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Google Slides Lessons Preview

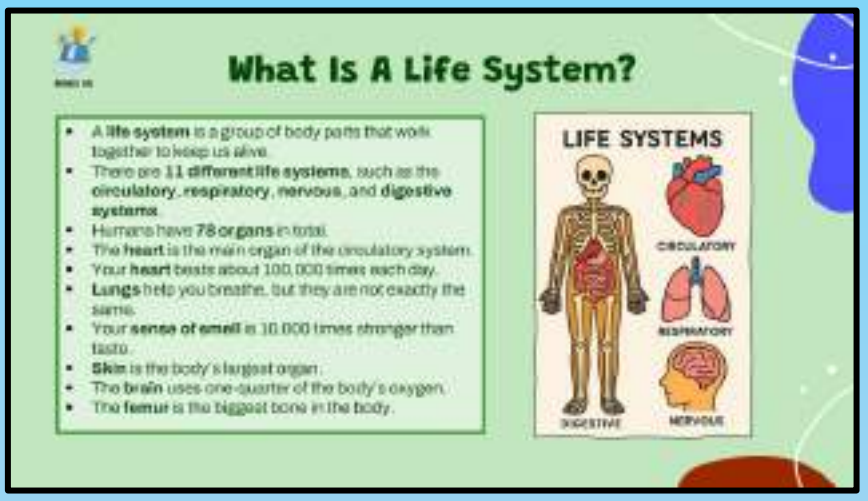
Alberta Science Curriculum

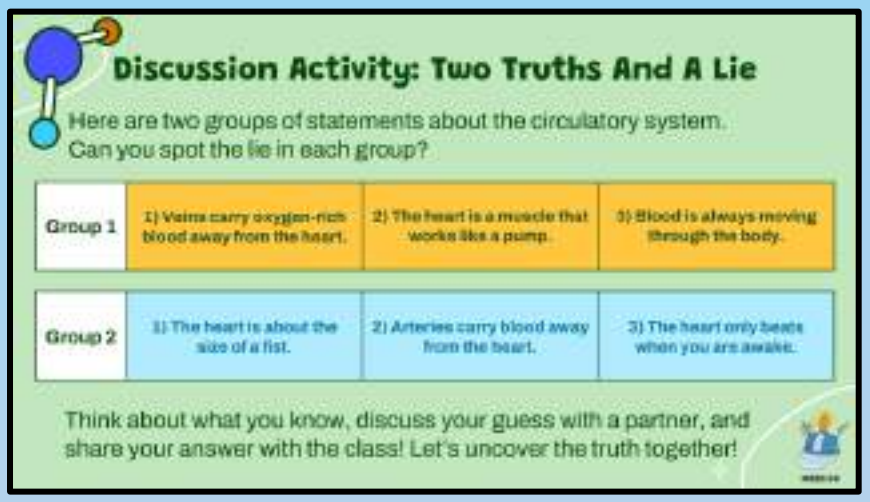
Living Systems: Internal Body Systems – Grade 5

3-Part Lesson Format

Part 1 – Minds On!

- Learning Goals
- Discussion Questions
- Quotes
- And More!



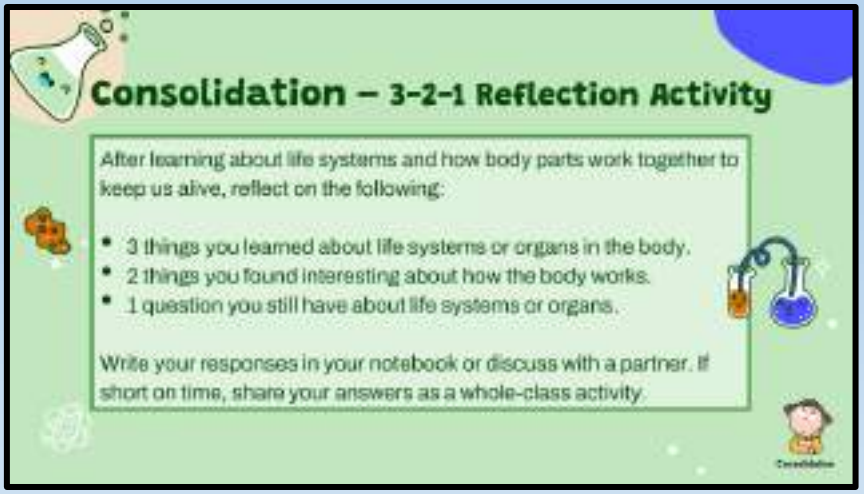


Part 2 – Action!

