Human Body Unit

Name:_____

(Do Not Lose!)

Due:_____

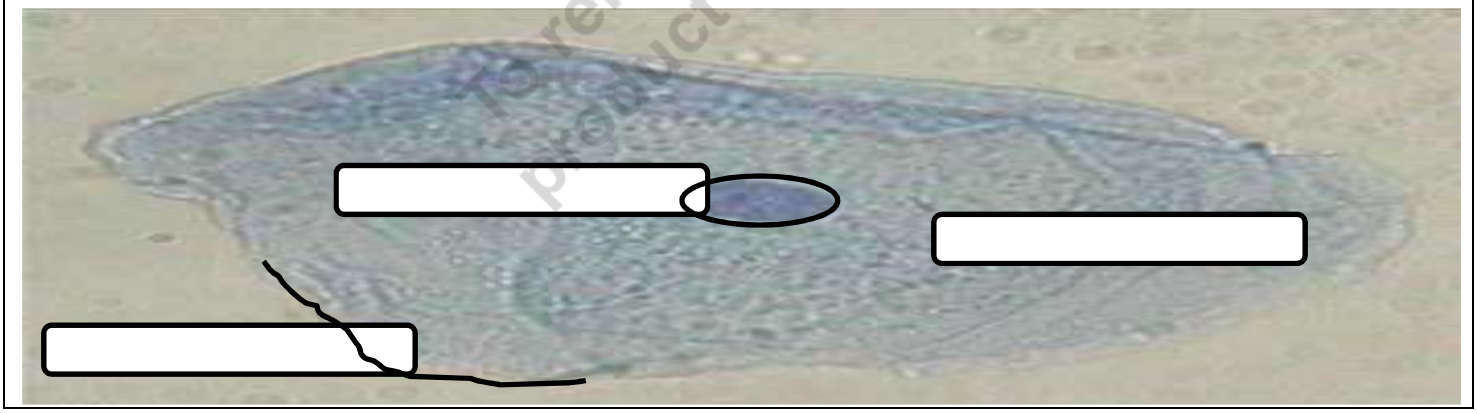
◊ **Please check-off all of the diamonds upon completion.**

Part I: Levels of Biological Organization

◊ Please find an object that demonstrates FFF? (Form Follows Function)
◊ Please sketch this object and then describe in detail how its shape allows it to perform a function.

◊ Make a quick sketch of the levels of biological organization in the boxes below.
◊ Please label each box. -**Word Bank: Cellular Organelle, Molecule, Cell, Tissue, Individual, Organ, Atom, Organ System,**

◊ Please tell me four things about the picture below? ◊ Why is this picture important to the human body?



◊ Name four different types of **cells** found in the human body

1.)	2.)
3.)	4.)

◊ Name three different types of **tissues** found in the human body

1.)	2.)
3.)	◊ Draw a body tissue in this box

Write down the names of four organs in the human body in the spaces below. The last letter of number 1 must be the first letter of number 2, and so on. Match the last letter of the organ to the first of the next.

_____► _____ ►_____►_____ ►_____ ↓

_____◄ _____ ◄_____◄_____ ◄_____

◊ Please describe a few ways your body maintains homeostasis with your environment.

_____

_____

_____

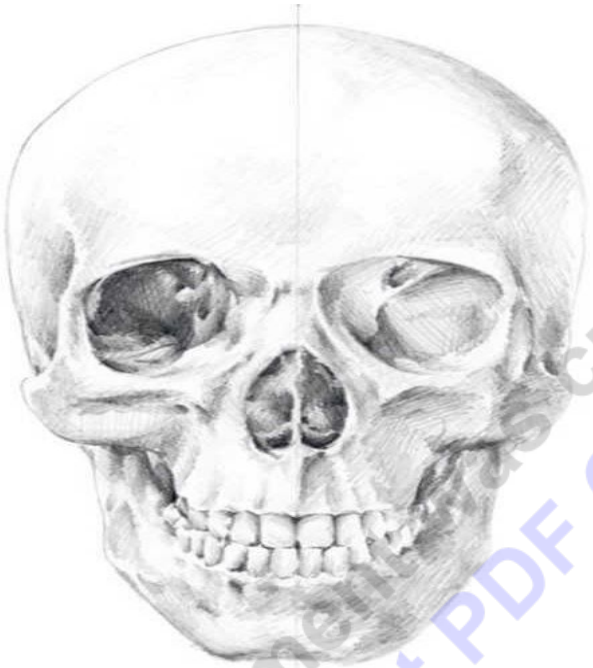
_____

_____

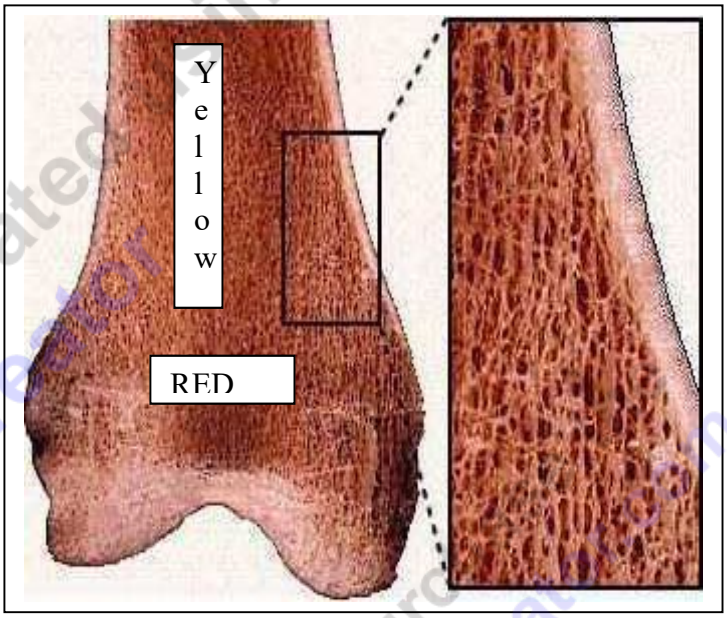
_____

Part II: Skeletal System

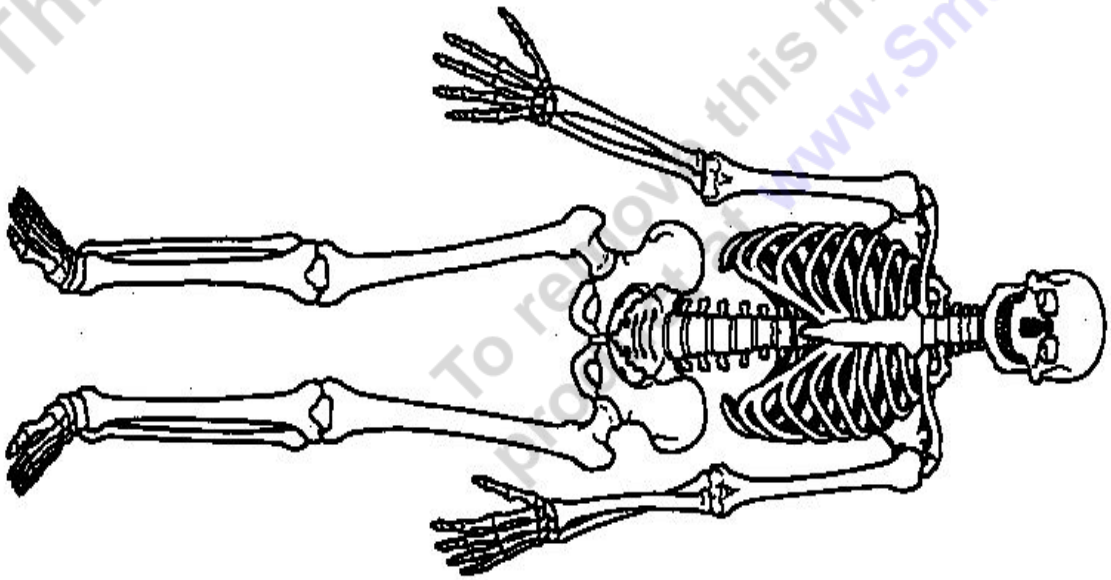
◊ Please record four roles of the skeletal system on or around the skull below.



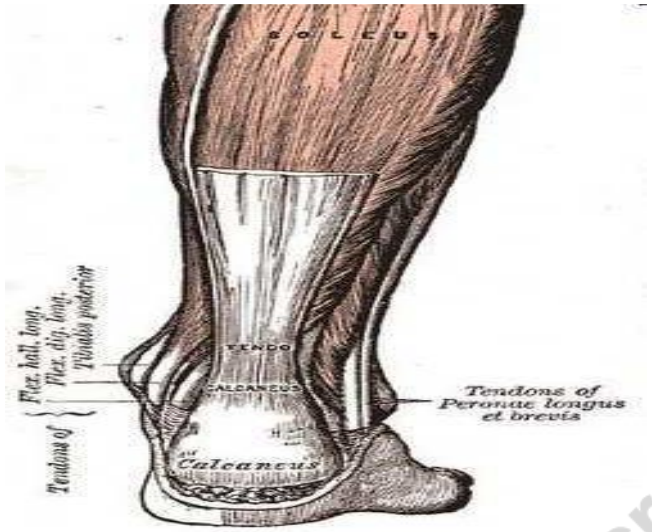
◊ Please use the picture below to describe the two types of bones.
◊ Can you mention anything about the words

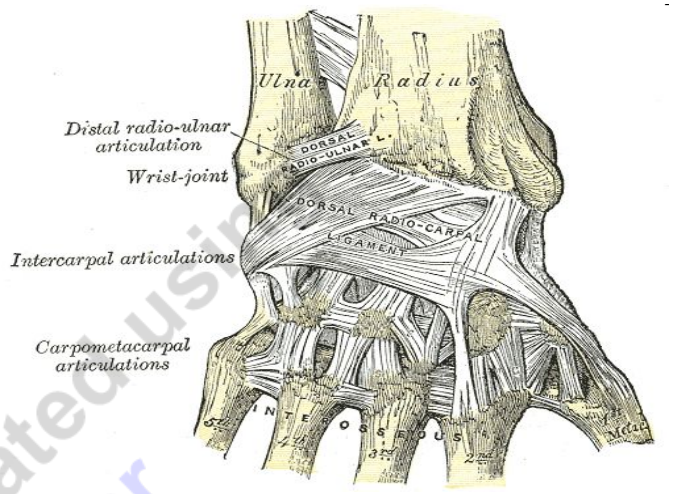


◊ Identify the… **Long Bones, Flat Bones, Irregular Bones, Short Bones**

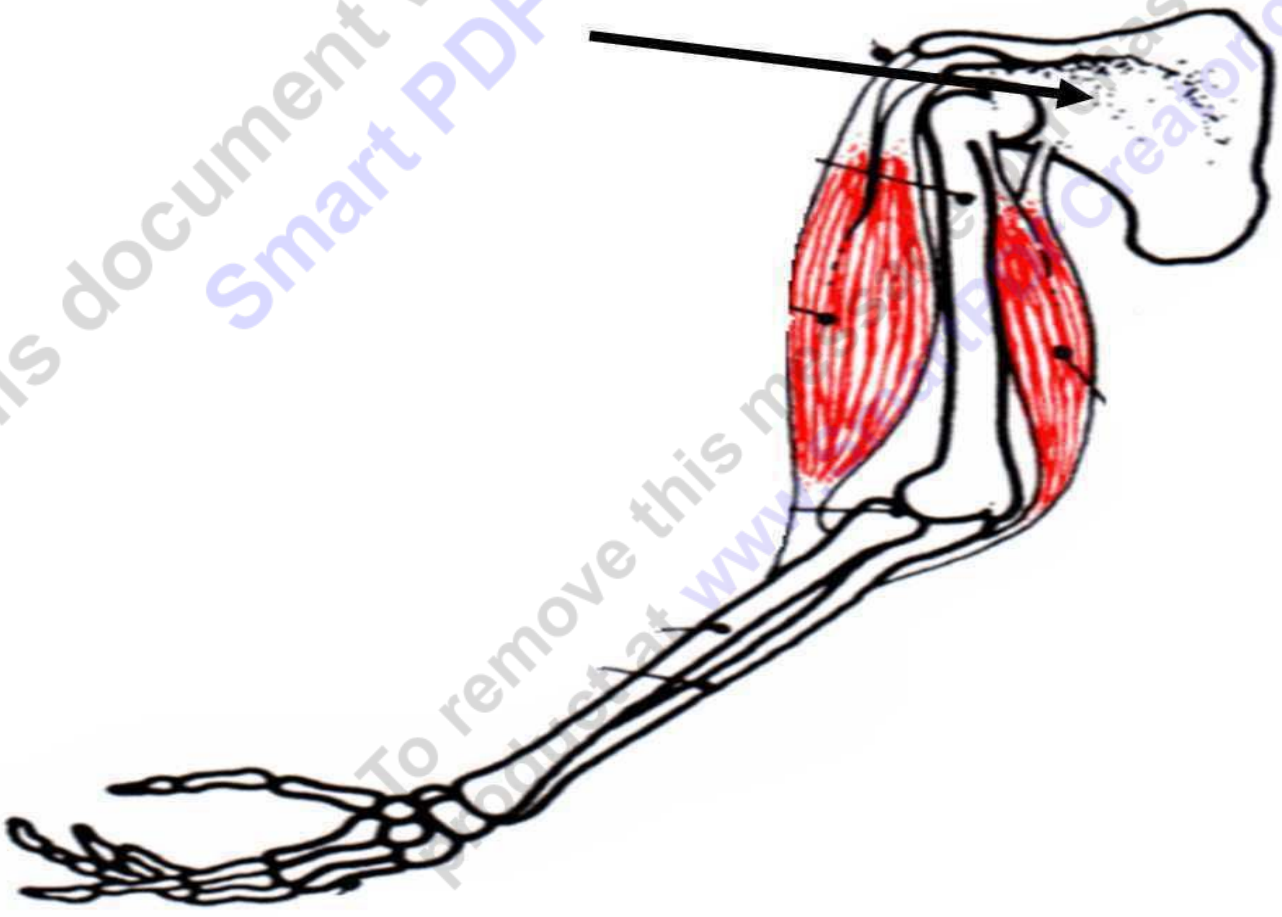


◊ Which picture is a tendon, and which is a ligament? ◊ How do you know?



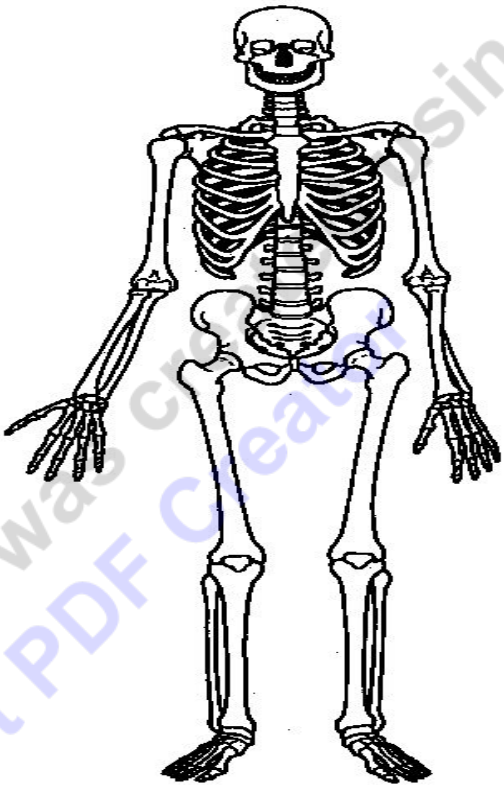


◊ Please label the major bones below ◊ Please label the types of joints ◊ Please label the muscles ◊ Please label the tendons



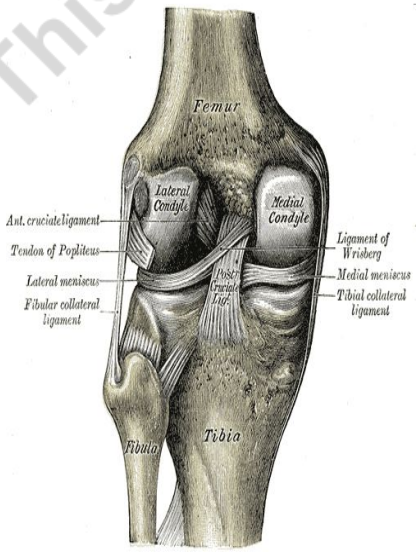
◊ Please **neatly** label the skeleton below and cross-off each bone from the word bank.

