

HUMAN SCIENCE Lesson Plan

Day 1: Waste removal



Outcomes for Today

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- A. Students know how the complementary activity of major body systems provides cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide.

PREPARE

1. Background Background knowledge to engage the content

How does your body get rid of toxic waste found in the body?

The human excretory system disposes of toxins and waste products from the cells in the body. These toxins travel through the bloodstream and into the main organ of the excretory system, the kidney. To excrete means to discharge or expel waste from the tissues, organs and body. This waste is expelled in liquid form, unlike the solid waste expelled from the digestive system.

The kidneys receive blood that contains a mixture of proteins, toxins and minerals through one artery, called the renal artery, which is connected to the aorta, the largest artery in the body. During filtration, the kidneys measure the amounts of vitamins and minerals needed in the body, sending the needed quantities out through the renal vein and into the vena cava, the largest vein in the body. The waste material collects in tubules connected to the nephrons and moves to a collecting duct, which connects to the renal pelvis, a collection chamber for urine.

www.ehow.com

2. Wordwall vocabulary words to teach and add to the Word Wall.

Metabolism: The sum of the physical and chemical processes in an organism by which its material substance is produced, maintained, and destroyed, and by which energy is made available

Excretory system: The systems that excrete wastes from the body

Kidneys: Either of a pair of bean-shaped organs in the back part of the abdominal cavity that form and excrete urine, regulate fluid and electrolyte balance, and act as endocrine glands.

Homeostasis:	The regulation of steady, life maintaining conditions inside an organism or cell, despite changes in its environment
Urine:	Waste liquid collected by the kidneys; contains water, salts, and other wastes
Ureter:	Tubes that lead from each kidney to the bladder
Bladder:	The bag shaped, elastic, muscular organ that stores urine until it leaves the body
Liver:	A large, reddish-brown, glandular organ located in the upper right side of the abdominal cavity, divided by fissures into five lobes and functioning in the secretion of bile and various metabolic processes
Epidermis:	The surface or outer layer of your skin
Dermis:	The inner layer of the skin; it contains many blood vessels, nerves and sweat and oil glands.

READ

3. View

Article: Human Excretory System
 Go to: http://www.ehow.com/about_5401765_human-excretory-system.html
 Search: Human Excretory System
 Locate: Human Excretory System
 Read: As a class

Article: Human Excretory System
 Go to: www.becomehealthynow.com
 Search: excretory system and toxic waste
 Locate: The Respiratory System-Introduction
 Read: As a class

Video:
 Go to: www.discoveryeducation.com (**Subscription Based Website**)
 Search: circulatory system and toxic waste
 Locate: Human Body Systems: The Excretory System (approximate run time 17:00)

RESPOND

4. Visual Process.

Sketch:

- Draw and label each of the organs located in the excretory system?
- Under each organ describe the function

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

The Human Body Drawing:

Using the words below, draw the shell of a human body and label its parts. Please use color and try to be as specific as possible

- Kidneys, lungs, bladder, epidermis, Ureter, Urethra, Adrenal Glands

6. Discussion Ask discussion questions that engage at many levels

Key Questions

1. What are the four organs of the excretory system?
2. Why is the excretory system important to the human body?
3. How do kidneys clean the blood?
4. How is perspiration important to regulating body temperature?
5. What does the term homeostasis mean?
6. What role do the lungs have in the excretory system?
7. What job do the lungs perform in eliminating wastes from the body?

EXTEND

7. Write, Draw or Speak.

Science Journal:

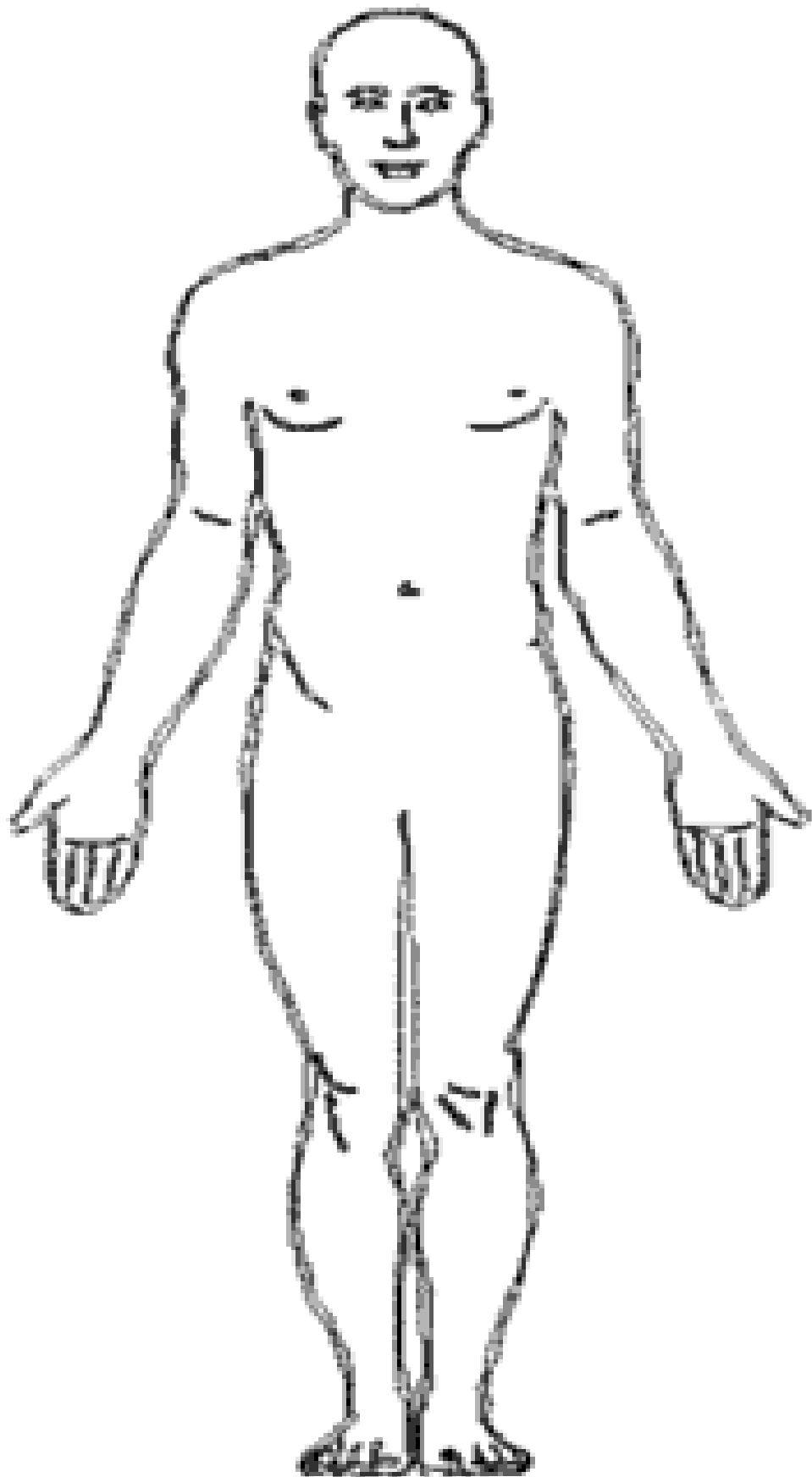
Write a paragraph explaining the function and importance of the excretory system. Use examples from the video to help with your reasoning.