- Surveys/Polls
- Matching
- Drag and Drop
- Videos
- And More!

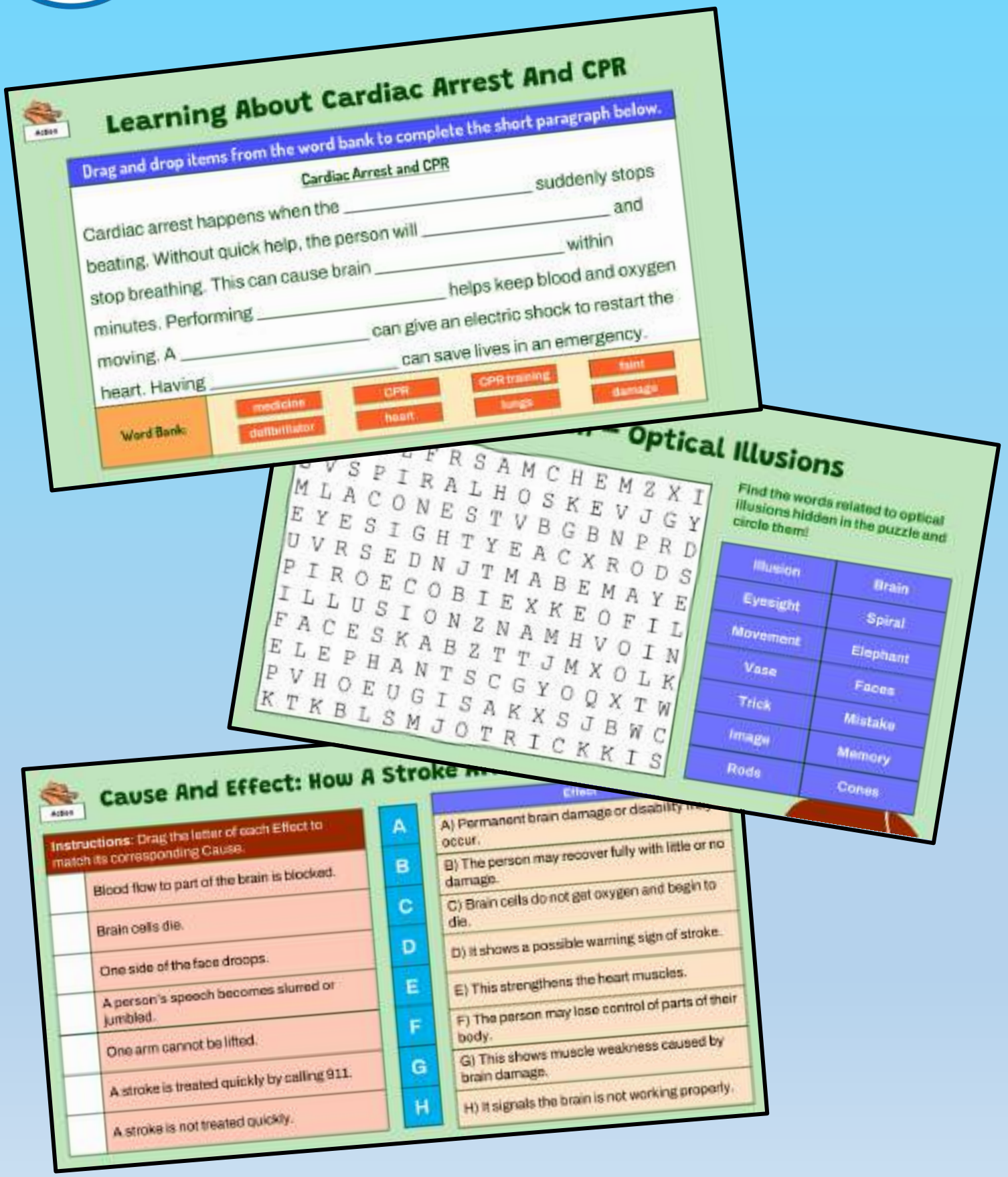
Part 3 – Consolidation!