◊ Word Bank: Pelvis, Radius, Jaws and Teeth, Phalanges, Tibia, Fibula, Humerus, Ribs, Femur, Ulna, Clavicle, Vertebrae, Skull, Metacarpals, Patella, sternum, phalanges, scapula

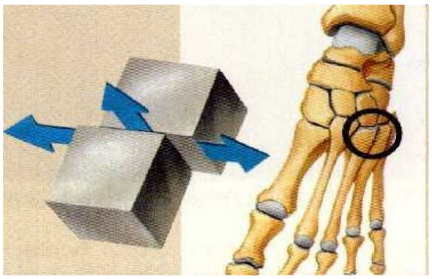


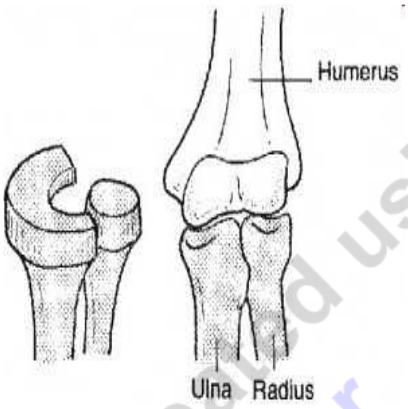
◊ Please place the correct term below the appropriate picture?

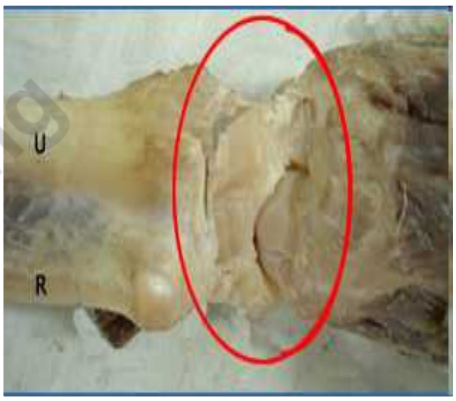
Word Bank: Fibrous (immovable) Cartilaginous (partially movable) Synovial (freely movable)

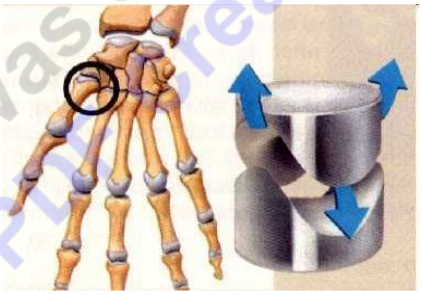


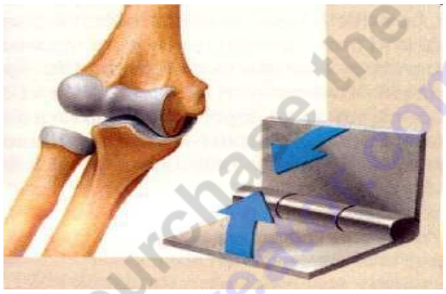
◊ Name the type of joint below? ◊ In just a few words…What does the joint do? Remember, FFF (Form Follows Function)







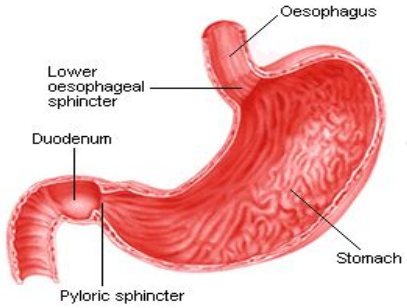


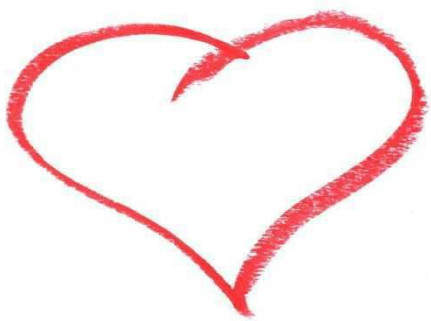


Part III: The Muscular System

◊ Why are blood vessels woven into muscles? _____

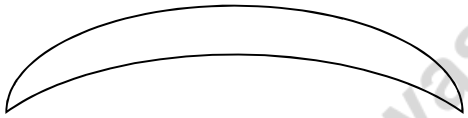
◊ Name the type of Muscle Tissue below?

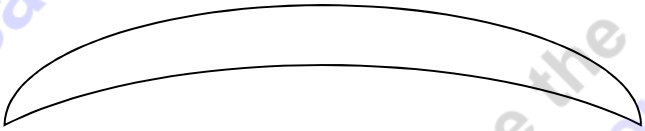




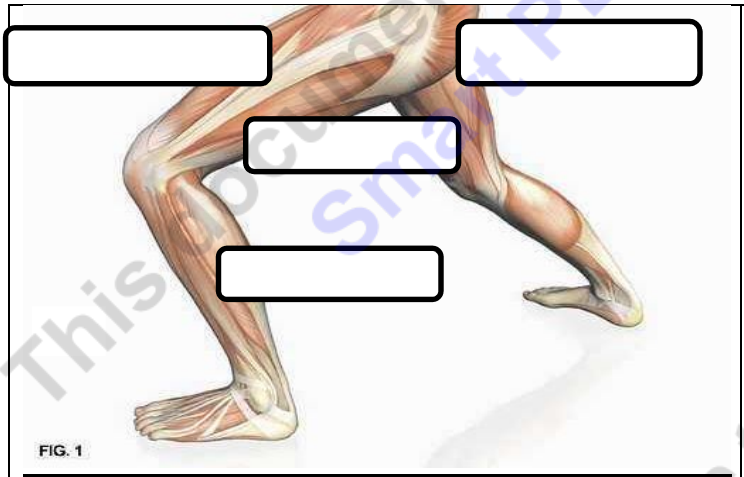
◊ Describe the difference between voluntary and involuntary muscles? ◊ You must use a few specific muscles as examples.

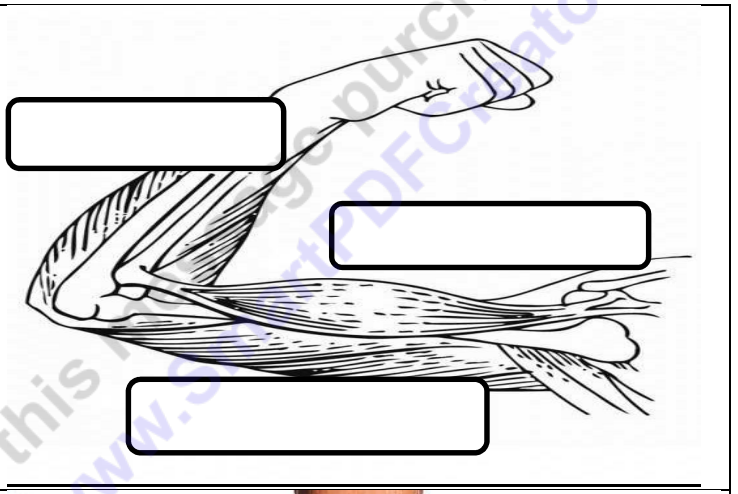
◊ Which muscle is relaxed? and which is contracted?

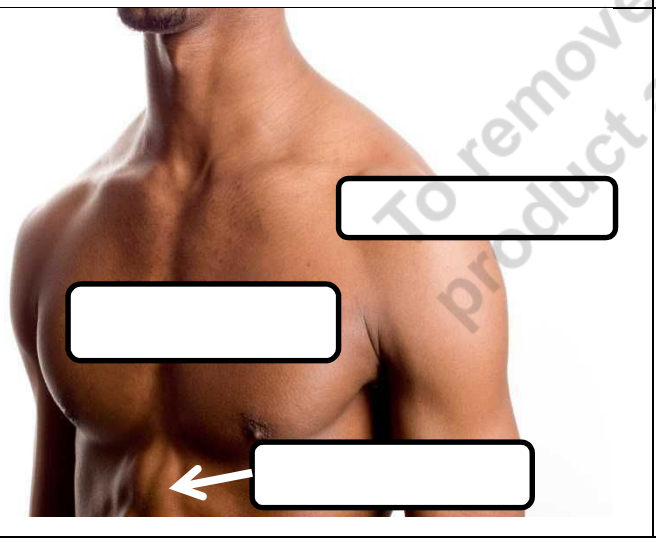


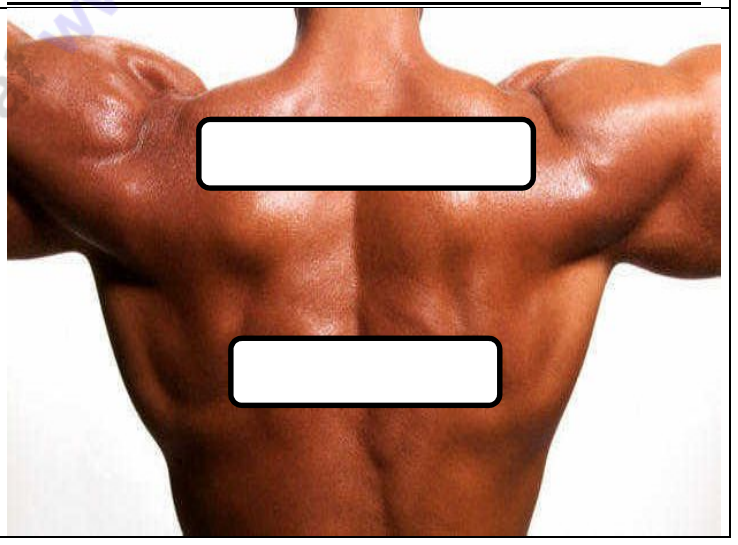


◊ Please label some of the muscles below?





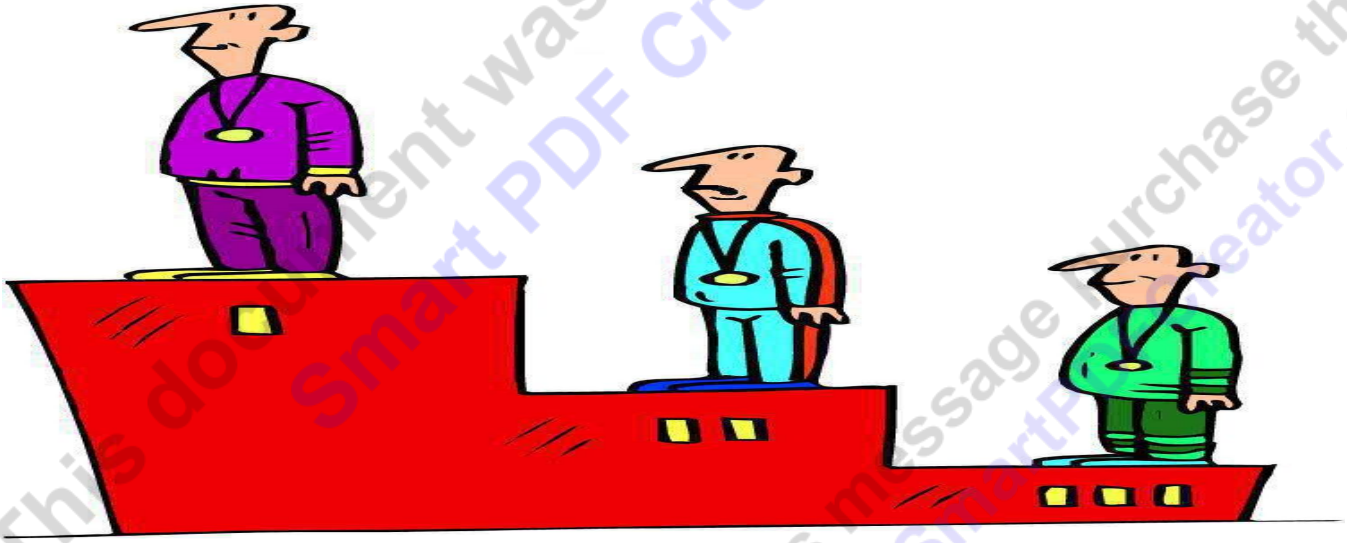




Part IV: Nutrients – Molecules of Life and Healthy Living

◊These are the Biologically Important Elements
◊(These letters deserve to look cool, please put their names below)

◊If these athletes were biologically important Elements, which element is used the most (1st), 2nd, and 3rd in living things. **Think SPONCH!**



◊Please describe some simple and some complex sugars in the boxes below.

Names:	Names:	Names:	What Sugar?
Mono_____	Di_____	Poly_____	

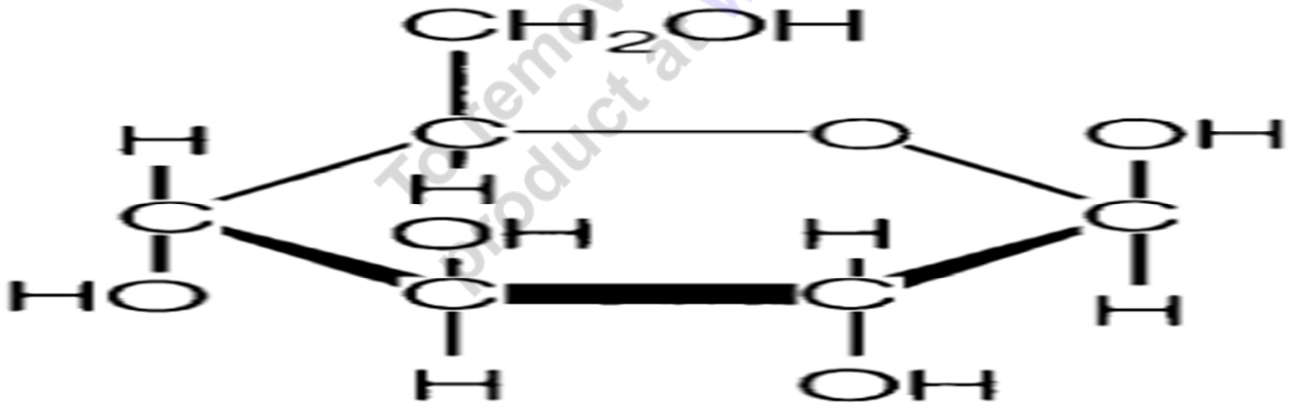
◊Please record in big letters the SPONCH elements that make up each of the important molecules below (1-5)

Carbohydrates and Lipids	Nucleic Acids, DNA and RNA	Amino Acids and Proteins
More complex Amino Acids and Proteins (S)	Hydrocarbons	What is the CaFe in the SPONCH café?

◊Please circle the sugars from this word list: Sucrose, bisphosphatetase, lyseine, maltose, Xanthine, wet runny nose, hydroxysteriod, glucose, big furry moose, kinase, methylegluatryl, dhydrogenase, sucrose, lactose, galactose, nucleotide binding protein, deoxyribose, isomearase, dextrose, fructose, red caboose, my shoe lace has come loose, my favorite author is Dr. Seuss.

What is the ratio of Carbon, Hydrogen, and Oxygen in the glucose molecule below

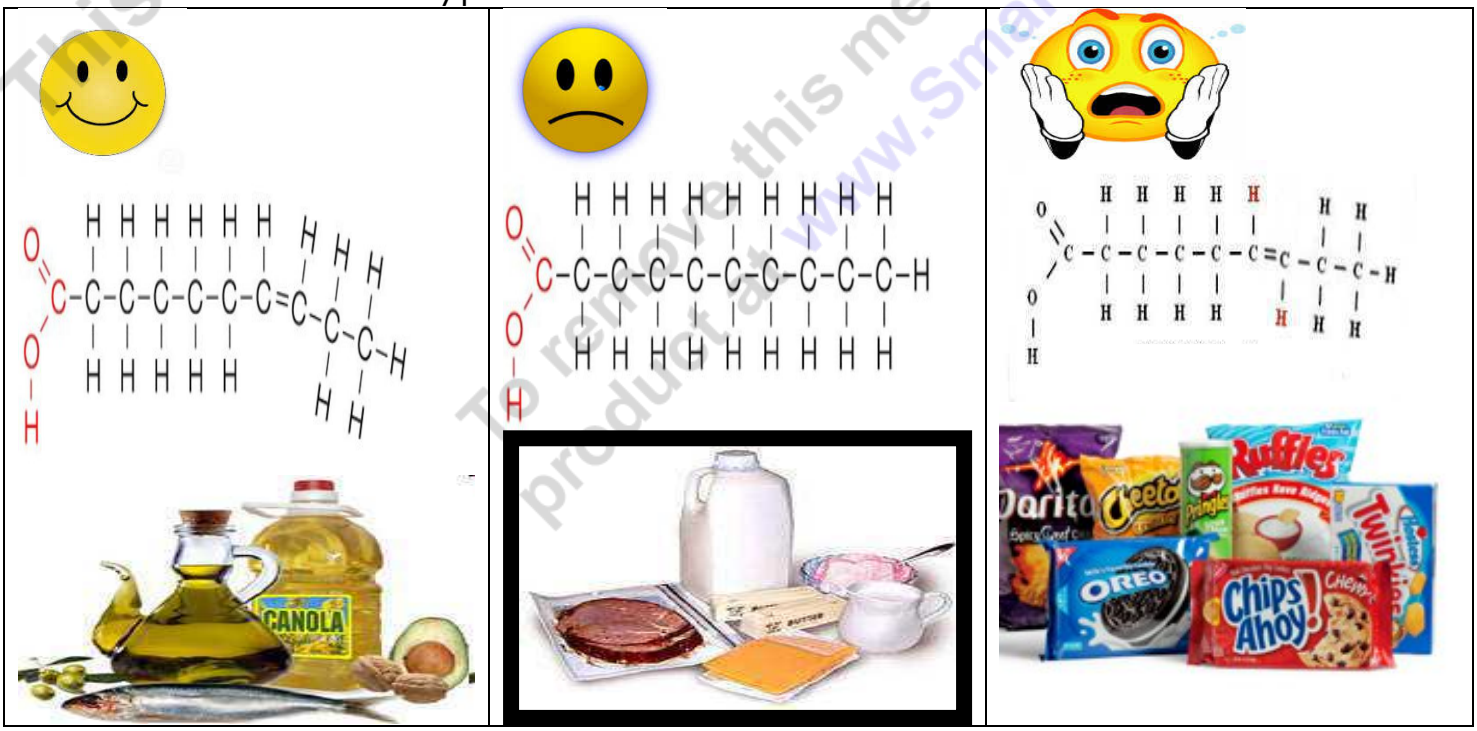
Ratio _____:_____:_____



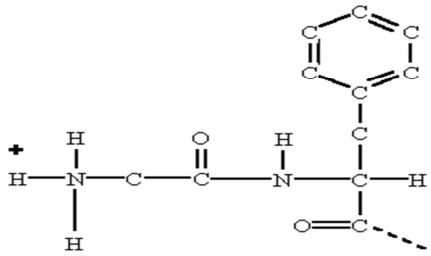
◊ Please describe the type of carbohydrate that will give you a **quick burst of energy** but will not sustain your energy needs over a long period. Draw and describe, use the correct terms.	◊Please describe the type of carbohydrate that will give you **longer lasting energy** but it takes longer to digest. Please Draw and describe, and use the correct terms.