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	



HUMAN SCIENCE Lesson Plan

Day 1: How do we know our next move?



Outcomes for Today

- 9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
 - B. Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment
 - E. Students know the roles of sensory neurons, interneurons, and motor neurons in sensation, thought and response.

PREPARE

1. Background Background knowledge to engage the content

What is the role of our Nervous System?

The Nervous System monitors and maintains all body functions, and at the same time, interprets information about our surroundings supplied by the senses... The nervous system is divided into two main systems, the central nervous system and the peripheral nervous system. The spinal cord and the brain make up the central nervous system. Its main job is to get the information from the body and send out instructions. The peripheral nervous system is made up of all of the nerves and the wiring. This system sends the messages from the brain to the rest of the body.

2. Wordwall vocabulary words to teach and add to the Word Wall.

Central nervous system:	the brain and spinal cord
Peripheral nervous system:	nerves that branch out from the brain and spinal cord and connect to sense and internal organs
Autonomic nervous system:	automatic actions such as breathing.
Axon:	part of neuron which carries impulse away from cell body
Spinal Cord:	Extension of the brain stem, made up of bundles of neurons that carry impulses from all parts of the body to the brain and from the brain to all parts of your

body.

- Neurons:** Nerve cell that carries impulses throughout the body
- Synapse:** To get from one neuron to the next, an impulse moves across a small space
- Sensory neuron:** collects signals from receptor cells and sends them to the brain or spinal cord
- Interneuron:** connects sensory neurons and motor neurons
- Motor neuron:** messages from the brain and spinal cord go to the motor neurons which are connected to muscle cells
- Reflex action:** bypasses normal paths to brain and goes to the spinal cord, where a decision is immediately made and a signal goes to the motor neuron to cause a quick reaction

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Nervous system

Locate: Human Body Systems: The Nervous System (approximate run time 27:00)

RESPOND

4. Visual Process.

Chart: Using the information from the video fill out the functions for each part of the nervous system.

Central Nervous System	Peripheral Nervous System

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Chart: Using the chart below fill out the function of each of the parts of the Nervous system

Parts of the nervous system	Function	Importance
Neurons		
Brain		
Spinal Cord		

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- Describe the principles of the central and peripheral nervous system?
- Name and describe the parts of a neuron.
- Why is the surface of the brain covered with folds and grooves?
- What are the 5 senses that supply the brain with information?

EXTEND

7. Write, Draw or Speak.

Art project:

Using construction paper, draw and label the parts of the nervous system. You can work in groups of two and three.

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

HUMAN SCIENCE Lesson Plan

Day 2: How do we know our next move?



Outcomes for Today

- 9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- B. Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment
- E. Students know the roles of sensory neurons, interneurons, and motor neurons in sensation, thought and response.

PREPARE

1. Background Background knowledge to engage the content

How do we know our next move?

So at any given moment, many complex things are occurring that are all controlled by a single system called the nervous system. Whether we are juggling three tennis balls or just sitting and reading a good book, the nervous system is in control. It controls and monitors all body activities. It determines how to move and coordinate our muscles to keep the balls moving. It signals the eyes to scan the page and to adjust to allow the proper amount of light through the iris. The brain interprets the words and breaks them into ideas. At the same time, the brain is controlling the heartbeat, breathing rate, and receiving information about conditions around the body. The brain is the most important part of the nervous system.