- Exit Cards
- Quick Draw
- 3-2-1 Reflection
- One-Sentence Summary



Alberta Science Curriculum

Living Systems: Internal Body Systems – Grade 5



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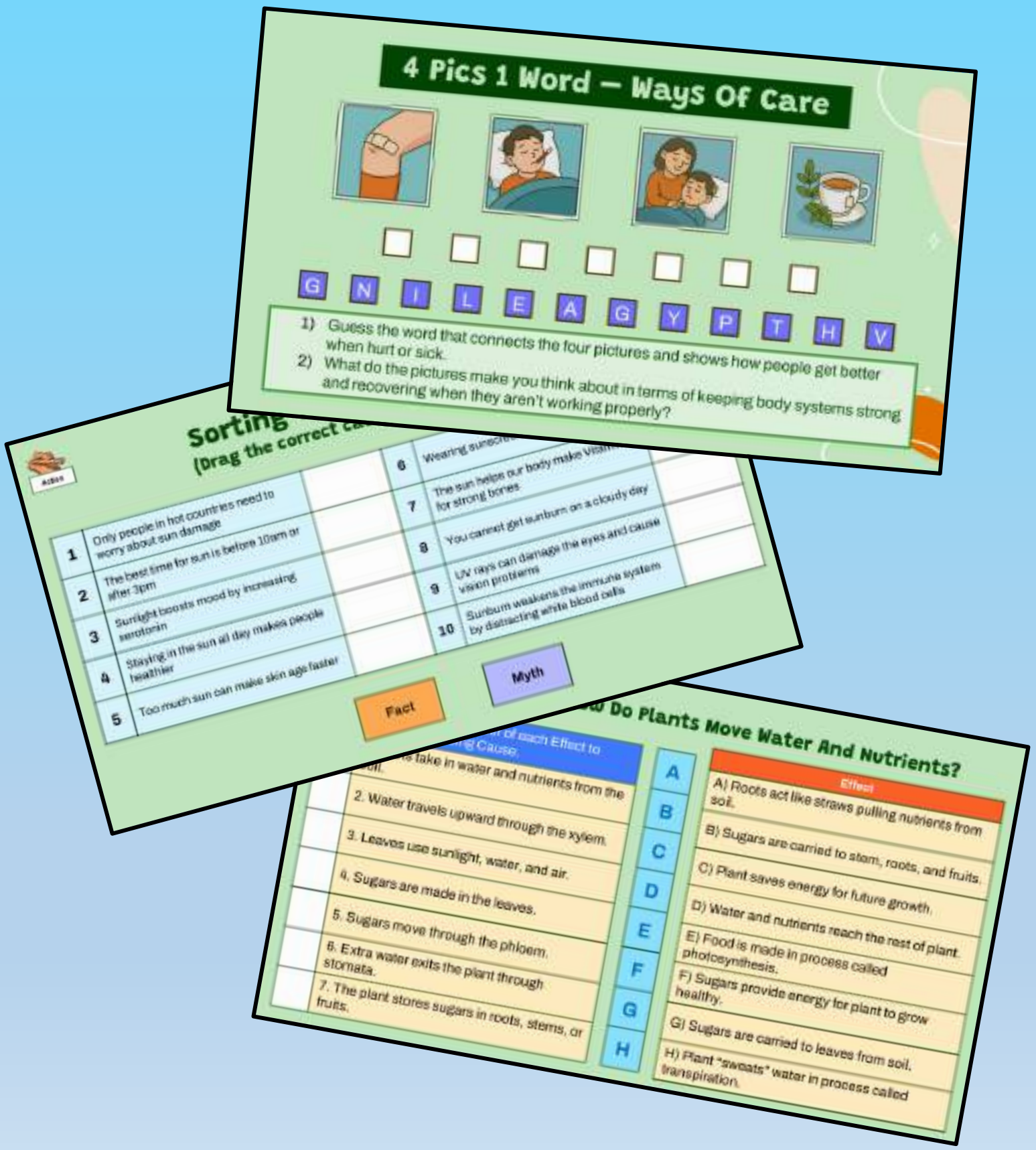
Living Systems: Internal Body Systems – Grade 5