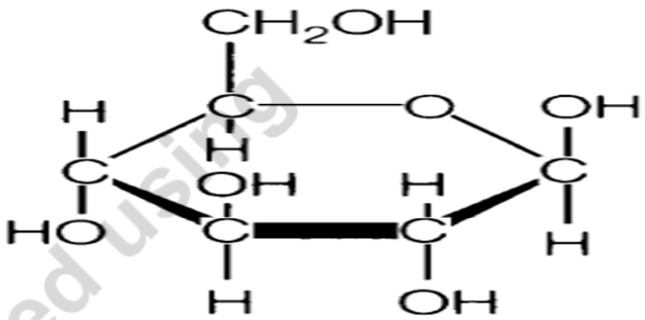
◊Describe the important roles that proteins play in human health.

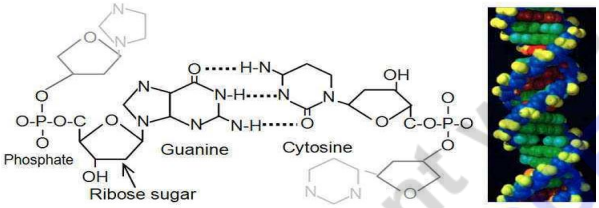
What are the three types of fats

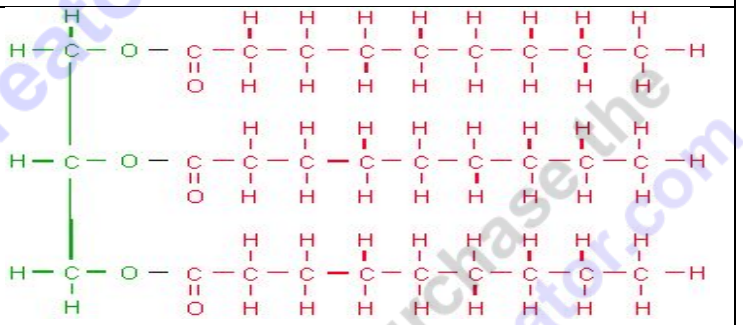


◊Please record the name of the correct biologically important molecules beneath the picture.









◊What are the dangers of being too big (obese) and too thin. Also describe some dangers associated with anabolic steroid use.

◊Please describe the health effects of eating "junk food" over long periods of time in the box below or ◊ describe the obesity epidemic in our country with a focus on the fast food industry.

Part VI: The Digestive System

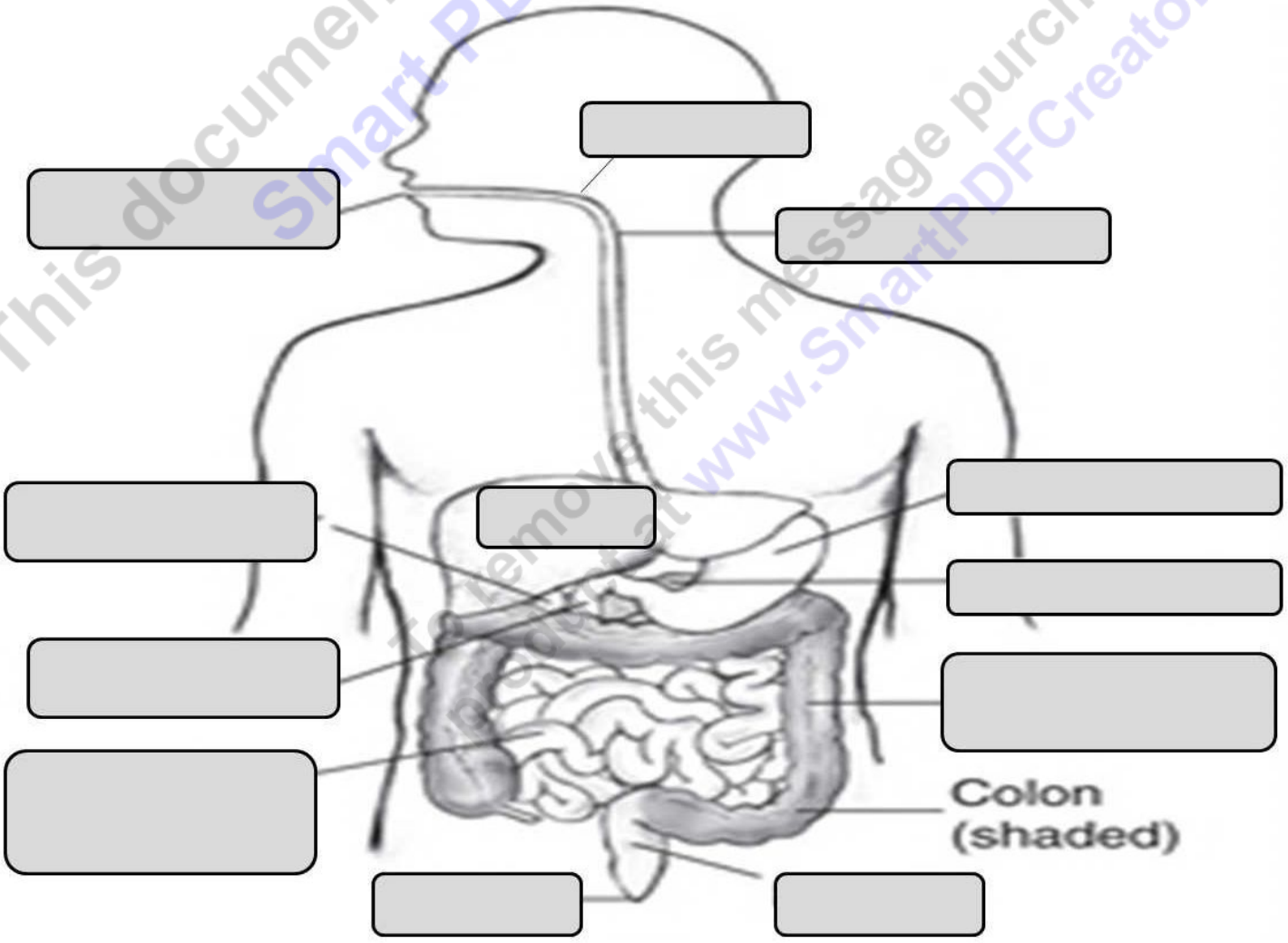
Word Bank: Proteins, Carbohydrates, Water, Fats, Vitamins, Minerals

◊Nutrients include: 1) _ _ _ _ _ 2) _ _ _ _ _ _ _ _ 3) _ _ _ _ 4) _ _ _ _ _ _ _
5) _ _ _ _ _ _ _ _ _ _ _ _ _ _ 6.)_ _ _ _ _ _ _ _

Word Bank: Proteins, Carbohydrates, Water, Fats, Vitamins, Minerals

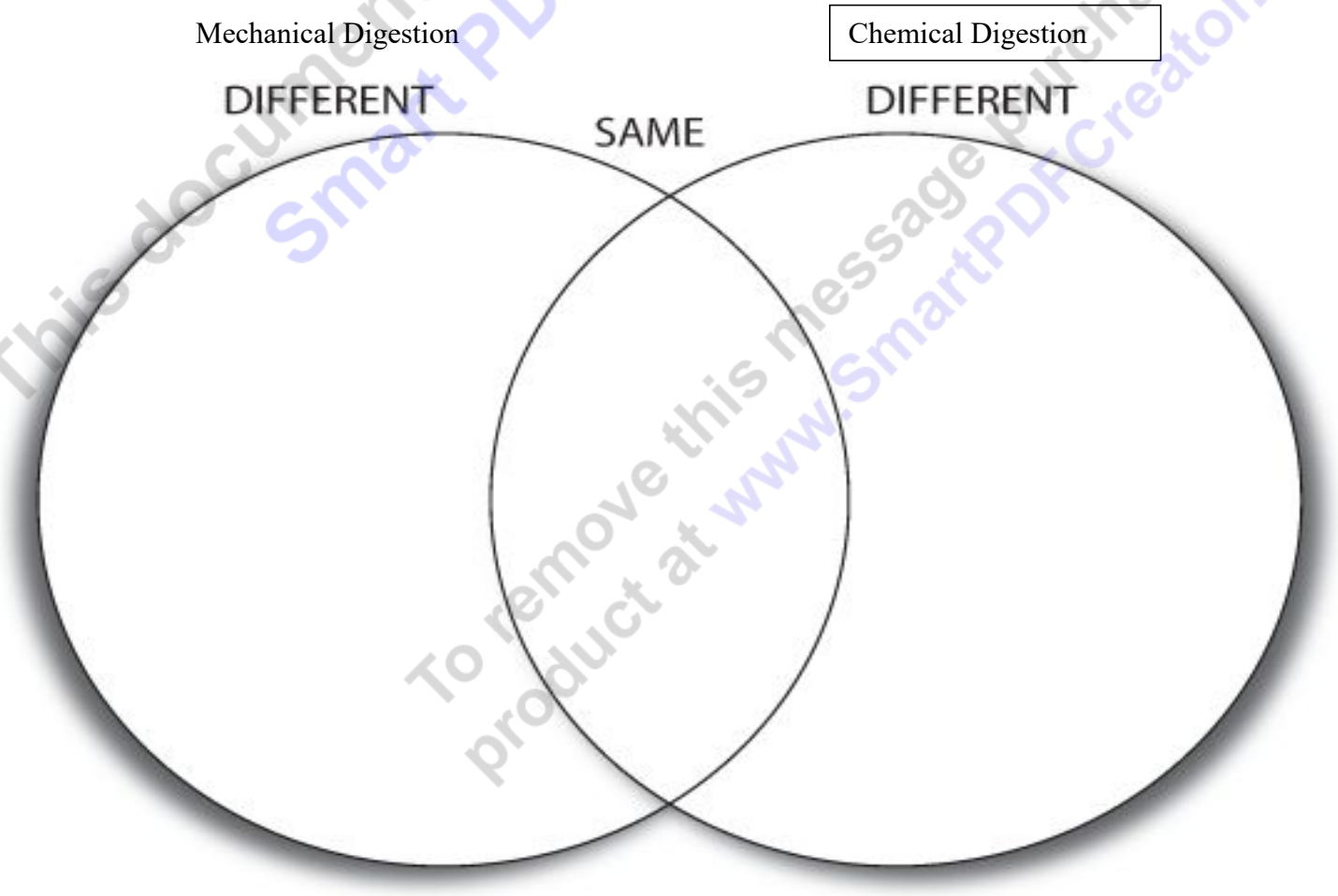
◊ Which the above are needed for the following processes...?

_____ Needed for growth, repair, reproduction of cells (structure of your body), produces enzymes, hormones, antibodies.
_____ Energy molecule and contains fiber.
_____ Energy source.
_____Prevents diseases, regulates body processes, and needed for chemical reactions.
_____ Needed for bones and teeth, blood and other tissues.
_____To dissolve substances in blood, tissue fluid, biochemical reactions.

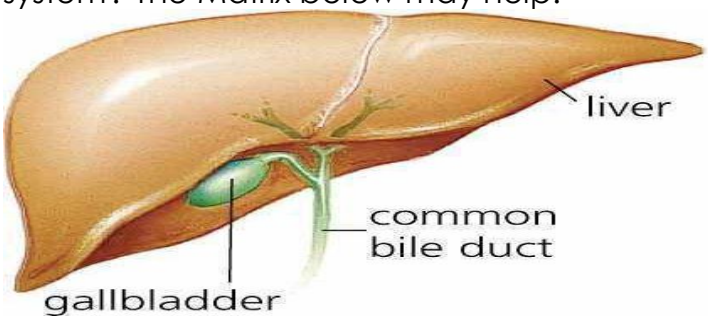


_____: Short tube at the end of the large intestine that stores waste.
_____: Water is absorbed here, and bacteria in the intestine also make important vitamins.
_____: A saclike part of the alimentary canal in which food is stored.
_____: Major organ for food absorption.
_____: Opening at the end of the rectum.
_____: Organ that aids in digestion by producing pancreatic juices that enter small intestine.
_____: The beginning of the small intestine Distributes bile (produced by the liver and stored in the gall bladder), pancreatic acids (pancreas), and other secretions to chemically breakdown food.
_____: A small pouch that extends off the large intestine. Plays a role in preventing infection. Can rupture causing Appendicitis.
_____: Waves of rhythmic muscular contractions that push / move food (involuntary).

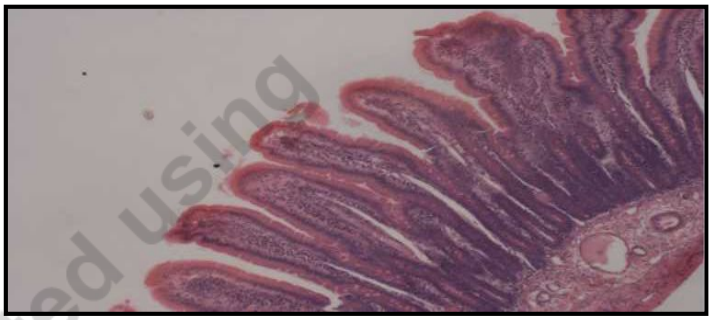
◊ What's the difference between mechanical and chemical digestion?



◊ Can you describe the role of the liver and the gall bladder play in the human digestive system? The Matrix below may help.



◊ What is this a picture of? ◊ Can you discuss (FFF)?



◊ Use the matrix below to write three sentences about chemical digestion.
Example: Intestinal Juices contain the digestive enzyme lipase that works on fats to turn them into fatty acids and glycerol.