2. Wordwall vocabulary words to teach and add to the Word Wall.

Brain:	organ of thought and feeling, the controlling center of the nervous system in vertebrates, connected to the spinal cord and enclosed in the cranium.
Cerebrum:	The part of the brain that interprets impulses from the senses, stores memory, and controls the work of voluntary muscles.
Cerebellum:	Is behind and under the cerebrum. It coordinates voluntary muscles movements and maintains balance and muscle tone.
Spinal Cord:	Extension of the brain stem, made up of bundles of neurons that carry impulses from all parts of the body to the brain and from the brain to all parts of your body.
Neurons:	Nerve cell that carries impulses throughout the body
Synapse:	To get from one neuron to the next, an impulse moves across a small space

READ

3. View

Video:

Go to: www.discoveryeducation.com **(Subscription Based Website)**

Search: Nervous system

Locate: Biologix: The Central Nervous System and Brain: A Segment of: How the Central Nervous System Regulates Responses to Stimuli: (approximate run time 11:06)

Video:

Go to: www.discoveryeducation.com **(Subscription Based Website)**

Search: Nervous system

Locate: Biologix: The Peripheral Nervous System (approximate run time 29:07)

RESPOND

4. Visual Process.

Part I:

Note taking tips: (Cornell Notes)

- Write important details from the video and segments in the second column
- After you write your notes, return to the first column and add phrases, words and questions related to the details. A sketch or picture may also be helpful.

Title:

Date:

Column 1: Phrases, words, questions or a sketch related to the details in column 2.	Column 2: Important Details

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Journal summary:

- Summarize the video in the space below. Use your own words.

Venn diagram:

Compare and contrast the Central and Peripheral Nervous System

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- How is our brain like a musical mixing board?
- What are the parts of the nervous system?
- What are the functions of the left and right hemisphere?
- Describe the principles structures of the brain.
- Describe sensory, motor, and mixed neurons.
- Why is the brain compared to plastic? What is that a good thing?

EXTEND

7. Write, Draw or Speak.

With a partner explain what happens to the brain and when a person loses one of its senses or injures themselves by way of a small cut on the finger. Use your notes from the last two days to help explain.

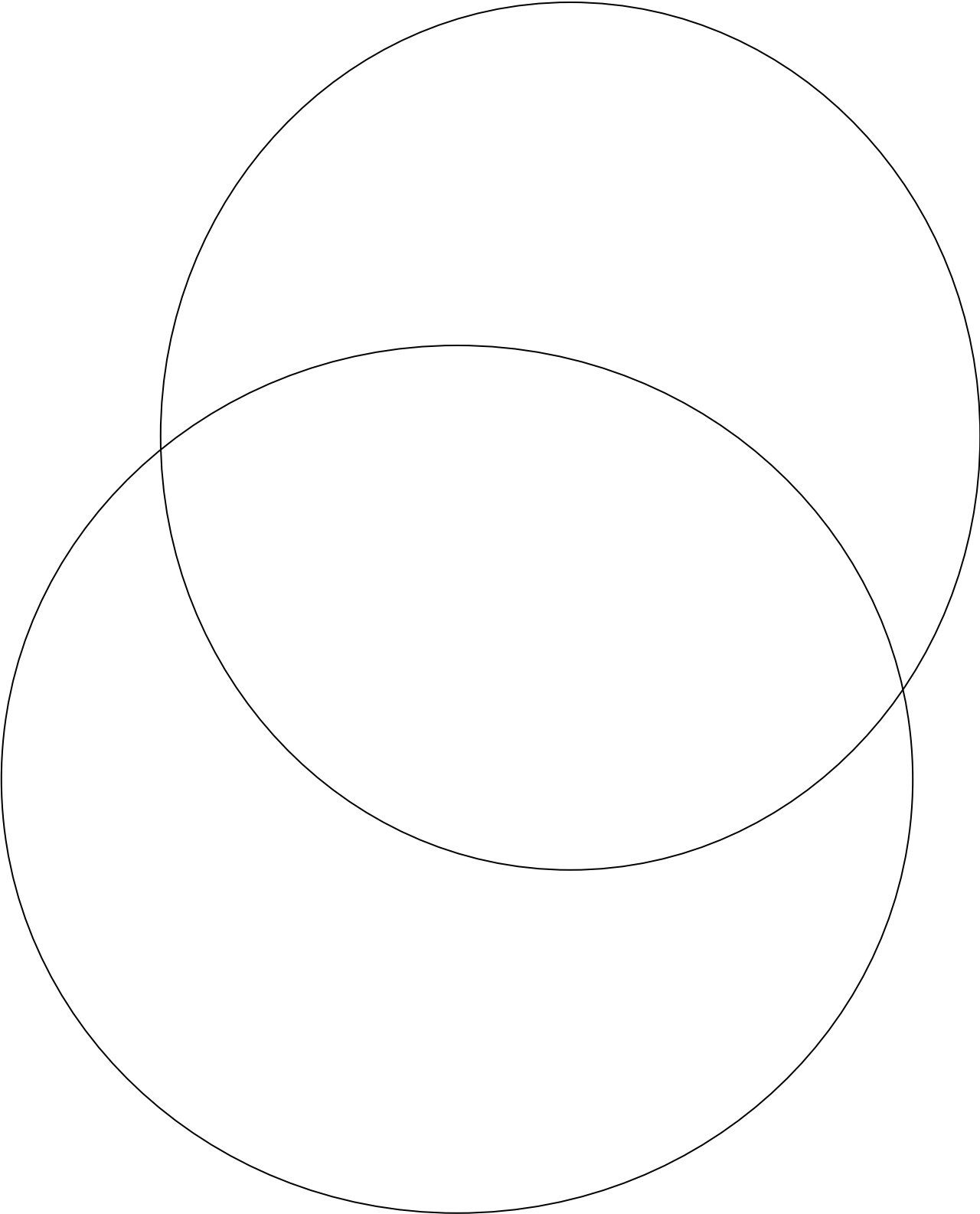
8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

6g6 Venn Diagram Chart



HUMAN SCIENCE Lesson Plan

Day 1: The “skinny” hormone. What causes obesity?