Workbook Preview

Grade 5 – Science Unit

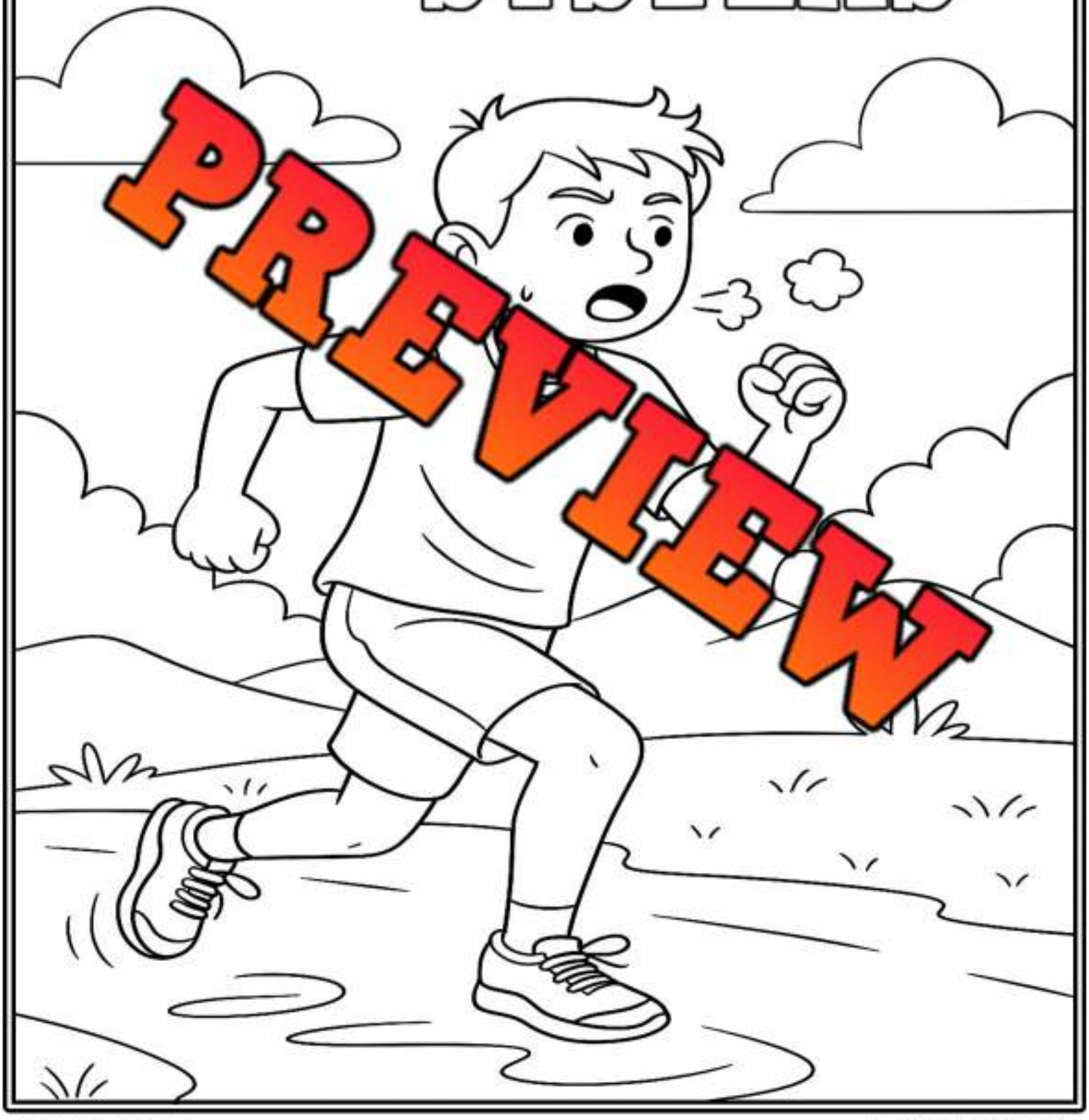
Organizing Idea: Living Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

Guiding Question: How are organisms supported by vital biological processes and systems?

	Learning Outcome – Students investigate the internal systems of organisms and explain how they support vital biological processes.	**Pages**
LS.1	Vital biological processes in complex organisms are carried out by biological systems that rely on each other. Vital biological processes of complex organisms include movement, nutrition, respiration, growth, reproduction Humans and many other animals have internal biological systems that	7–9, 52–76, 111–116
LS.2		-38, -59, -116
LS.3		1, 57- 11-116
LS.4	heart and blood vessels.	-23, 57-59, 111-116
LS.5	The musculoskeletal system supports and moves the body, and includes muscles and bones.	39-51, 57-59, 111-116
LS.6	The digestive, respiratory, and circulatory systems work together to supply oxygen and nutrients to the human body.	77-91, 111-116
LS.7	Plant transport systems include xylem and phloem. Xylem and phloem in plants perform similar functions to the circulatory system in animals. Xylem transports water and nutrients from the roots to the rest of the plant. Phloem transports sugars from the leaves to the rest of the plant.	104-116
Computer Science:		
CS.1	Students apply design processes when creating artifacts that can be used by a human or machine to address a need.	24-26, 92-103, 111-116

NAME: _____

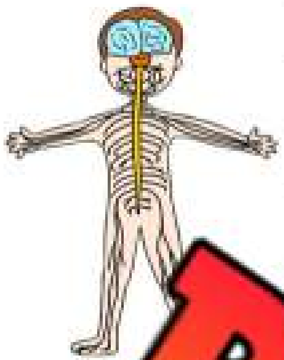
LIVING SYSTEMS



Name: ____________________ 7

Curriculum Connection
LS.1

Introduction to Life Systems

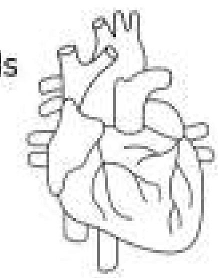


What is a Life System?