Digestive Juices	Digestive Enzyme	Works On	Changes To
Saliva	Ptyalin	Starch	Simple Sugars
Gastric (Stomach)	Pepsin	Protein	Peptides and Amino Acids
Pancreatic	Amylase Trypsin Lipase	Starch Protein Fats	Complex Sugars, simple Proteins, Fatty Acids, Glycerol
Intestinal	Lactase, Maltase, Sucrase, Lipase, Peptidase	Complex Sugars, Simple Proteins, Fats	Simple Sugars, Amino Acids, Fatty Acids, Glycerol

1)_____

_____

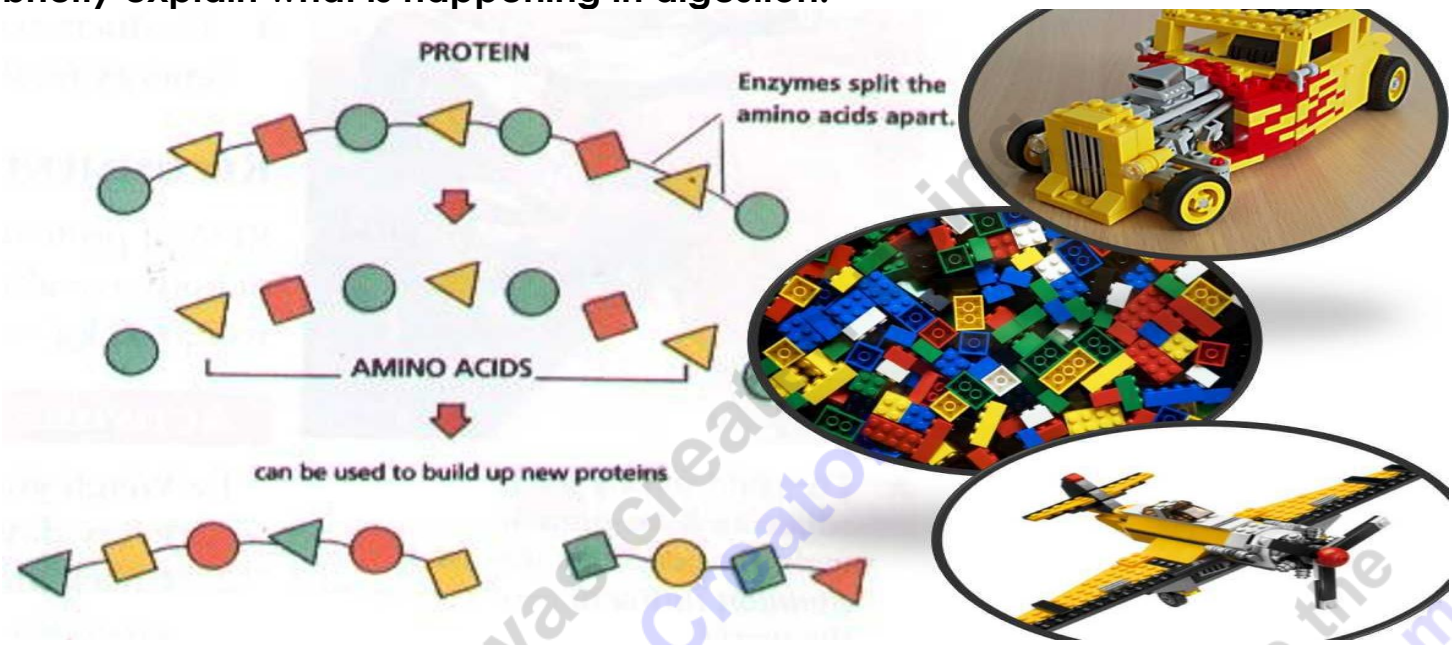
2)_____

_____

3)_____

_____

Larger Molecules to _____ Molecules. Use the picture below to briefly explain what is happening in digestion.

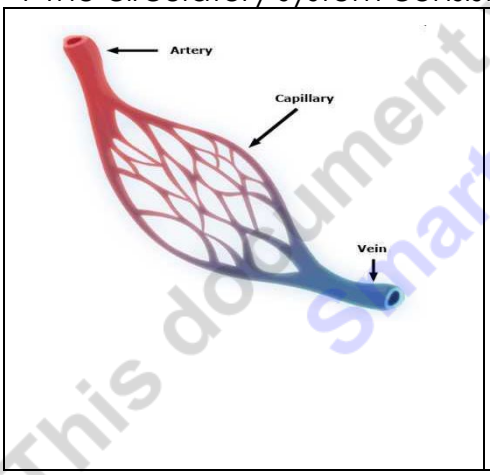


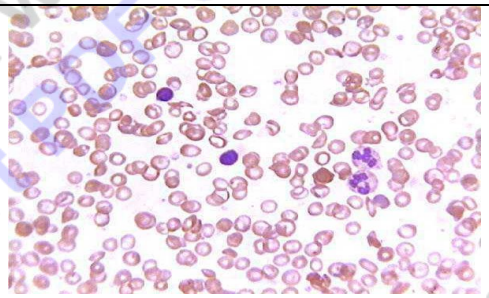
Can you identify any of the organs of the digestive system in this fetal pig?

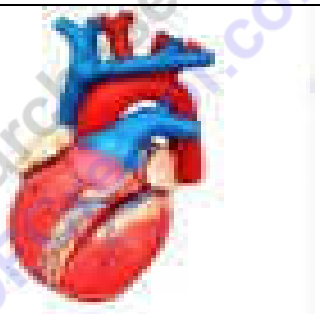
Part VII Circulatory System

◊ Please describe what needs to enter, and what needs to leave the person below as it relates to the circulatory system

◊ The circulatory system consists of these three…







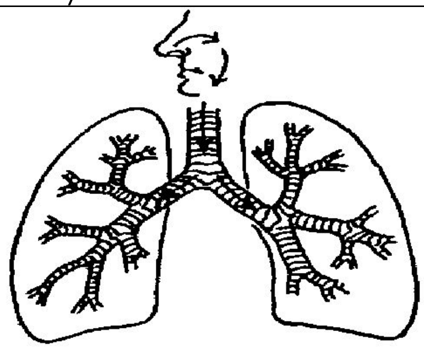
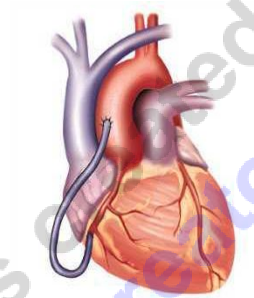
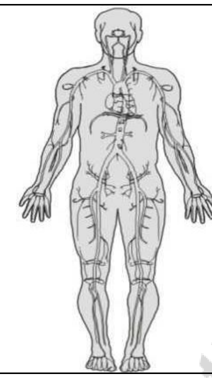
◊ Please write out the equation for cellular respiration in the boxes below.

◊ Which of the following is the correct equation for cellular respiration?

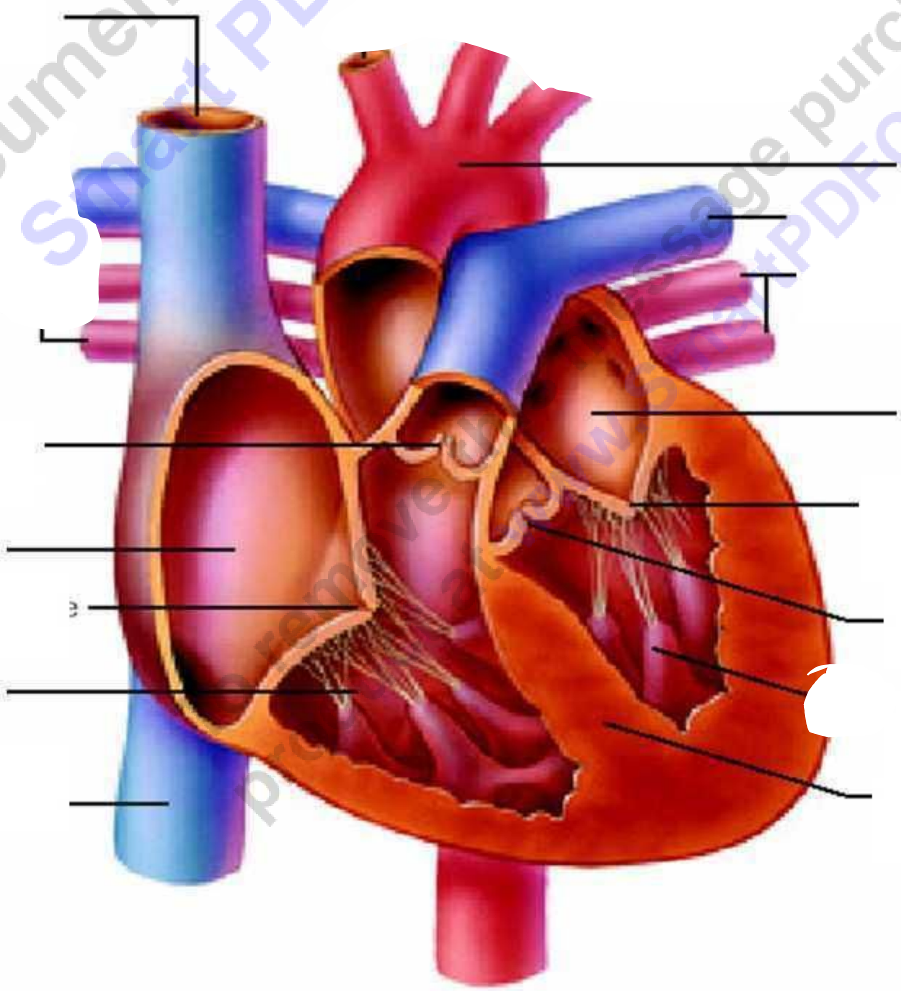
1. **A) $C_6H_{12}O_6 + 6H_2O$ = Released energy + $6CO_2 + 6H_2O$.**
2. **B) $C_6H_{12}O_6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.**
3. **C) $C_6H_{12}O_6 + 6O_2$ = Released energy + $6O_2 + 6H_2O$.**
4. **D) $C_{12}H_6O_6 + 6O_2$ = Released energy + $6CO_2 + 6H_2O$.**
5. **E) $C_6H_{12}O_6 + 6CO_2$ = Released energy + $6O_2 + 6H_2O$.**

◊ What are the four functions of the circulatory system?

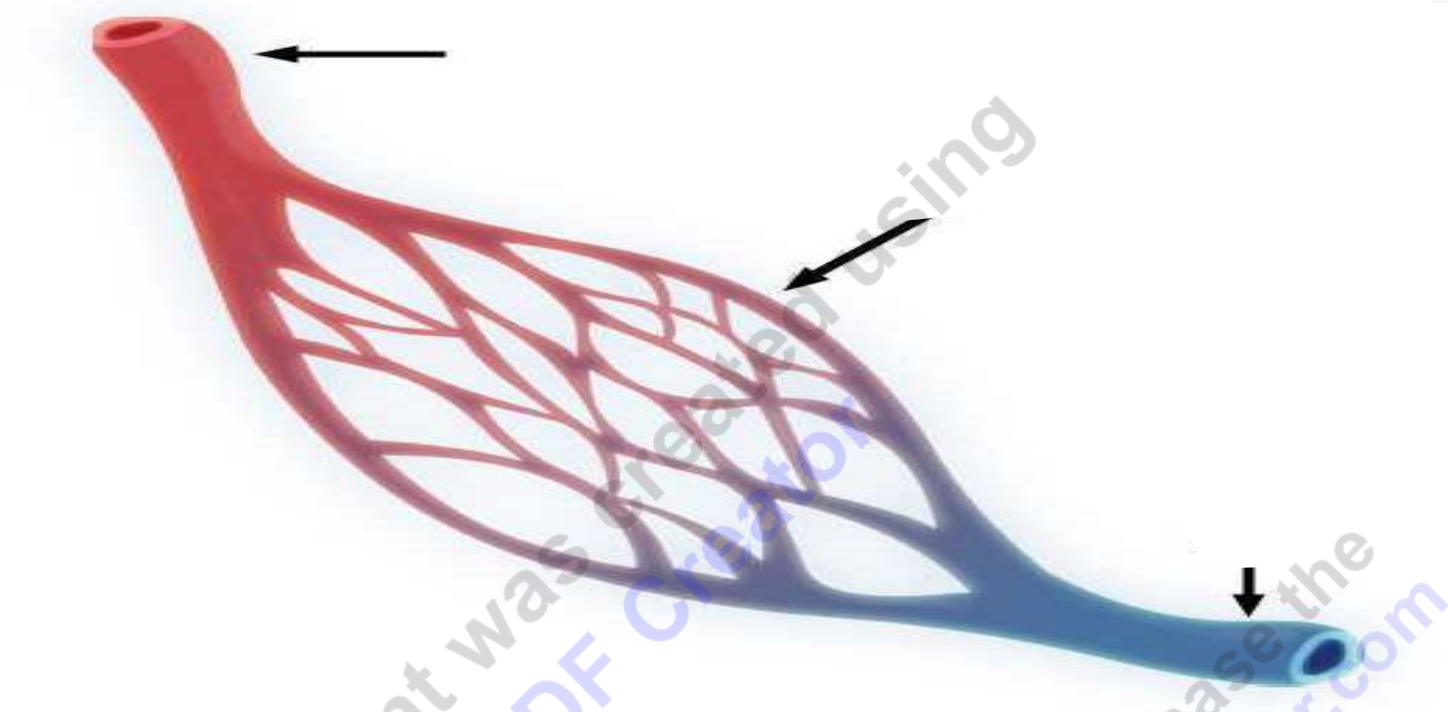
◊ Please place **<u>COLORED</u>** (Red and Blue) arrows to represent the flow of blood in the human body. Which arrows are oxygenated, and which are deoxygenated?

◊ Name the parts of the heart below. ◊ Also use arrows to show how bloods flows through the heart. Use terms such as "to the heart" and "To the lungs" and "To the body."



◊ Please name the three parts of the picture below? Which one has oxygen rich blood, and which one carries oxygen depleted blood?



◊ Please describe some dangers / diseases associated with your heart?	◊ If you are A+ blood, can you get a blood transfusion from someone with O- blood? **Explain!**

◊Please name the four parts of blood in the boxes below using the descriptions to help you.

-Circulate throughout the body providing protection against foreign organisms and matter.	Irregularly shaped bodies with sticky surfaces that form clots to stop bleeding.
Controls amount of water in blood. Has antibody proteins that fight off disease. -Blood clotting agents. -Carries chemical messages (hormones). -Carries waste products.	-Produced in bone marrow, no nucleus in cell (mature cell), delivers oxygen to cells, carries away CO_2. -Hemoglobin: Protein in blood that helps blood bind with oxygen and carbon dioxide.

Part VIII: The Respiratory System

◊ What's the purpose of the respiratory system in your body?_____

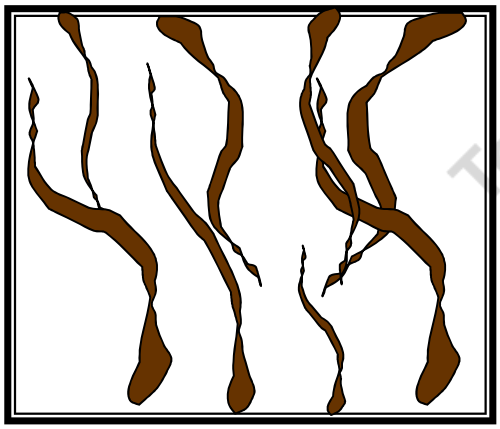
_____

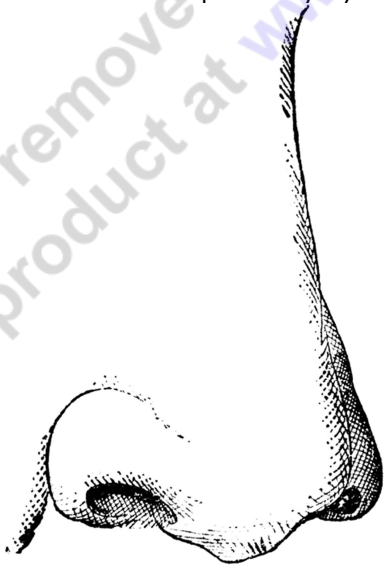
_____

_____

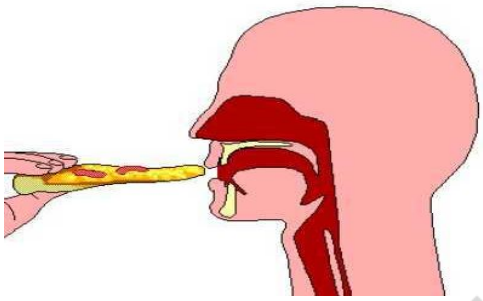
_____

◊ Please describe the role of the nose in the respiratory system?



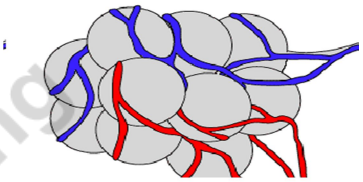


What should you do if you see someone choking?