Outcomes for Today

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- C. Students know how the feedback loops in the nervous and endocrine systems regular conditions in the body.
- I. Students know how hormones (including digestive, reproductive, osmoregulatory) provide internal feedback mechanisms for homeostasis at the cellular level and in whole organisms.

PREPARE

1. Background Background knowledge to engage the content

What causes obesity?

Some argue that obesity is due to poor eating habits and lack of exercise. Some say obesity is something that is inherited through the family genes. For instance, if your mom or dad is obese then the chances of the child being obese is high. Research and studies have shown that it is also what it is in our body that causes us to gain weight. Insulin is just one of the hormones that affect our hunger mechanism and fat storage. Leptin is another. It was discovered in 1994 by researchers who were studying a genetic line of mice that continually consumed food until they became morbidly obese.

Leptin is a hormone that is involved in the long term regulation of body weight. It is derived from the Greek word for "thin." It is produced primarily by fat cells. Leptin is carried by the blood to the brain, where it normally acts to inhibit the appetite center. Leptin sends a signal to your brain that you are full which shuts down your hunger mechanism. It also signals the fat inside your cells to break down into a usable form for energy.

2. Wordwall vocabulary words to teach and add to the Word Wall.

- Leptin:** A protein hormone with important effects in regulating body weight, metabolism and reproductive function
- Hypothalamus:** A neural control center at the base of the brain, concerned with hunger, thirst, satiety, and other autonomic functions
- Metabolism:** All of the chemical activities of an organism that enable it to live, grow, and reproduce

Hormone: Chemicals secreted from endocrine glands that control specific body activities

READ

3. View

Article:

Go to: <http://www.scq.ubc.ca/leptin-a-piece-of-the-obesity-pie/>

Search: Leptin and feedback loop

Locate: Leptin: A Piece of the Obesity Pie

Read: As a class

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: feedback loops

Locate: Biologix: Electrochemical Control Systems (approximate run time 29:07)

RESPOND

4. Visual Process.

Diagram:

You will create a diagram illustrating how leptin is used in relation to weight gain and weight lost.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Advertisement poster:

You have just been asked to promote the new diet pill LEPTIN. With a partner create an advertisement poster and speech to explain why Leptin should be the new diet pill of choice. What are the reasons a person should take the pill besides the fact that they may be obese.

- Use reasons from today's article and video to support your reasons

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- What is the relation between leptin and obesity?
- Explain feedback loop and negative feedback loop?

EXTEND

7. Write, Draw or Speak.

Have a class discussion to identify the problem and causes of obesity in America.

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

HUMAN SCIENCE Lesson Plan

Day 1: The affects and effects of Drug Abuse on the body



Outcomes for Today

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- D. Students know the functions of the nervous system and the role of neurons in transmitting electro chemical impulses.

PREPARE

1. Background Background knowledge to engage the content

How does the effect of drugs and alcohol affect the body?

The brain controls everything a person does, think, remembers, learn, and feels. Drugs and alcohol can change the way the brain sends messages to and from other parts of the body. They make those changes on or near nerve cells by blocking, slowing down, speeding up, or chemical changing the message carriers, or transmitters. Drug abuse can be seriously damaging to the brain. The brain's neurological communication can become permanently rewired, or the brain can stop producing essential chemicals needed for normal functioning. Drugs also affect the heart and lungs, including irregular heartbeats, high blood pressure and respiratory problems.

2. Wordwall vocabulary words to teach and add to the Word Wall.

Cell body:	The main part of a neuron
Dendrite:	The short threads coming out of cell bodies
Axon:	The single long thread that is part of each neuron
Synapse:	The tiny space between the axon of one neuron and the dendrite of another
Transmitter:	Chemicals triggered when an electrical signal reaches the end of an axon
Depressant:	Drugs that slow down signals in the nervous system
Neurons:	The building blocks of nerves, also called nerve cells

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Drug Abuse

Locate: Drug Danger: In the Brain (approximate run time 12:00)

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Drug Abuse

Locate: Drug Danger: In the Body (approximate run time 12:00)

RESPOND

4. Visual Process.

Draw and label the major parts of the nerve cell.

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Chart:

Show the class a chart of the various organs of the body and discuss the function of the heart (as well as veins and arteries), the lungs, the liver, the brain, and the stomach. Make certain that your students realize that each organ is vital to good health. Ask if drugs can affect these organs.

Organ Part	How drugs and alcohol affect each organ
Brain	
Liver	
Lungs	
Stomach	
Heart	

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- Explain, in basic terms, the mechanism by which messages are sent in and out of the brain.
- Discuss the effects of some drugs on the pleasure center of the brain.
- Describe their effects of alcohol on the major organs of the body.

EXTEND

7. Write, Draw or Speak.

With a partner, discuss reasons why a person should not use drugs and alcohol. Why do you think alcohol is not illegal?

8. Close

Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

HUMAN SCIENCE Lesson Plan

Day 2: The affects and effects of Drug Abuse on the body



Outcomes for Today

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- D. Students know the functions of the nervous system and the role of neurons in transmitting electro chemical impulses.

PREPARE

1. Background Background knowledge to engage the content

How does the effect of drugs and alcohol affect the nervous system?