To better understand the term life system, it helps to break down the two words. The word **life** means to be alive – to grow and use energy. The word **system** means a combination of things that work together as a whole. Therefore, a **life system** is a group of body parts that work together to allow us to stay alive.

Diffe[illegible]te[illegible]

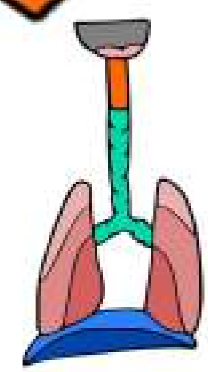
There are 11 diffe[illegible]te[illegible] that keep us alive. Some examples of major life systems includ[illegible]latory[illegible] the respiratory system, the nervous system and the digestive system.



Each of these system[illegible]gans[illegible]rm jobs the system needs to take care of in order for the bo[illegible] to s[illegible]le, the circulatory system's main organ is the heart. Huma[illegible]ve 78 o[illegible]

Interesting Facts about Life Systems

- Your heart will beat about 100,000 times a day, s[illegible] litres [illegible]od through the body
- You have two lungs in your respiratory system, but they a[illegible] not [illegible]
- Your sense of smell is around 10,000 times more sensitive than y[illegible] s[illegible] taste
- The brain uses over a quarter of the oxygen used by the human body
- The brain of an adult weighs around 3 pounds (1.5 kg)
- When listening to music, your heartbeat will sync with the rhythm
- Skin is the human body's largest organ
- The largest bone in the body is the femur (thigh bone)
- You can't breathe and swallow at the same time
- A runny nose is the way our bodies flush out germs from our nose when we catch a cold



Name: _____ 8

Curriculum Connection
LS.1

True Or False

Circle whether the statement is true or false

1) We have 7 life systems in our bodies	True	False
2) The lungs are the main organ in the circulatory system	True	False
3) Our life systems are not that important to take care of	True	False
4) Our heart beats approximately 100,000 times a day	True	False
5) Humans have only one organ in each life system	True	False

Questic

formation from the text to support your answer

1) What

2) What are organs? List some organs t

about.

Questioning

Write 4 questions that you hope to learn more about

ems

1)	
2)	
3)	
4)	

Curriculum Connection
LS.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____ Mark

Check only the facts.

- ☐ A life system helps keep us alive.
- ☐ The brain weighs about 3 pounds.
- ☐ Skin is an organ
- ☐ Humans have 87 organs in total
- ☐ The heart is an organ
- ☐ The circulatory system pumps blood
- ☐ There are 15 different life systems
- ☐ The largest bone is the femur
- ☐ Your heart beats a million times a day

Name: _____ Mark

Check only the facts.

- ☐ A life system helps keep us alive.
- ☐ The brain weighs about 3 pounds.
- ☐ Skin is an organ
- ☐ Humans have 87 organs in total
- ☐ The heart is an organ
- ☐ The circulatory system pumps blood
- ☐ There are 15 different life systems
- ☐ The largest bone is the femur
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Name: _____ Mark

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- ☐ The heart is an organ
- ☐ The circulatory system pumps blood
- ☐ There are 15 different life systems
- ☐ The largest bone is the femur
- ☐ Your heart beats a million times a day

Name: _____ 10

Curriculum Connection
LS 4

Circulatory System

What is the Circulatory System?
The circulatory system is the movement of blood through the body. The blood carries nutrients to the cells in our body to feed them and help them fight disease. Therefore, the **circulatory system's** main job is to send nutrients in blood to the rest of our body.

Meet the Team - Organs in the Circulatory System
The main organs in the circulatory system are blood vessels and the heart. There are three types of blood vessels: arteries, veins, and capillaries.

1) Arteries carry oxygenated blood away from the heart to the rest of the body. You can remember this by saying "A is for 'artery' and 'away' (from the heart).
2) Veins carry deoxygenated blood back to the heart
3) Capillaries are blood vessels that connect arteries to veins

Oxygen is carried by blood. The cells in our body need oxygen to survive. The way they get oxygen is from the heart pumping blood with oxygen to them.

