreas--keep glucose in the blood at a healthy level. Although scientists categorize groups of organs into different body systems, these systems do not work in isolation. A disorder in one system can cause other systems to break down. For example, the pancreas may fail to produce enough of the hormone insulin. This causes the level of glucose in the bloodstream to rise, and a condition known as Type I diabetes mellitus results. Other body systems, including the digestive, circulatory, and excretory systems, are affected by the disease. Symptoms include excessive urination, thirst, loss of appetite, poor circulation, and vomiting. If left untreated, coma and death can follow. Type I diabetes is managed by injections of insulin and small regularly spaced meals and snacks to keep the amount of glucose in the blood at a steady and normal level. The human body is beautifully complex. Although each body system performs a different role, all the systems work together to keep the entire body healthy. Learning how these systems interact can help us understand how food, exercise, and disease affect more than just a single system. Digestion begins when we break food down into little pieces in our mouth with the help of teeth, the tongue and saliva. After that, food travels down the esophagus and into the stomach, where it's further broken down by stomach acids. From the stomach, it heads to the small intestine, out of your body... and beyond! Every player on a softball team has a special job to perform. Each of the orange team cover other parts of the field or pitch or catch the ball. Playing softball clearly requires teamwork. The human body is like a softball team in that regard. All the organ systems of the human body must work together as a team to keep the body alive and well. Teamwork within the body begins with communication. Figure \(\PageIndex{1}\): Softball Communication among organ systems is vital if they are to work together as a team. and change their responses as needed to keep the body in balance. Communication among organ systems is controls heart rate, blood flow, and digestion. You don't have to tell your heart to beat faster or to consciously squeeze muscles to push food through the digestive system. In fact, you don't have to even think about these functions at all. The autonomic nervous system orchestrates all the signals needed to control them. It sends messages between parts of the nervous system and between the nervous system and other organ systems via chemical messengers called neurotransmitters. Figure (()PageIndex {2}): The figure illustrates the hypothalamus, pituitary gland, brain stem, spinal cord, cerebellum, pineal gland, and cerebrum. The endocrine system of glands that secrete hormones directly into the bloodstream. Once in the blood, endocrine hormones circulate to cells everywhere in the body. The endocrine system is under the control of the hypothalamus, a part of the pituitary gland is the master gland of the endocrine system. Most of its hormones either turn on or turn off other endocrine glands. For example, if the pituitary gland secretes thyroid stimulating hormone, the hormone travels through the circulation to the thyroid gland, which is stimulated to secrete thyroid hormone. Thyroid hormone then travels to cells throughout the body, where it increases their metabolism. Figure \(\PageIndex{3}): The image shows a concept map of how the fight-or-flight response occurs. A treat (an attack, harmful event, or threat to survive) leads to the brain processing the signals - beginning in the amygdala, and then the hypothalamus. ACTH (adrenocorticotropic hormone) is released by the pituitary gland. This causes cortisol and adrenaline to be released. The physical effects include heart rate increase, bladder relaxation, tunnel vision, shaking, dilated pupils, flushed face, dry mouth, slowed digestion, and hearing loss. An increase in cellular metabolism requires more cellular metabolism requires more cellular respiration. it is a basic life process that occurs in all living cells. Cellular respiration is the intracellular process that breaks down glucose with oxygen to produce carbon dioxide and energy in the form of ATP molecules. It is the process by which cells obtain usable energy to power other cellular processes. Which organ systems are involved in cellular respiration? The glucose needed for cellular respiration comes from the digestive system also via the cardiovascular system. The cardiovascular system. The cardiovascular system also via the cardiovascular system also via the cardiovascular system. respiration requires at a minimum the digestive, cardiovascular, and respiratory systems. The well-known fight-or-flight responses. The fight-or-flight response begins when the nervous system perceives sudden danger, as shown in Figure \ (\PageIndex{2}). The brain sends a message to the endocrine system (via the pituitary gland) for the adrenal glands to secrete their hormones flood the circulation and affect other organ systems. Specific responses include increased heart rate, bladder relaxation, tunnel vision, and a shunting of blood away from the digestive system and toward the muscular, and muscular systems. When you eat a meal, the organs of the digestive system need more blood to perform their digestive organs. Food entering the digestive systems causes nerve impulses to be sent to the brain; in response, the brain sends messages to the cardiovascular system to increase heart rate and dilate blood vessels in the digestive organs. Food passes through the organs of the digestive tract by rhythmic contractions of smooth muscles in the walls of the organs, so the muscular system is also needed for digested, nutrients from the food are absorbed into the blood of the vessels lining the small intestine. Any remaining food waste is excreted through the large intestine. The men playing softball in Figure (\PageIndex{1}) are using multiple organ systems in this voluntary activity. Their other systems are being controlled by the autonomic nervous systems. Organ systems they are using include the muscular, skeletal, respiratory, and cardiovascular systems. Can you explain how each of these organ systems is involved in playing softball? Teamwork among organ systems fails. When that happens, other organ systems interacting in the same overall process will also be affected. This is especially likely if the system affected plays a controlling role in the process. An example is type 1 diabetes. This disorder occurs when the pancreas does not secrete the endocrine hormone insulin. Insulin normally is secreted in response to an increasing level of glucose in the blood, and it brings the level of glucose back to normal by stimulating body cells to take up insulin from the blood. Learn more about type 1 diabetes. Use several reliable Internet sources to answer the following questions: What causes the endocrine system to fail to produce insulin in type 1 diabetes. is not controlled? What are some of the specific effects? How can blood glucose levels be controlled in patients with type 1 diabetes? What is the autonomic nervous system and endocrine system and endocrine system communicate with other organ systems so the systems can interact? Explain how the brain communicates with the endocrine system. What is the role of the pituitary gland in the endocrine system? Identify organ systems that play a role in cellular respiration. How does the hormone adrenaline prepare the body to fight or flee? What specific physiological changes does it bring about? Explain the role of the muscular system in the digestion of food. Describe how three different organ systems are involved when a player makes a particular play in softball, such as catching a fly ball. True or False. The autonomic nervous system controls conscious movements. True or False. Hormones travel throughout the body. molecules that the body uses to communicate between organ systems? Explain why hormones can have such a wide variety of effects on the body. Heart rate can be affected by: Hormones Neurotransmitters The fight-or-flight response All of the above Which gland secretes the hormone cortisol? Without the muscles lining the GI tract, you would be unable to digest food. Watch this short animation of food moving through the GI tract. It illustrates very clearly the necessary interaction of the muscular and digestive systems in the digestive process, LICENSED UNDER

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