The nervous system is the command control of our body. The nervous system consists of the brain, spinal cord, nerve fibers and specialized nerve cells throughout the body It receives and sends out messages throughout the body. It also communicates, regulates, coordinates, detects and responds. The functional cell type in our nervous system is the neuron. When alcohol enters our body it slows down the transmission of messages leading to a variety of behavioral changes.

The smallest component of the nervous system are axons, which have a head and a tail. Millions of these line up head to tail and form the nerve endings in your body. In the space between each head and tail (called a synapse) chemicals can flow. When something happens (you prick yourself), an axon signals chemicals to flow between the synapse, activate the next axon, and the next until the message reaches your brain and you react. Different drugs affect the ability for these chemicals to flow across the synapse (speeding up, slowing down, or not at all) or wipe out axons all together leaving gaps in the message chain.

www.answers.com

2. Wordwall vocabulary words to teach and add to the Word Wall.

Please review the words from day one:

Cell body: The main part of a neuron

Dendrite: The short threads coming out of cell bodies

Axon: The single long thread that is part of each neuron

Synapse: The tiny space between the axon of one neuron and the dendrite

of another

Transmitter: Chemicals triggered when an electrical signal reaches the end of an axon

Depressant: Drugs that slow down signals in the nervous system

Neurons: The building blocks of nerves, also called nerve cells

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Neurons in the Nervous System

Locate: In Control: Our Brain and Nervous System (approximate run time 25:00)

RESPOND

4. Visual Process.

Draw and label the major parts of the nerve cell.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Divide your class into committees, and have each committee give an oral presentation on drugs and their effects on the various parts of the body

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- Name some parts of a nerve cell, or neuron.
- Identify parts of the brain and nervous system and tell how each contributes to our thoughts, emotions, reactions, movements, or body functions.
- What kind of drugs affect the brain and nervous system and how?
- If our nervous system is a communicating system, how does it send and receive messages throughout our body?

EXTEND

7. Write, Draw or Speak.

Quiz

Directions: Select the answer from the four choices given. Circle the correct letter.

1. The human body is quite remarkable and there are specific body systems that make it function so well. The _____ and nervous system controls our thoughts, feelings and all the ways we respond to the world around us. It is a complex body system, but we can understand it.

A. head B. heart C. brain D. skull

2. The main organ of the nervous system is the brain. The next important component is the _____ which extends from the brain halfway down the back. This part of the system connects the millions of nerves throughout the body to the brain so that we can send and receive messages.

A. spinal cord B. axon C. dendrite D. neuron

3. There are specific types of neurons found throughout the body. One type is called a _____ and its job is to transmit messages from the brain to the muscles. When the brain interprets a signal it relays a message that causes the neurons to act.

A. peripheral neuron B. axon C. sensory neuron D. motor neuron

4 Our brains and bodies can be affected by chemicals in foods as well as drugs. Substances such as alcohol act as a _____ on the brain. When we take this drug we slow down in terms of our reflexes and ability to think. This substance is harmful to other body parts, too.

A. stimulant B. transmitter C. depressant D. relaxer

5. There are other drugs that affect the brain and body in other ways. Substances like caffeine in soda and coffee act as _____ on the brain. There are more harmful drugs like cocaine and crack that can be very destructive to the brain and body in general. In fact, death can result from using these.

A. depressants B. stimulants C. sedatives D. relaxers

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
<i>Habit I can build</i>	

HUMAN SCIENCE Lesson Plan

Day 1: How do we digest the food we eat?



Outcomes for Today

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- F. Students know the individual functions and sites of secretion of digestion enzymes (amylases, proteases, nucleases, lipases), stomach acid and bile salts.

PREPARE

1. Background Background knowledge to engage the content

What happens to food after it has entered our mouth?

The digestive system is made up of the digestive tract—a series of hollow organs joined in a long, twisting tube from the mouth to the anus—and other organs that help the body break down and absorb food.

Organs that make up the digestive tract are the mouth, esophagus, stomach, small intestine, large intestine—also called the colon—rectum, and anus. Inside these hollow organs is a lining called the mucosa. In the mouth, stomach, and small intestine, the mucosa contains tiny glands that produce juices to help digest food. The digestive tract also contains a layer of smooth muscle that helps break down food and move it along the tract.

Two “solid” digestive organs, the liver and the pancreas, produce digestive juices that reach the intestine through small tubes called ducts. The gallbladder stores the liver’s digestive juices until they are needed in the intestine. Parts of the nervous and circulatory systems also play major roles in the digestive system.

<http://digestive.niddk.nih.gov/ddiseases/pubs/yrdd/>

2. Wordwall vocabulary words to teach and add to the Word Wall.

Digestion: the process of breaking food down to be used by the body

Calorie: a measurement to show how much energy a food contains

Nutrients: the useable portions of food used for growth, repair, and replacement

Esophagus: the tube leading from the throat to the stomach

Saliva: liquid released in the mouth to moisten food and to begin the dissolving of food

Liver: organ located near the stomach; makes bile which helps break fat into smaller pieces called fat droplets

Pancreas: makes pancreatic juice which contains many enzymes that act on the food in the small intestine; the pancreas also produces sodium bicarbonate to neutralize the acidity of the food coming from the stomach

Enzymes: substances which chemically act on food to break it down into simpler substances

Peristalsis: muscular contractions that move food through the digestive system

Bolus: the name given to a food ball formed in the mouth and then swallowed

Chyme: the name given to food as it leaves the stomach and moves into the small intestine

READ

3. View

Article:

Go to: www.kidshealth.org

Search: Digestion System (teens)

Locate: Digestion System

Read: As a class

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Digestion

Locate: Human Body Systems: The Digestive System (approximate run time 21:00)