The heart does this by pumping blood through the lungs, where oxygen is put into the blood. Oxygen rich blood is sent away from the heart via arteries. When cells in our bodies use the oxygen, the used blood is sent back to the heart and lungs so it can get more oxygen. The entire process takes about 1-2 minutes for blood to circulate through your entire body!

The Heart
Your heart is a muscle that acts like 2 pumps. On the right side of your heart, blood from the body is received and pumped to the lungs to get oxygen. On the left side, the heart receives blood from the lungs and pumps it to the body.

The heart is a complex organ. Learn more about the parts of the heart below.

Atrium	Upper chamber where blood enters the ventricles of the heart
Ventricle	One of two large chambers towards the bottom of the heart
Aorta	Major blood vessel that carries blood away from the heart
Tricuspid Valve	On the right side and separates the upper and lower chambers
Pulmonary Veins	Carries oxygenated blood from lungs to the heart (2 on each side)
Pulmonary Artery	Carries used blood from the heart to the lungs

Name: _____ 11

Curriculum Connection
LS.4

Definitions What do the blood vessels below do?

Blood Vessels	Function – What do the Blood Vessels do?
Arteries	
Veins	
Capillar	

Diagram Lab am below using the terms in the word bank

Word Bank
- Pulmonary vein
- Pulmonary artery
- Tricuspid valve
- Right atrium
- Left atrium
- Right ventricle
- ft ventricle

Questions Answer the questions below using evidence fro

1) What is the main job of the heart?

2) How do the lungs and heart work together to get oxygen to our cells?

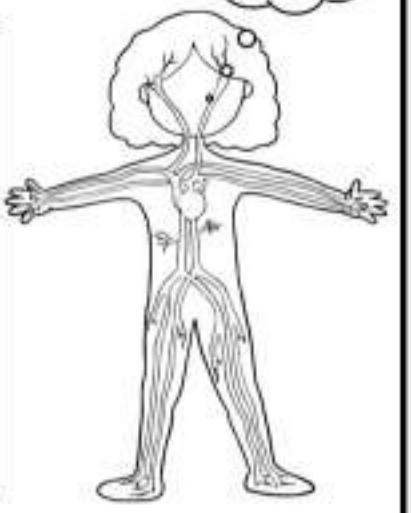
Name: _____ 12

Curriculum Connection
LS 4

Matching

Write the letter from the description beside the matching term

Colour Me



_____ 1. Arteries

_____ 2. Veins

_____ 3. Capillaries

_____ 4. [illegible]

_____ [illegible]

a) Pumps blood throughout the body

b) Movement of a liquid through a system

c) Carries blood rich in oxygen and nutrients away from the heart to the cells in the body

d) Carries blood full of waste materials from the cells to the heart

e) Connects arteries and veins

Fill In The Blan[illegible]

[illegible] bank vocabulary to fill in the blanks below

Bank			
Circulation	[illegible]	Blood	Waste
Heart	[illegible]	[illegible]aries	Arteries

1. The movement of blood throughout a system i[illegible] _____
2. The _____ is the main organ of the c[illegible]tor[illegible] responsible for circulating the blood.
3. The 3 types of blood vessels are _____, _____, _____.
4. Arteries carry _____ rich blood away from the heart.
5. Our bodies are constantly circulating _____ throughout our body.
6. Veins carry _____ in our blood to our heart.

Question

Answer the question below using evidence from the text

Blood is used to circulate nutrients and oxygen to our bodies. Can you infer how the food we eat affects the nutrients our cells get? What do you think?

_____

_____

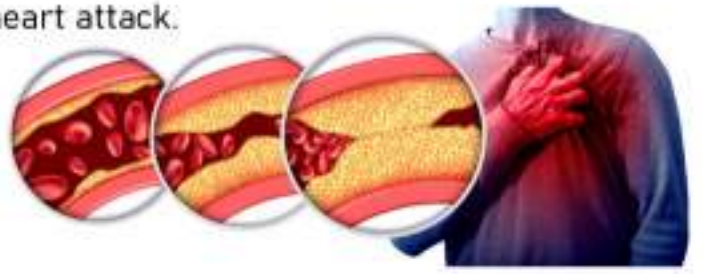
Name: _____ 17

Curriculum Connection
LS.4

Heart Disease

What is Heart Disease?

Heart disease is when something is wrong with your heart. Just like a car needs oil to run, your heart needs blood to pump. Sometimes the blood vessels that carry blood to the heart can get blocked, which can cause a heart attack.



Symptoms of Heart Disease

Some common symptoms of heart disease include pain or discomfort, shortness of breath, and a fast or irregular heartbeat. Some people might also experience pain or discomfort in other parts of the body, like their arms, neck, or jaw. However, some people may not have any symptoms at all.