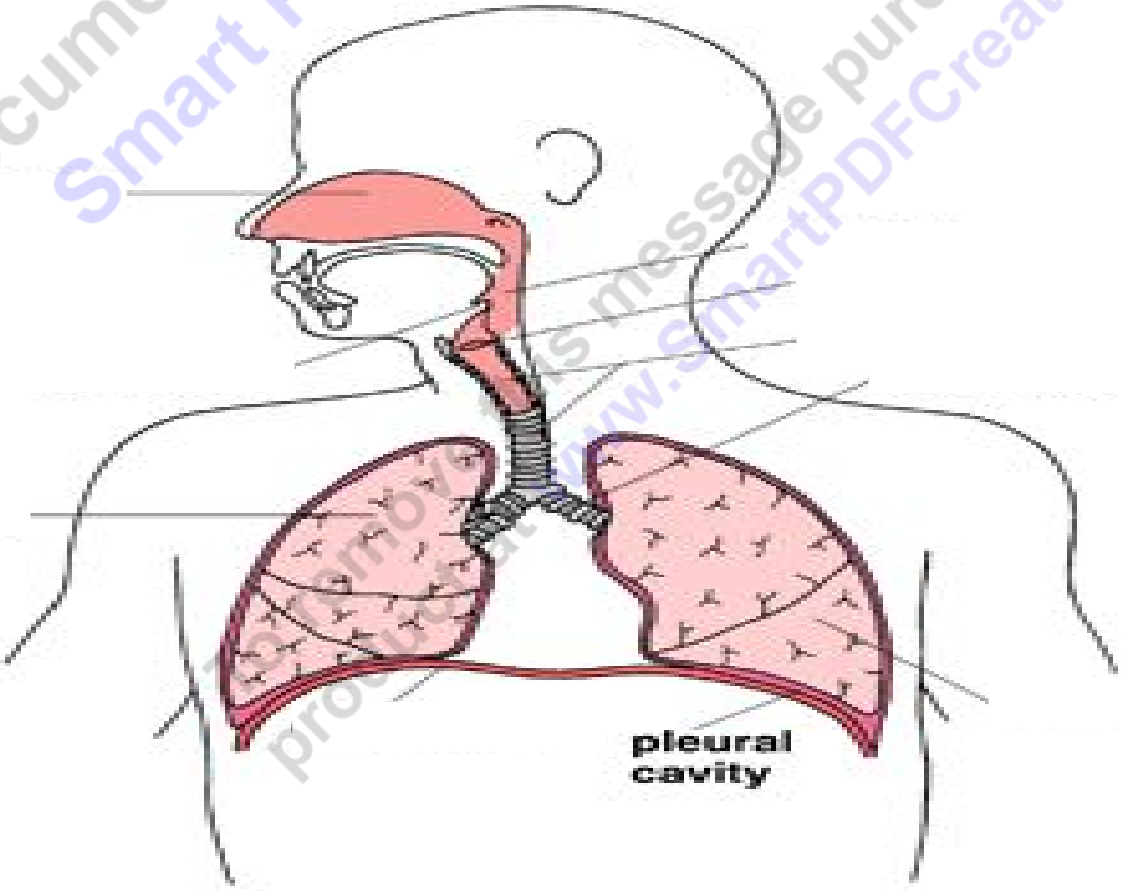


◊When you swallow, how come you don't choke on your food?

◊ What is the picture below?
◊ How does it work?

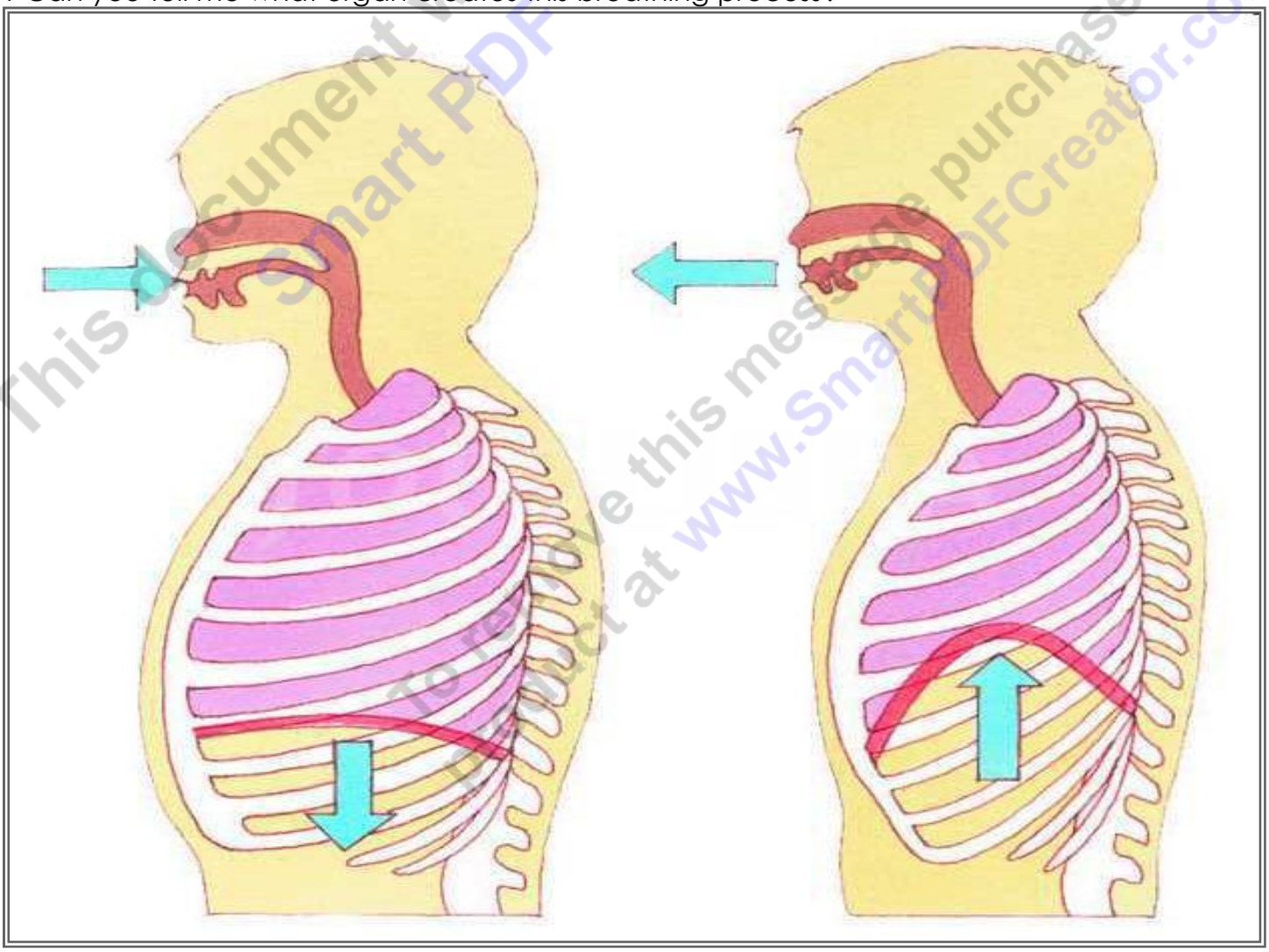


◊Please name the following parts of the respiratory system.

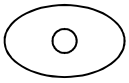


- _____: Either of two saclike respiratory organs in the chest of vertebrates; serves to remove carbon dioxide and provide oxygen to the blood.
- _____:Tube in your throat that carries air to your lungs (windpipe)
- _____: Dome shaped muscle and membranous partition that separating the abdominal and thoracic cavities.
- _____: A flap of cartilage at the roof of the tongue, which is depressed during swallowing to cover the opening of the windpipe.
- _____: The hollow muscular organ forming an air passage to the lungs and holding the vocal cords.
- _____: Airway in the respiratory tract that conducts air into the lungs.

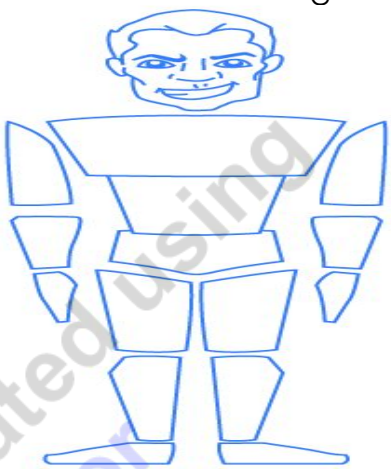
◊ Please label which picture is a person inhaling, and which is a picture of someone exhaling?
◊ Can you tell me what organ creates this breathing process?



◊What is cancer? Please demonstrate with the cell below.

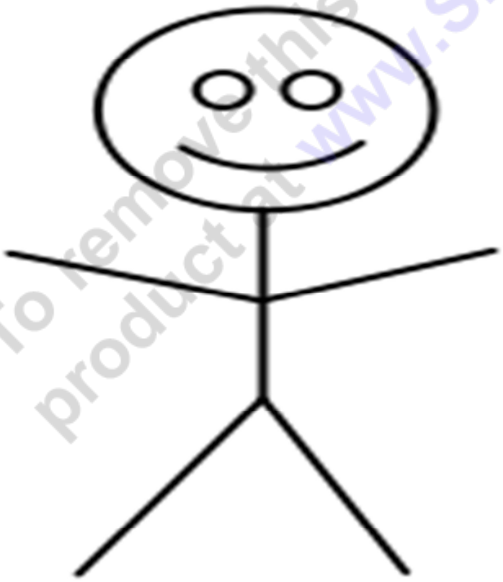


◊Please decorate the person below with accessories and poor habits that may increase his chances of getting cancer.



◊What are some of the chemicals in these? ◊Do most people know this? ◊If so, then why do they smoke?

◊Please decorate the stick figure below with some of the health and other effects that smoking can give you.



Part IX: The Excretory System

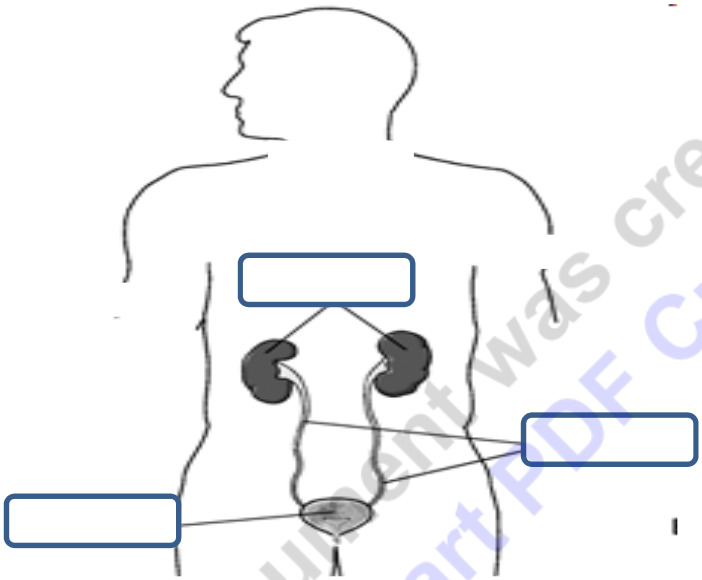
The Excretory System removes excess…

W _ _ _ _ _ _ _ T _ _ A _ _ _ _ - _ I _ _ _ _ _

◊Name the organs that are part of the Excretory System

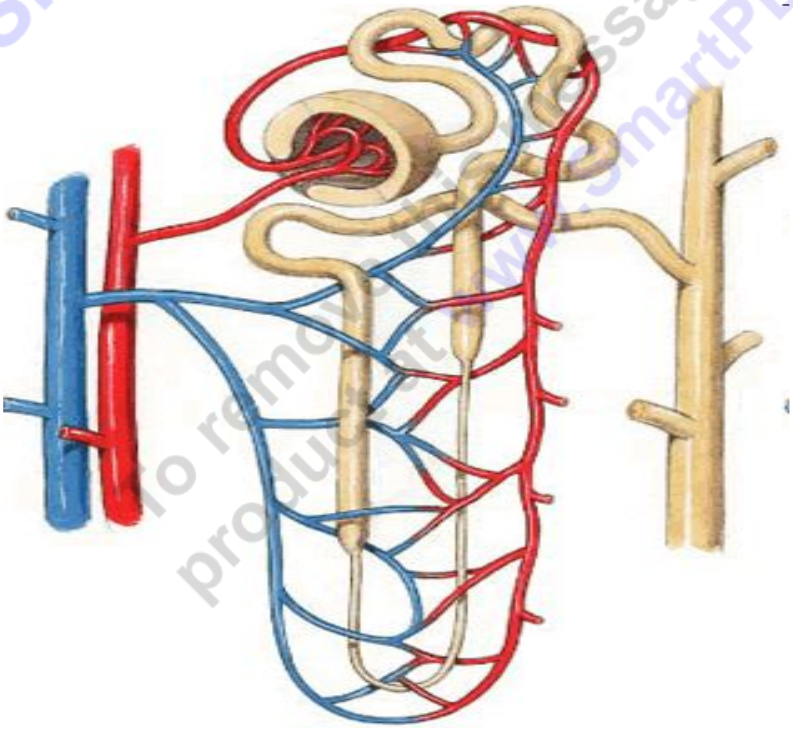
K _ _ _ _ _ _ I _ _ _ _ _ _ D _ _ _ _ _ _ N

◊ Name the organs below?

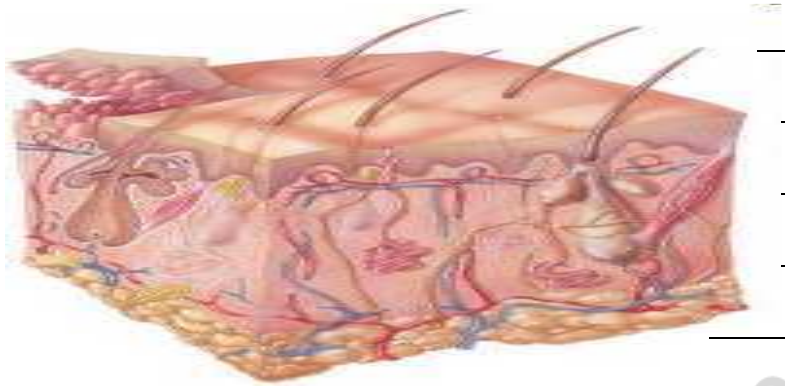


_____: These filter waste products from the blood to keep it clean and balanced.
_____: Tubes from the kidneys that deliver urine to the bladder.
_____: Stores urine until excretion.

◊ Please describe these structures found within the kidneys?



◊ The integumentary system (Skin) is the organ system that…



_____

_____

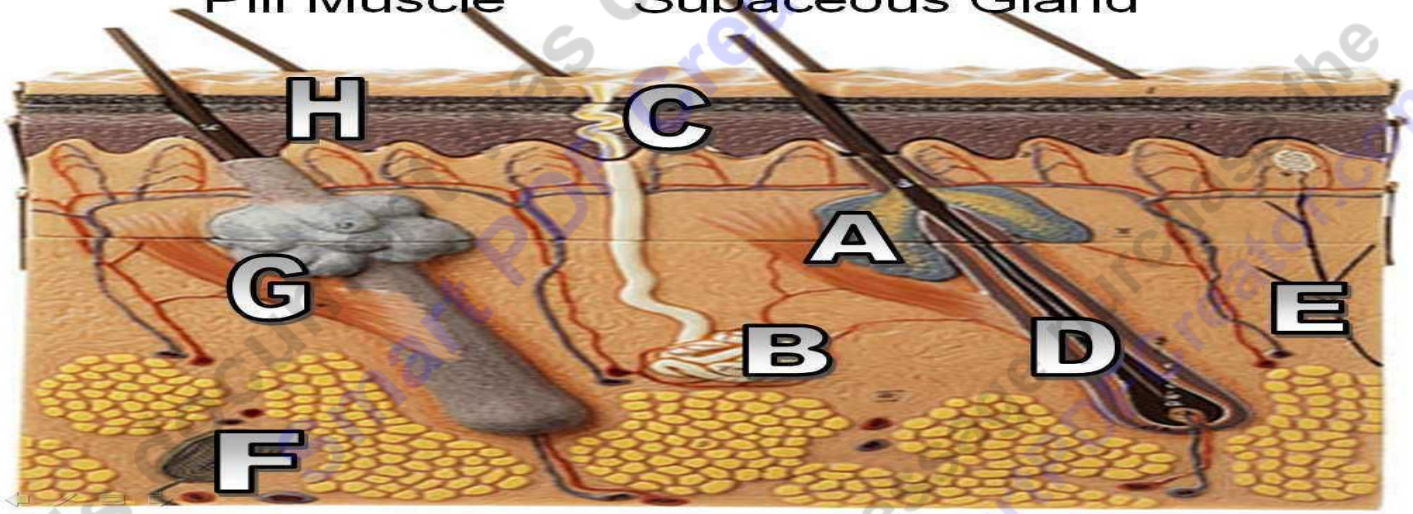
_____

_____

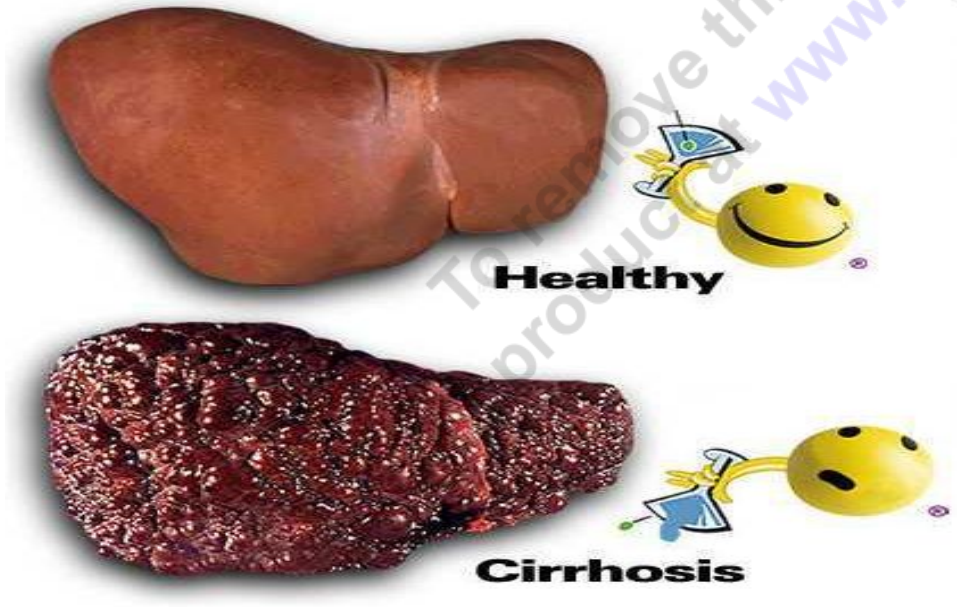
_____

◊ Please match the correct letter next to the term below

Sweat Gland Hair Follicle Dermis
Epidermis Sweat Pore Subcutaneous Layer
Pili Muscle Subaceous Gland



◊ What's this a picture of? What does this organ do for your body (Excretory), ◊ and why should you take care of it?