RESPOND

4. Visual Process.

Concept Map:

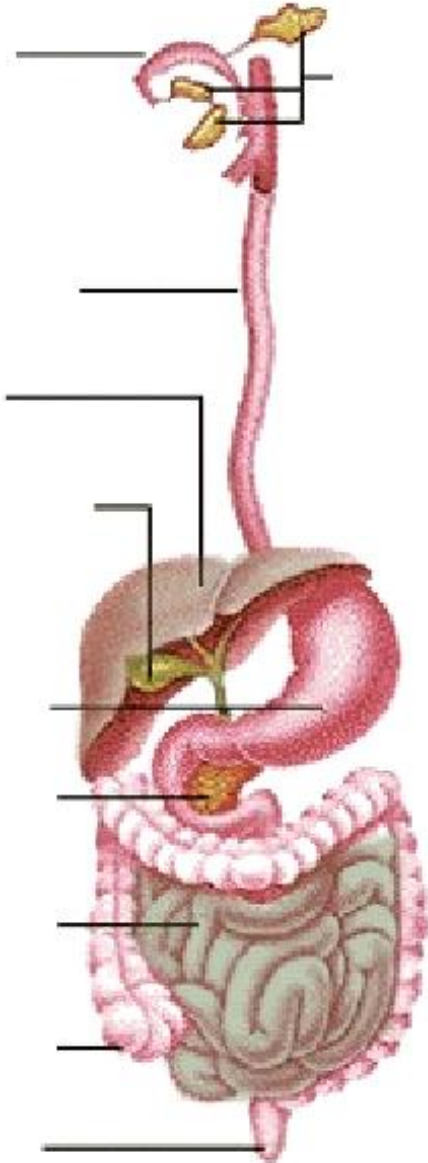
Draw a concept map to illustrate the main functions of the digestive tract?

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Label Digestion System:

Students label main structures of the digestive system, describe each structure's function, and describe sequence of events involved in digestion.



6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What is digestion?
- What are the six main types of substances needed by the body for growth, repair, maintenance, and energy?
- What is an example of mechanical digestion inside the mouth?
- Identify the six main substances required by the body for proper nutrition.
- What are the two forms of digestion?
- What role do enzymes play in food digestion?
- What kinds of food are good for the digestive system?
- What kinds of food are bad for the digestive system?

EXTEND

7. Write, Draw or Speak.

With a partner, come up with healthy ways to maintain a healthy digestive system.

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

HUMAN SCIENCE Lesson Plan

Day 2: KIDNEY'S AND BEER, OH MY!



Outcomes for Today

9. As a result of the coordinated structure and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- 9.g Students know the homeostatic role of the kidneys in the removal of nitrogenous wastes and the role of the liver in blood detoxification and glucose balance.
3. **Health Expectation 3:**
Students will practice behaviors that reduce the risk of becoming involved in potentially dangerous situations and react to potentially dangerous situations in way that help to protect their health.

PREPARE

1. Background Background knowledge to engage the content

What are the effects that beer has on the kidneys?

The metabolic nutrients are decreased by the water content in beer. Because beer is low in dissolved nutrients, not all the water is filtered out of the body as urine. The ionic concentrations can reach dangerous levels due to the overload of fluids in the blood stream.

2. Wordwall vocabulary words to teach and add to the Word Wall.

- Metabolic:** Relating to metabolism, the whole range of biochemical processes that occur within us (or any living organism).
- Ions:** protein that acts as a pore in a cell membrane and permits the selective passage of **ions** (such as potassium **ions** and sodium.)

READ

3. View

Article:

Go to : www.montana.edu/wwwai/imds/alcohol/Jace/Final%20Drafts/kidney.htm

Search: Link on website

Locate: Article: **Complications of Alcohol** – Kidney Link
Read: As a class

RESPOND

4. Visual Process.

Activity Name:

Venn Diagram Chart

Directions:

- Students complete Venn Diagram Chart by comparing and contrasting beer and hard alcohol on (see worksheet)
 - Students review article to find information for chart.
-

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Video

Title: Kidney Function

Website: <http://www.dnatube.com/video/600/Kidney-Function> (5 mins)

- During the video use the “note taking form to take notes. These notes will be helpful during discussion or writing prompts.

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- What are the main functions of the kidneys?
- Why are ions important for a healthy body?

EXTEND

7. Write, Draw or Speak.

Directions: Writes a short product from today’s article. The following questions will help you in the process.

The kidneys are the filtration system for our bodies. How does this filtration system work? How does beer and hard alcohol affect the kidneys normal function?