Causes of Heart Disease

1) <u>High blood pressure</u> - This occurs when the force of blood against the walls of your blood vessels is too high. Over time, high blood pressure can damage the blood vessels and increase the risk of heart disease. Stress can also lead to high blood pressure.
2) <u>High cholesterol</u> - This is a type of fat that can build up in the blood vessels and form plaque, which can block the flow of blood to the heart.
3) <u>Smoking</u> - Nicotine and other chemicals in cigarettes and other tobacco products can damage the heart and blood vessels, increasing the risk of heart disease.
4) <u>Lack of physical activity</u> - People who don't get enough exercise are more likely to develop heart disease because lack of physical activity can lead to obesity, high blood pressure and high cholesterol.
5) <u>Poor diet</u> - Eating foods high in saturated and trans fats, cholesterol, salt, and added sugars can increase the risk of heart disease.
6) <u>Genetics and family history of heart disease</u> - Some people have a higher risk of heart disease because of their genes or family history.

Name: _____ 18

Curriculum Connection
LS.4

Questions

Answer the questions below using evidence from the text

1) What is heart disease? What are the symptoms of it?

2) What ar uses of heart disease?

True Or False

Is the en

1) Lack of exercise can cause heart dis	True	False
2) Your heart is a muscle that you need to exer	True	False
3) Stress and high blood pressure can make your h t	True	False
4) A poor diet can lead to high cholesterol and blocked b els	Tru	False
5) Your family's history of heart disease will not affect your he t	T	alse

Visualizing

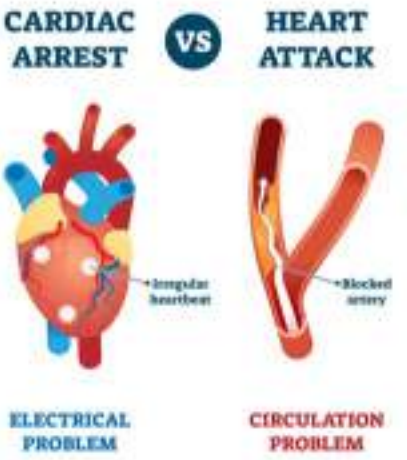
Draw what you were picturing while you were reading. Ex the picture

Name: _____ 19

Curriculum Connection
LS.4

What Is Cardiac Arrest

What is Cardiac Arrest?



Cardiac arrest is a serious emergency where the heart suddenly stops. It's not the same as a heart attack, which involves blocked blood flow.

When cardiac arrest occurs, the person will lose consciousness and will not be able to breathe properly. Without treatment, cardiac arrest can lead to brain damage or death within minutes.

The most common cause of cardiac arrest is a condition called ventricular fibrillation, which is an abnormal heart rhythm that causes the ventricles (the heart's lower chambers) to quiver instead of pumping blood. Other causes include trauma, electric shock, drowning, drug overdose, and other underlying heart conditions.

CPR – Cardiopulmonary Resuscitation

CPR stands for cardiopulmonary resuscitation. It is an emergency procedure that is used to manually pump blood to the heart and brain when the heart stops or is not working properly.

During CPR, a person uses their hands to compress the person's chest to pump the blood and uses their mouth to breathe air into the person's lungs. This helps to keep the person's brain and other vital organs alive until more advanced medical treatment can be given.

CPR can help in case of cardiac arrest because it keeps oxygenated blood flowing to the brain and other vital organs, which can prevent brain damage. It buys time until advanced medical treatment such as defibrillation can be administered.

The effectiveness of CPR depends on how quickly it is given after cardiac arrest. The survival rate decreases rapidly the longer the person goes without CPR and defibrillation. That's why it's important to know CPR and be prepared to give it if needed.

Name: _____ 20

Curriculum Connection
LS 4

Questions

Answer the questions below using evidence from the text.

1) What is cardiac arrest? How is it different than a heart attack?

2) What is [illegible]w does it help someone who is suffering from a cardiac arrest?

True Or False

Is the stat[illegible]t tr[illegible]

1) CPR is done by compressing a person's chest	True	False
2) When CPR is given effectively, blood and oxy[illegible]l flo[illegible]	True	False
3) Even if you've been trained in CPR, you shouldn't do [illegible] under	True	False
4) It is wise to learn CPR	[illegible]	False
5) Cardiac arrest happens when blood flow is blocked	[illegible]	alse

Questioning

Write 3 questions you have about the reading

1)	
2)	
3)	

Curriculum Connection
LS.4

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____ | Mark

Circle yes or no for each question.