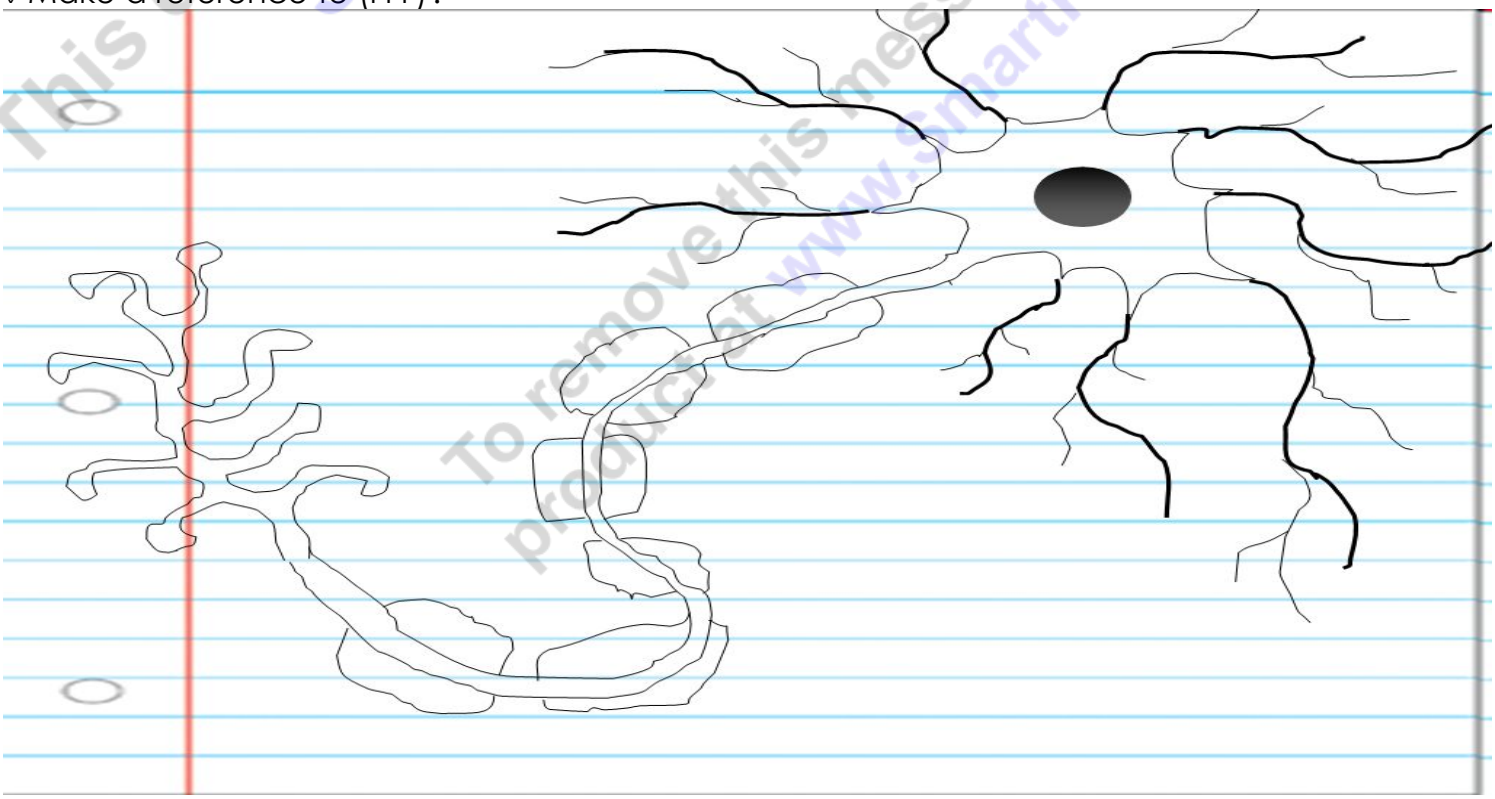


Part X: The Nervous System –

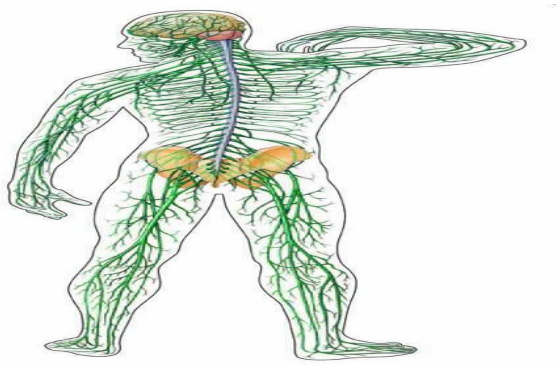
◊ What **body systems** are used to pick up a pencil and write down a few sentences in the space below? Fingers, Hand and arms is not what I'm looking for.

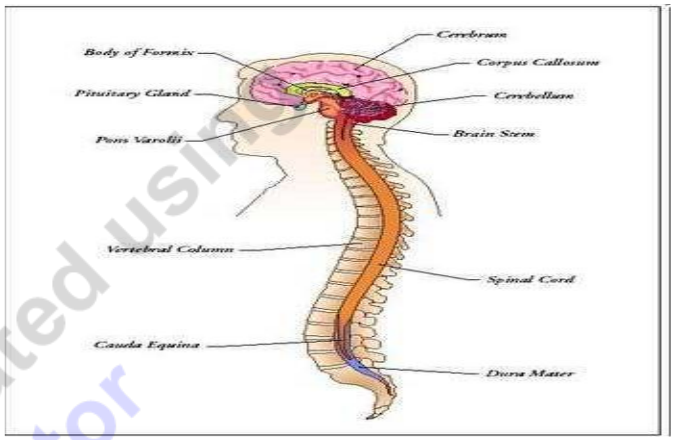
◊ Name a few important body functions that your nervous system controls on its own without you having to think about it much?	◊ What are the three types of neurons?

◊ Please label some of the parts of neuron below?
◊ Please describe electrochemical as it relates to this neuron?
◊ Make a reference to (FFF)?



◊ The nervous system can be divided into the central nervous system, and peripheral nervous system? Which one is which?

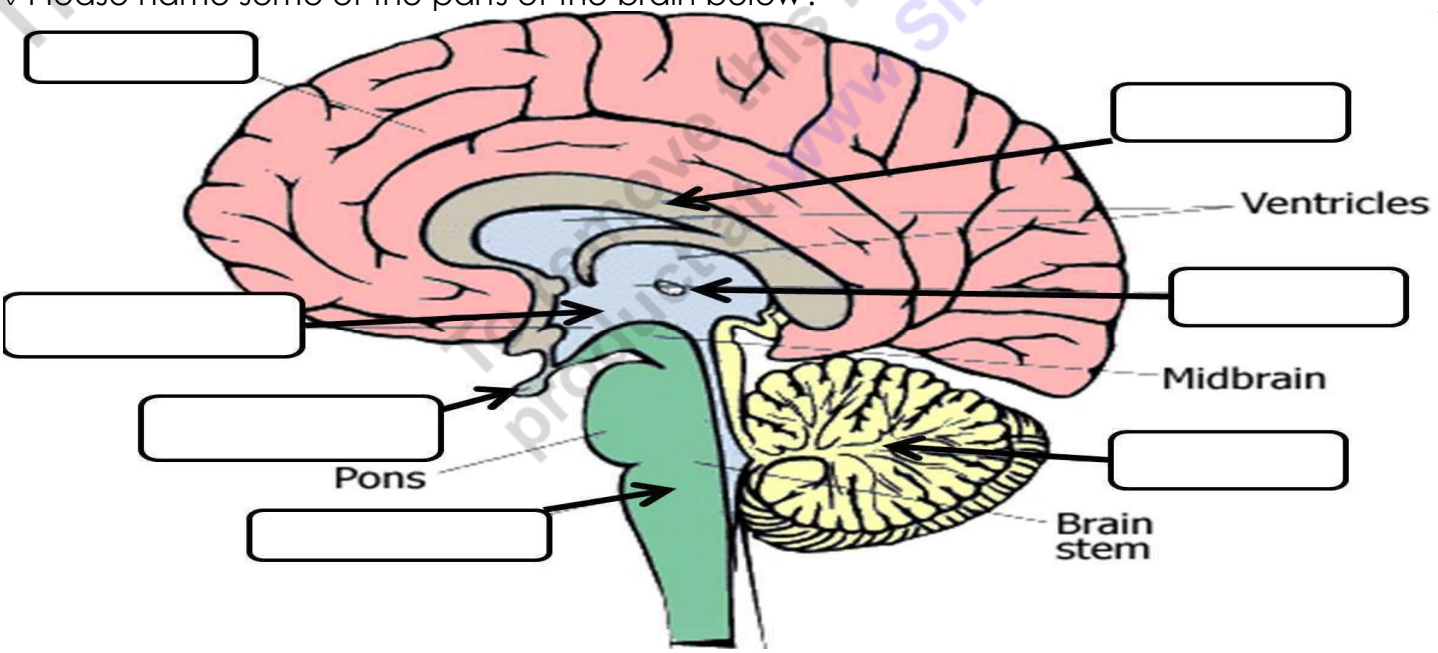




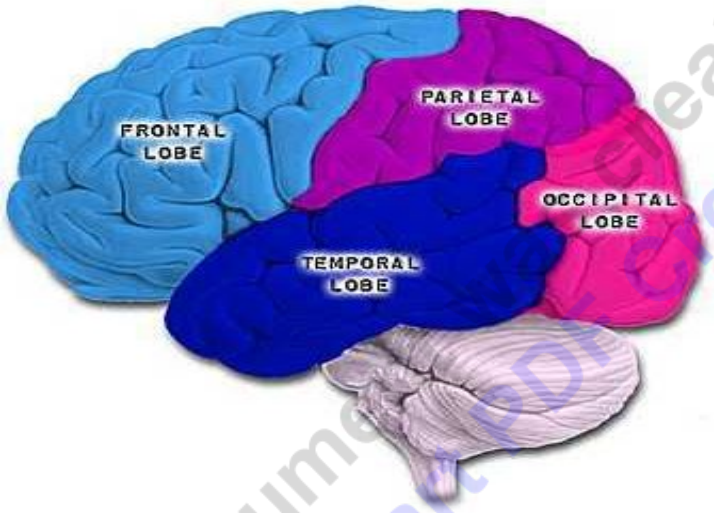
◊ Describe the layers of the skull as it relates to protecting and cushioning your brain? (FFF)

This type of neuron makes up a large part of your brain? _____

◊ Please name some of the parts of the brain below?



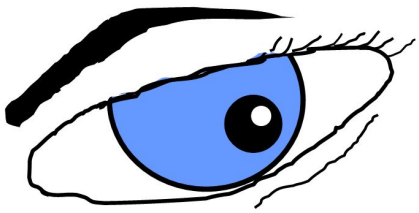
_____: Learning, Intelligence, emotions, personality, Judgment, and all voluntary activities of your body.
_____: Connects brain to spinal column and controls all involuntary activities.
_____: Thick band of nerve fibers that divides the cerebrum into left and right hemispheres.
_____: Controls motor movement, coordination, balance.
_____: Lobed mass of grey matter buried under the cerebral cortex. It is involved in sensory perception and regulation of motor functions.



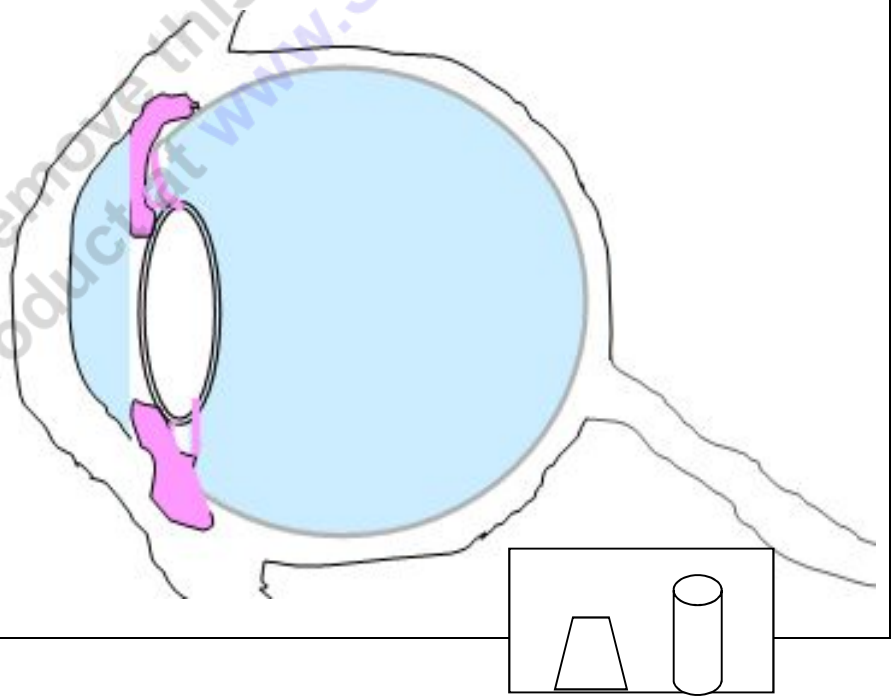
_____- associated with reasoning, planning, parts of speech, movement, emotions, and problem solving
_____- associated with movement, orientation, recognition, perception of stimuli
_____- associated with visual processing
_____- associated with perception and recognition of auditory stimuli, memory, and speech

◊ These type of organs respond to changes in light, sound, heat, pressure, and chemicals?_____

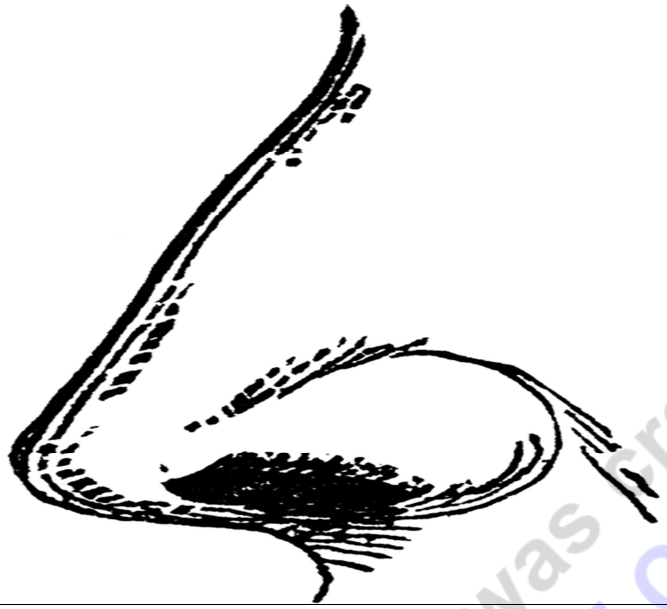
◊ Please label the outside parts of the eye?



◊ Please label and provide some insight about the function of parts of the eye?