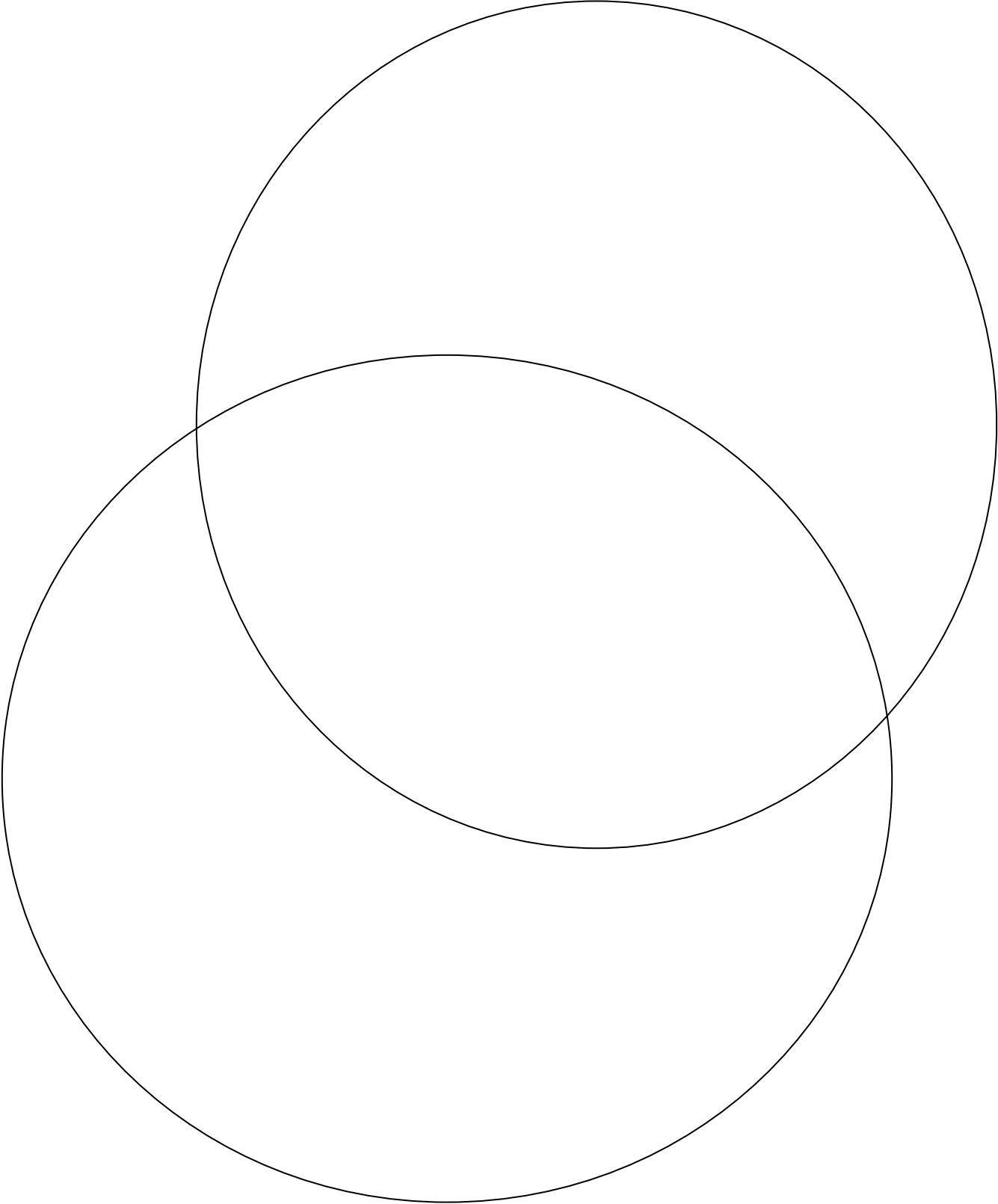
8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

6g6 Venn Diagram Chart



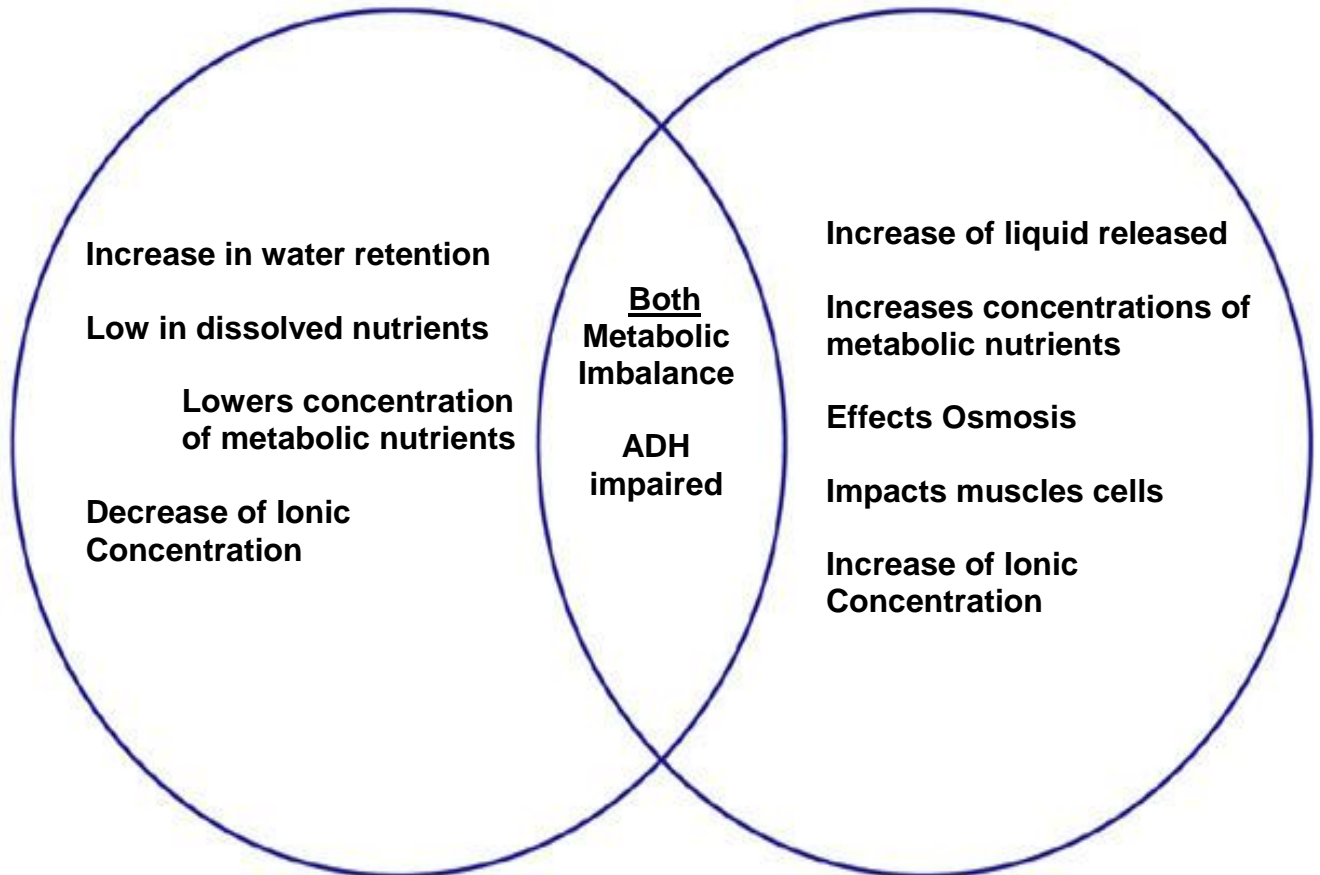
NAME:

THE EFFECTS OF ALCOHOL ON THE KIDNEYS

Date:

**Health Risk of
Kidneys and Beer intake**

**Health Risk
Kidneys and Hard Alcohol intake**



HUMAN SCIENCE Video Notes



Name:

Part I:

Note taking tips: (Cornell Notes)

- Write important details from the video, segment, article, or passage in the second column;
- After you write your notes, return to the first column and add phrases, words and questions related to the details. A sketch or picture may also be helpful.

Title:

Date:

Column 1: Phrases, words, questions or a sketch related to the details in column 2.	Column 2: Important Details

Part II:

Note taking tips: (Cornell Notes)

- Summarize the video, article, or passage in the space below. Use your own words.

HUMAN SCIENCE Lesson Plan

Day 1: What Causes Muscle Weakening?



Outcomes for Today

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept:
- H. Students know the cellular and molecular basis of muscle contraction, including the roles of actin, myosin, calcium, and ATP.

PREPARE

1. Background Background knowledge to engage the content

What causes muscle weakness?

Muscle weakness (or "lack of strength") is a direct term for the inability to exert force with one's muscles to the degree that would be expected given the individual's general physical fitness. True muscle weakness means that full effort does not produce a normal muscle contraction or movement. A voluntary muscle contraction is generated when the brain sends a signal through the spinal cord and nerves to a muscle. If the brain, the nervous system, the muscles or the connections are injured or effected by disease, the muscle will not contract normally and muscle weakness is the resultant symptom.

Muscle cells contract to release calcium in the body, on the basis signal obtained from electrical impulses flowing in the brain.

There are three stages of muscle contraction and they are excitation, contraction and relaxation.

Read more: <http://www.healthline.com/hlc/muscle-weakness#ixzz16eYNkaLS>

Healthline.com - Connect to Better Health

2. Wordwall vocabulary words to teach and add to the Word Wall.

Actin: a protein forming the thin filaments in muscle fibers that are pulled on by myosin cross-bridges to cause a muscle contraction. Some bacteria forms actin tails to use for motility

Myosin: The commonest protein in muscle cells, a globulin responsible for the elastic and contractile properties of muscle and combining with actin to form actomyosin.

ATP: Adenosine triphosphate; an adenosine-derived nucleotide that supplies large amounts of energy to cells for various biochemical

processes, including muscle contraction and sugar metabolism, through its hydrolysis to ADP

- Filaments:** A fibril, fine fiber, or threadlike structure
- Sarcomere:** One of the segments into which a fibril of striated muscle is divided, plasma membrane of the skeletal muscle cell
- Calcium:** a chemical element, Calcium phosphate salts form the dense hard material of teeth and bones. The calcium 2+ ion is involved in many physiologic processes.
- Transverse tubules:** A series of infoldings of the plasma membrane (sarcolemma) of muscle fibres that envelop each myofibril at the Z line (see sarcomere). The T tubules transfer action potentials from the sarcolemma to the sarcoplasmic reticulum, which releases calcium ions into the cytosol causing contraction of the muscle fibres.

READ

3. View

Article:

Go to: www.cliffsnotes.com
Search: Muscle Contraction
Locate: Muscle Contraction
Read: As a class

Article:

Go to: <http://health.howstuffworks.com/human-body/systems/musculoskeletal/muscle3.htm>
Search: Muscle Contraction
Locate: How Muscles Work
Read: As a class

Video:

Go to: www.teachertube.com
Search: Muscle contraction
Locate: Myofibril & Muscle Contractions (approximate run time 05:01)

RESPOND

4. Visual Process.

Note taking:

- Write important details from the video and article in the second column;
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Title:

Date:

Column 1: Phrases, words, questions or a sketch related to the details in column	Column 2: Important Details

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Sequencing:

Directions: Place the following events in the order in which they occur.

- _____ Myosin and actin filaments bind
- _____ Myosin filaments pull the actin filaments to the sarcomere's center
- _____ Calcium is released into the muscle's cytoplasm
- _____ Nerve impulse reaches a muscle

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- Explain the three steps of muscle contraction.
- What is the Mechanism of skeletal muscle contraction?
- How does a muscle contract?
- How is calcium important to muscle contraction?
- What is the difference between actin & myosin?

EXTEND

7. Write, Draw or Speak.

- Summarize the video and article in the space below. Use your own words.

8. Close Close by extending today's lesson to what you can do in your life and the world.

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