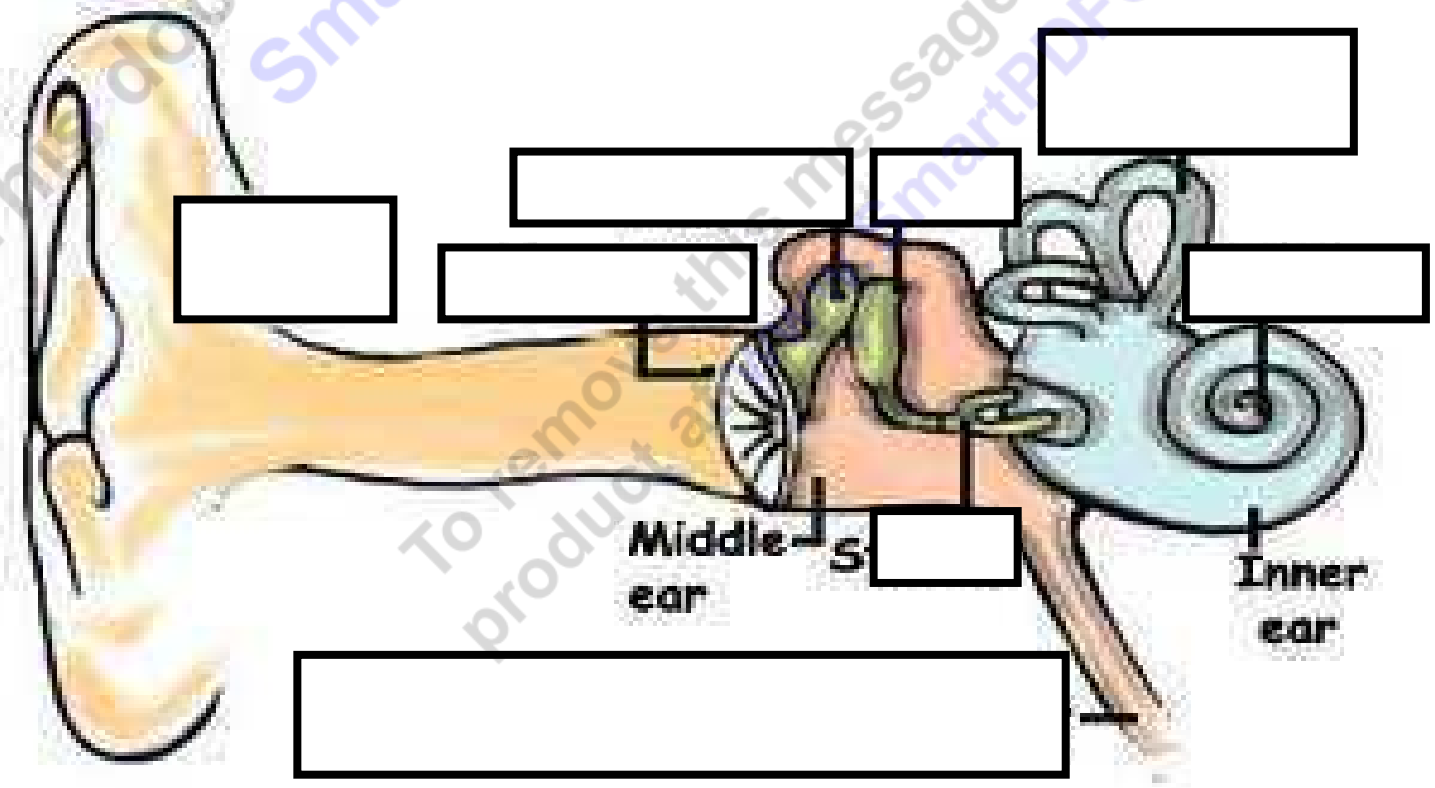


◊ Please sketch the inside of a nose below? ◊ Describe how smell occurs and is connected to taste>



◊ Fill in the blanks below? To hear you must….
Direct the sound _____ into the hearing part of the ____.
Sense the fluctuations in air _____.
Translate these fluctuations into an _____ signal that your brain can understand.

◊ Please label the parts of the ear below?



_____: A tiny bone that passes vibrations from the hammer to the stirrup.

_____: A spiral-shaped, fluid-filled inner ear structure; it is lined with cilia (tiny hairs) that move when vibrated and cause a nerve impulse to form.

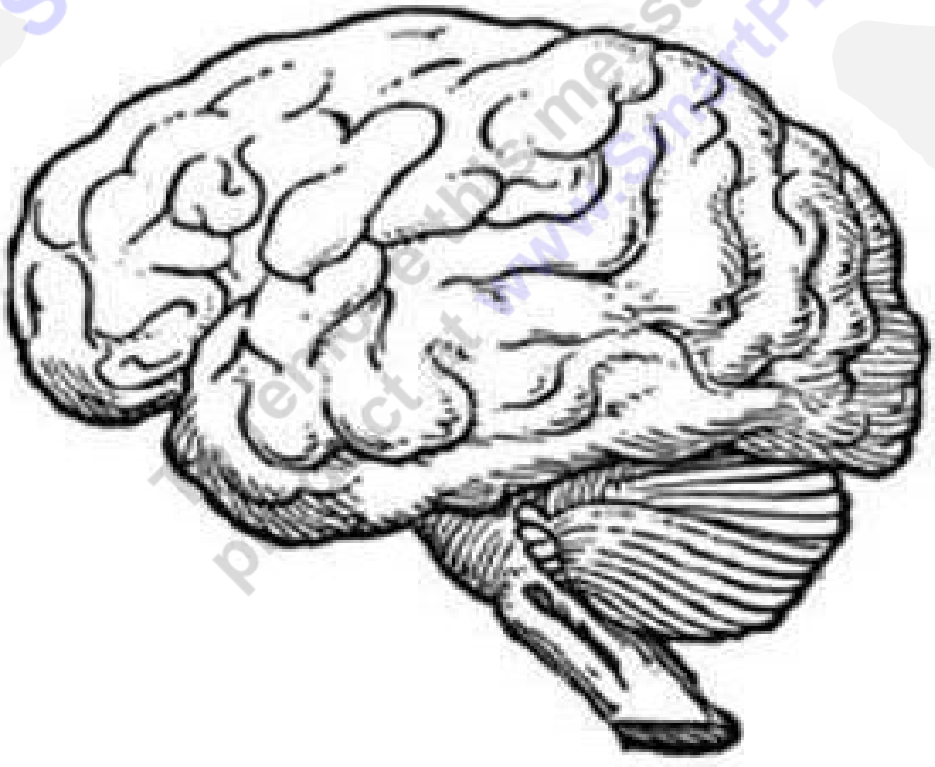
_____: (Also called the tympanic membrane) a thin membrane that vibrates when sound waves reach it.

_____: A tube that connects the middle ear to the back of the nose; it equalizes the pressure between the middle ear and the air outside.

_____**:** A tiny bone that passes vibrations from the eardrum to the anvil.

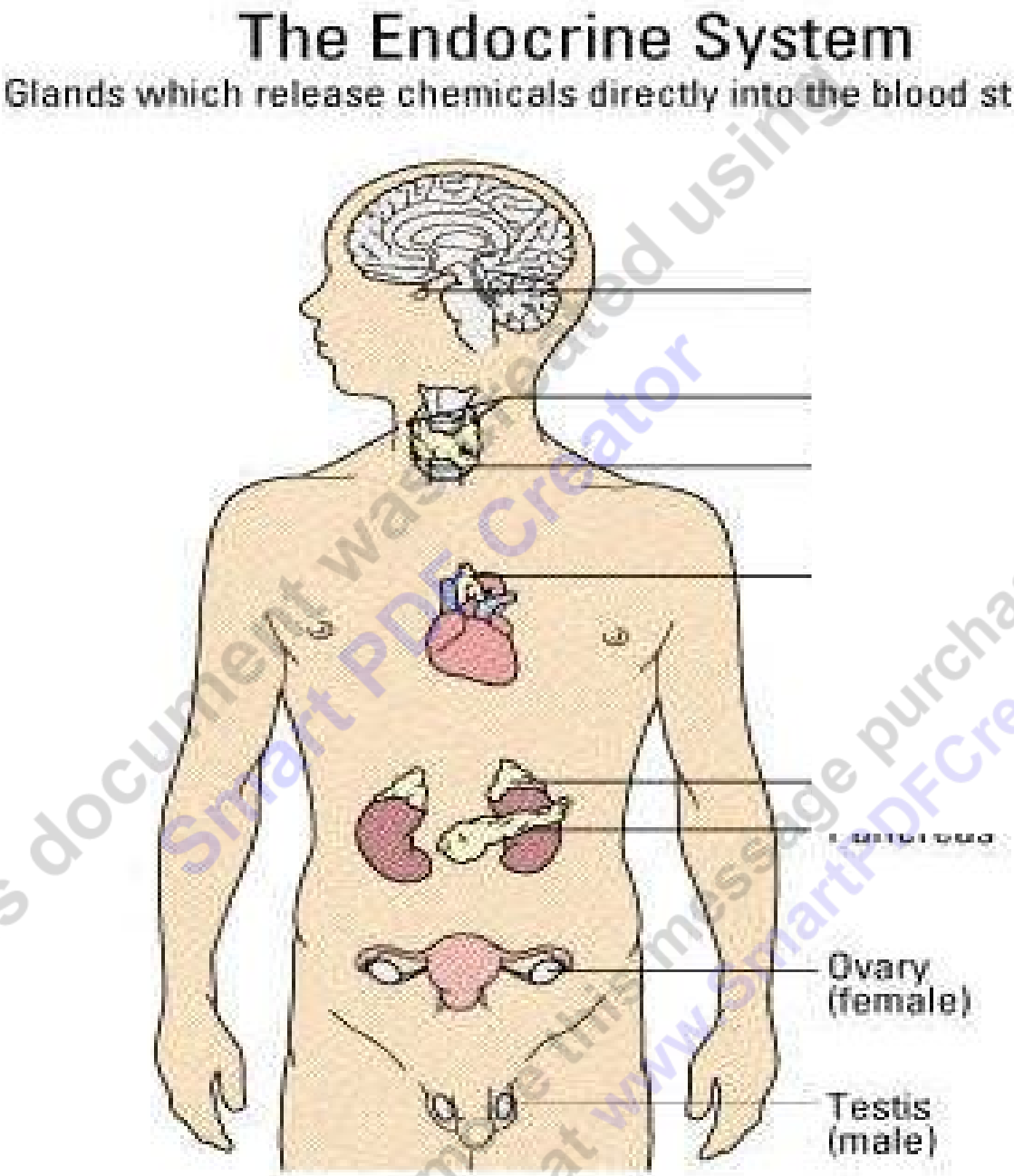
◊ Describe a few of the different senses that nerves in your skin can send to your brain?

◊ Please label where some of the functions of the brain are located on the brain below?



Part XI: The Endocrine System

◊ Please name the glands in the Endocrine System



_____: Controls how quickly the body uses energy, makes proteins, and controls how sensitive the body should be to other hormones.

_____: Communicates to hypothalamus (neurons). Size of pea. Controls blood pressure, growth, metabolism.

_____: Responsible for development of immune system.

_____: Produces adrenaline, part of emergency action plan, puts you on high alert.

_____: Produces insulin, which keeps sugar (glucose) in blood under control.

_____ and _____: Produce sex hormones.

◊What happens in your body when a hormone level is too high? _____

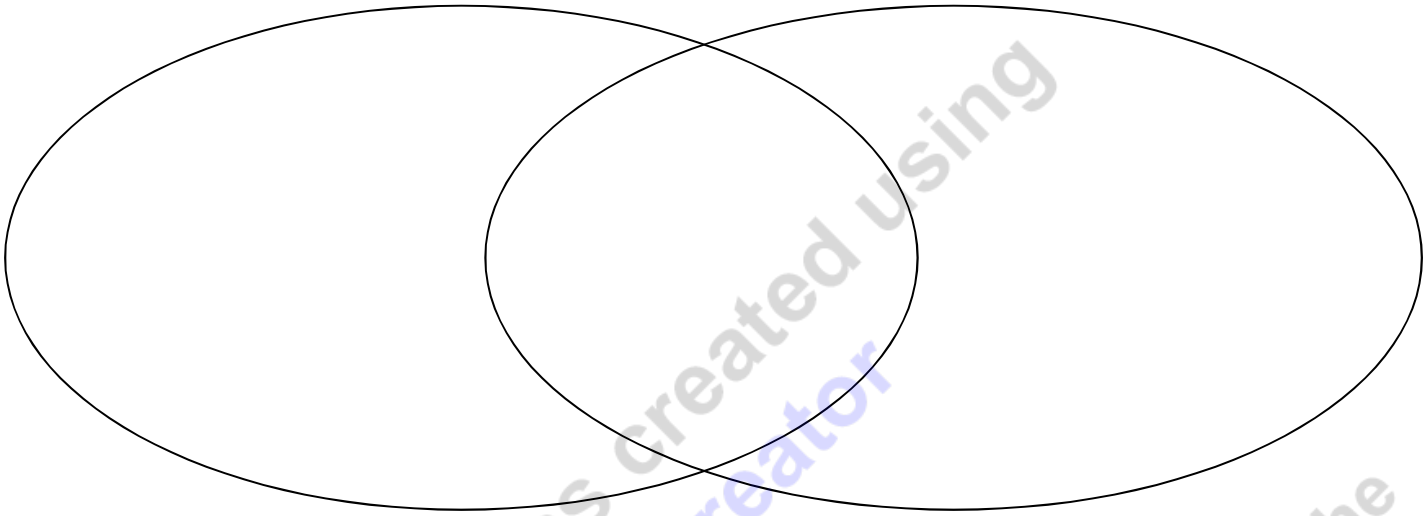
◊ Describe Puberty as it has to do with the Endocrine System: _____

_____: A chemical substance produced in the body that controls and regulates the activity of certain cells or organs.

◊ Can you name some of these activities?

◊ How are the nervous system, and endocrine system similar and different?

Different Similar Different



Nervous System Endocrine System

◊ Draw a picture of substances produced by exocrine glands

Part XII The Reproductive System

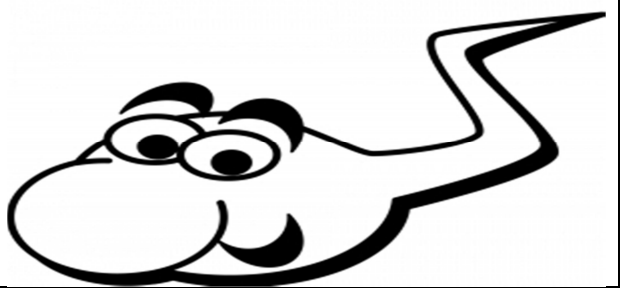
The Reproductive System: Produces, stores, nourishes and releases sex cells. ◊ What are these sex cells?

Male Sex Cell =_____,# of Chromosomes____

- Fertilization, # of chromosomes=_____

Female Sex Cell =_____,___ # of Chromosomes___

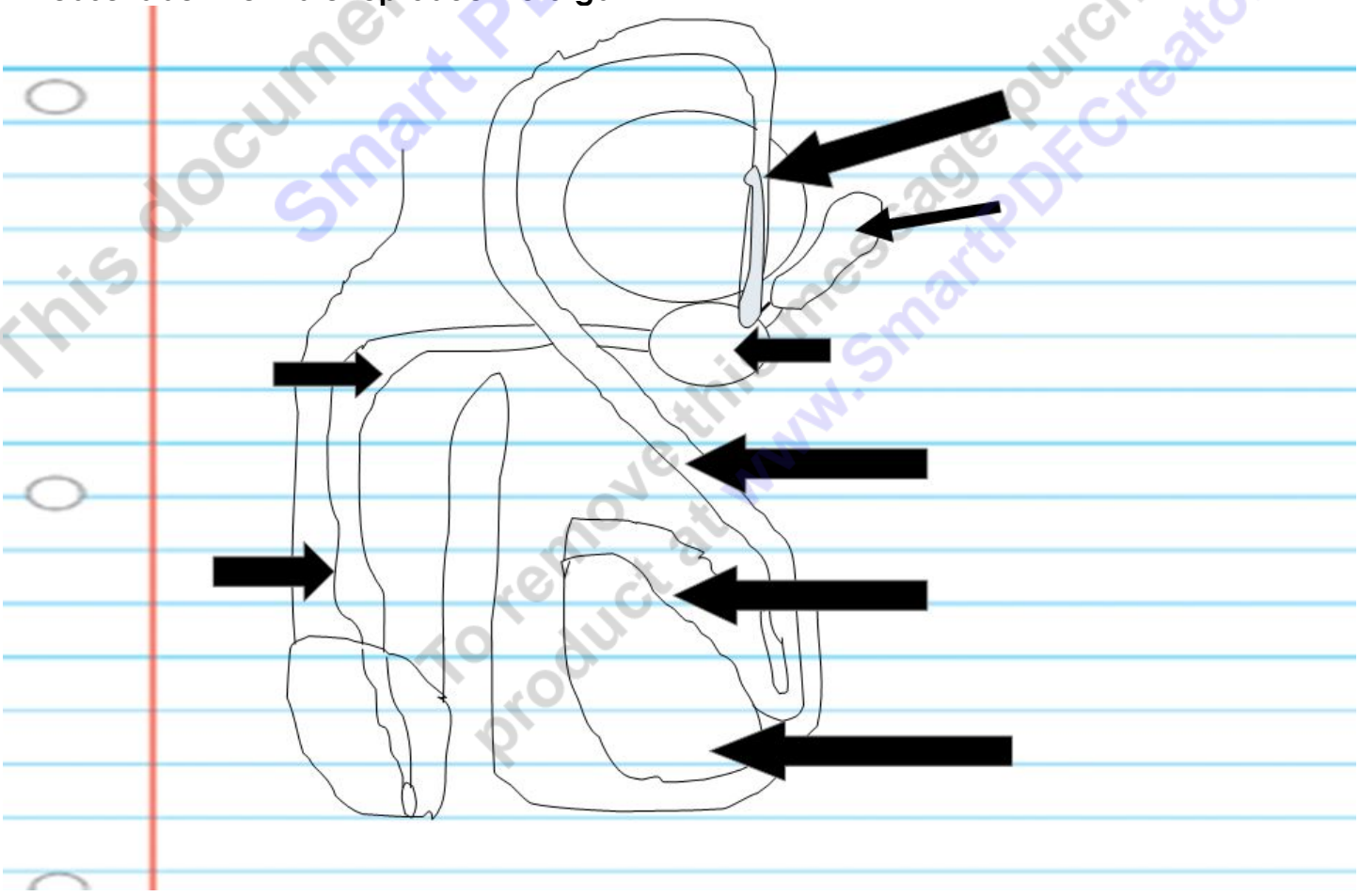
The picture below is not very accurate. ◊ Draw your best sperm below. ◊ Label the parts. ◊ How does it move



◊ If the picture below is a sperm cell, ◊ Draw the egg? ◊ Please label the parts?

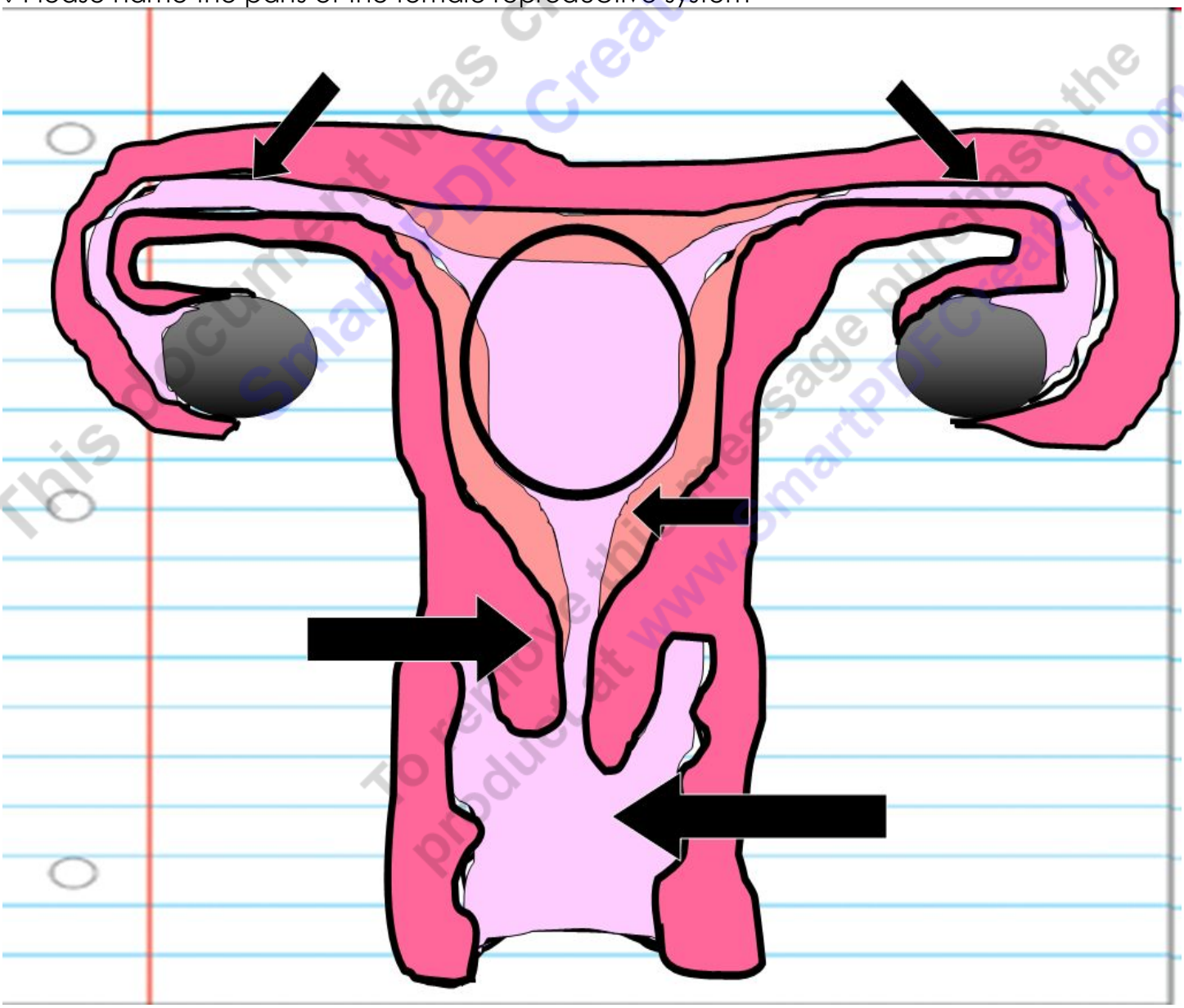
◊ How is a baby made? – Keep the artistic visuals PG-13 Please. (Fertilization)

◊ **Please label the male reproductive organ**



_____: This is a firm partly muscular chestnut sized gland in males at the neck of the urethra; produces a viscid secretion that is the fluid part of semen.
_____: A membranous sac in humans and other animals, in which urine is collected for excretion
_____: This is the tube connecting the testes with the urethra.
_____: Small tubular glands that are near the prostate. The primary function involves the production of fluid that makes up a significant percentage of semen.
_____: This is the duct for the transfer of sperm during copulation.
_____: This is either of the two oval organs that produce sperm in men.
_____: This is the duct by which urine is conveyed out of the body from the bladder.
_____: This is a highly convoluted duct behind the testis, along which sperm passes to the vas deferens.

◊ Please name the parts of the female reproductive system



_____: Located between the vagina and uterus, it serves as a passageway for menstrual blood on the way out, and semen on the way in. (During childbirth, the cervix slowly thins and opens, allowing the baby to move from the uterus and into the vaginal canal.)

_____: A female reproductive organ in which ova or eggs are produced.

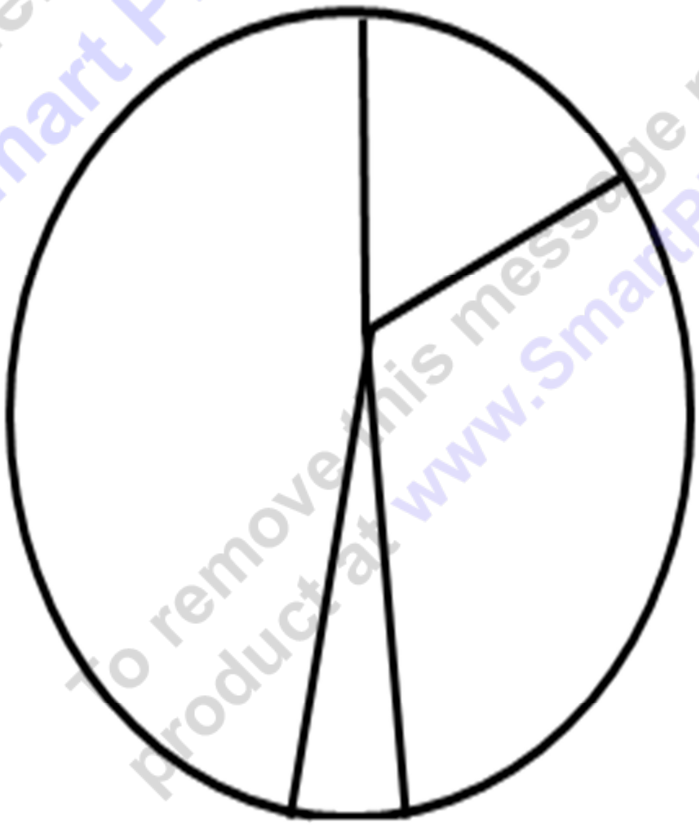
_____: This is a muscular organ, containing and nourishing the young prior to birth.

_____: These transport the egg from the ovary to the uterus (the womb).

_____: Muscular tube leading from the external genitals to the cervix of the uterus.

_____: This is the mucous membrane lining the uterus, which thickens during the menstrual cycle in preparation for possible implantation of an embryo.

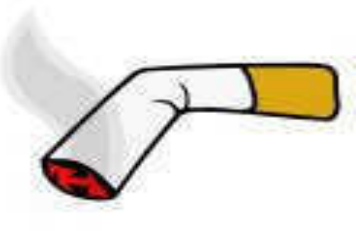
◊ In four steps, Please describe the female menstrual cycle. Boys, you can discuss this topic with your female peers.



The cell begins to divide…

1→2→4→8→ ☐ →32→ ☐ →1☐→2☐→51☐→1024 → Baby

◊ **Describe some dangers associated with smoking and drinking alcohol while pregnant?**



Part XIII Immune System

◊ What's the immune system? Why is it so important? _____

_____

_____

_____

_____

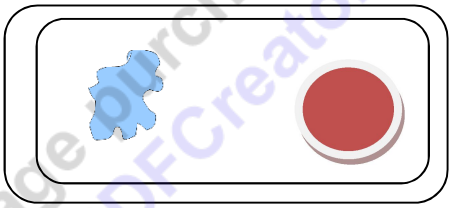
_____

◊ What are a few things that your immune system constantly battles?

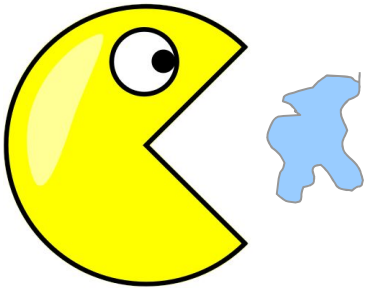
◊ What is a vaccine and how can you prevent transmission of a virus?

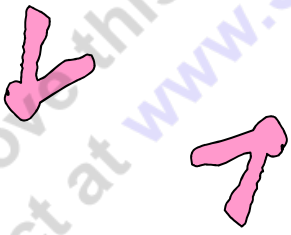
◊ Please use the space below and the pictures to describe the Immune System. Focus on the 1st, 2nd, and 3rd lines of defense. This is supposed to be abstract.

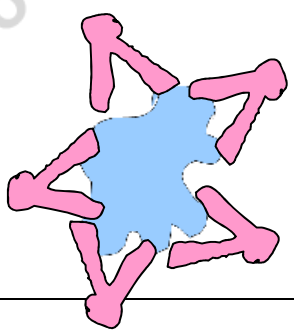
Skin

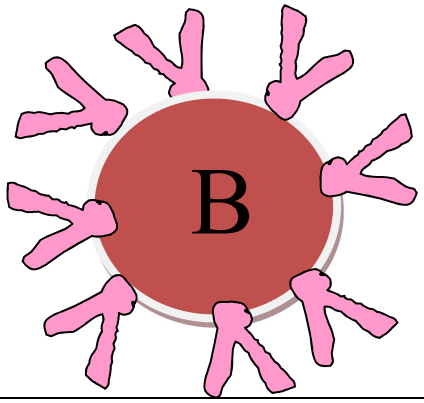


T

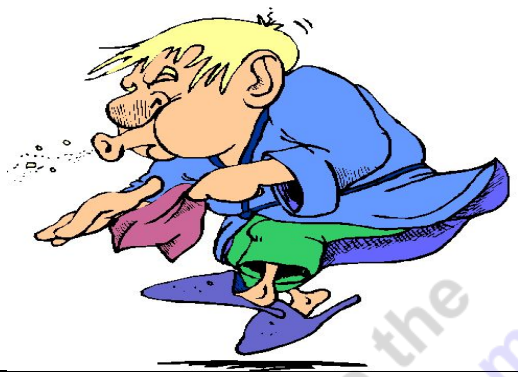




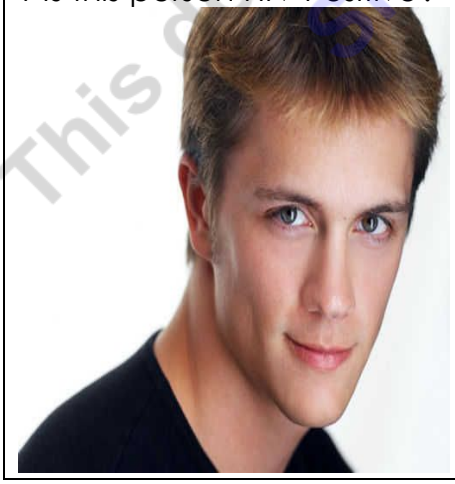




Describe symptoms of a sickness such as the flu, and the reasons for that symptom based on your immune system response.
Why do you…
-Get the aches and pains.
-Get a fever.
-Get a headache.
-Cough
-have a sore throat



◊ Is this person HIV Positive?



◊ What are some ways you can contract HIV?
-
-
-
-
-
-

◊ What makes HIV such difficult virus for your immune system to fight?_____

A I D S

◊Why is AIDS deadly?_____

_____

_____

_____

_____

_____

_____

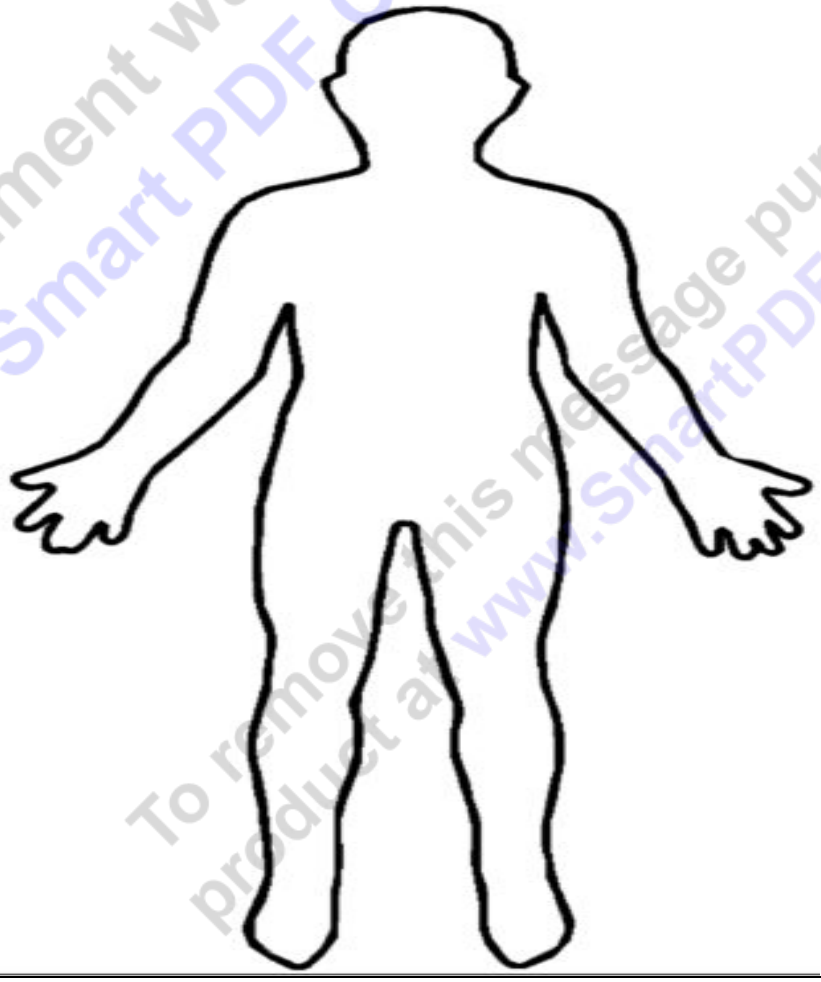
◊ Respond to the angry student in the margin on the right.

Choose one STD to give him after his fling and describe it below.

◊ What are some ways to prevent yourself from contracting HIV and other STD's?
◊ What is your plan for your future?

* Bonus Question if done really well (I've given up to 10 points in the past)

Please create the insides of a human to the best of your ability. Skip the skeletal system for the whole body. – Maybe put the skeletal system in one arm and leg, and the muscular system in one arm and leg. Try and label all of the organs. Color code organ systems if you can.



Please lightly color the pictures and provide text / label in the white space near the pictures on the next page. Nice Work! Put in Binder!