1) Can cardiac arrest stop breathing?	Yes / No
2) Is cardiac arrest a heart attack?	Yes / No
3) Does CPR move oxygen to the brain?	Yes / No
4) CPR stands are cardiopulmonary rescue	Yes / No

Name: _____ | Mark

Circle yes or no for each question.

1) Can cardiac arrest stop breathing?	Yes / No
2) Is cardiac arrest a heart attack?	Yes / No
3) Does CPR move oxygen to the brain?	Yes / No
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Name: _____ | Mark

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2) Is cardiac arrest a heart attack?	Yes / No
3) Does CPR move oxygen to the brain?	Yes / No
4) CPR stands are cardiopulmonary rescue	Yes / No

Name: _____ 22

Curriculum Connection
LS 4

Lab Experiment - Heart Rate

Research Question

What are we trying to answer?

How many times will your heartbeat in 1 minute when resting, walking, and running? Will there be a big difference?

Hypothesis

Answer the research questions below before you do the experiment

1) How many times do you think your heart will beat in one minute while you are:

Resting: _____ Beats Per Minute (BPM)

Walking: _____ Per Minute (BPM)

Running: _____ Minute (BPM)

2) Will there be a difference between your resting heart rate and your running heart rate? Explain your answer.

_____

_____

Materials

What you will need for the experiment

1) Stopwatch or clock
2) This paper/Writing Utensil
3) Heart rate monitor (optional)

Procedure

Instructions – How to complete the experiment

1) If you do not have a heart rate monitor, you can find your heartbeat by placing two fingers on your wrist
2) Count each thump as a beat
3) Find your resting heart rate by sitting in your chair and rest for approximately 1-2 minutes. Then have your partner time 20 seconds while you count the number of beats.
4) Multiply this number by 3 to get your beats per minute. Record this as your resting heart rate.
5) To find your walking heart rate, go walk around at a normal pace for 1 minute. Then have your partner time 20 seconds again while you count the number of beats. You can do this while you are walking, or you can stop to count.
6) To find your running heart rate, complete step number 5, but this time after running for 1 minute.

Name: _____ 23

Curriculum Connection
LS.4

Observations

Fill in the table below as your complete the experiment

Heart Rate Type	What was your heart rate for each type?
Resting Heart Rate	
Walking Heart Rate	
ing Heart Rate	

Result

Ans estions now that you have completed the experiment

1) Did anything s ou? W pothesis correct?

2) Why do you think your heart rate was whe ing and lowest when resting?

3) Does everyone have the same heart rate? How do you think raini (muscle) can help you perform in sports?

4) How can you keep your heart strong and healthy? What are things that you do to exercise your heart? What could you start doing?

Name: _____ 24

Curriculum Connection
CS.1

STEM - Pacemakers

Science And Technology – Healthcare

Improvements in science and technology make us healthier and help us live longer. As scientists learn more about our organs and body systems, engineers develop technologies that help these systems.

What Is

A **pa** **ker** is s e that is placed (implanted) in the chest t t rtbeat. It is used in patients who hav regu et. The pacemaker makes sure the heart d eat too To implant a pacemaker, the patient wi su

How Does A Pacemaker Work?

The heart beats because of the heart's electri st older, their electrical system can get damaged, causing an irreg t rh A pacemaker only works when needed. If your heartbeat is o sl r sends an electrical signal to your heart to correct the beat.

Writing Code – Pacemakers

A pacemaker device uses code to tell the machine what to do. If/Then statements are used in the following way:

If the heart beats are irregular
then send an electrical signal

Name: _____ 25

Curriculum Connection
CS.1

True Or False

Is the statement true or false?

1) A pacemaker is worn in a shirt pocket	True	False
2) The heart beats because of its electrical system	True	False
3) Everyone's heart beats the same	True	False
4) Pacemakers work to keep people's heart beat regular	True	False
5) A pacemaker will send an electrical signal to the heart if needed	True	False

Question

Answer the questions below

1) How [illegible] Why are they needed by some people?

2) How has science and technology hel[illegible]hy? Use the pacemaker as an example.

Visualizing

Draw what you were picturing while you were reading. Ex[illegible]he picture

Name: _____ 26

Curriculum Connection
CS.1

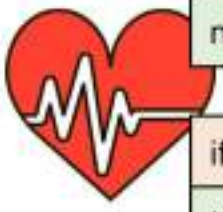
Directions Follow the instructions below

Before a pacemaker can be used, it needs to find out how many seconds apart the person's heartbeat is normally apart. Let's define this number as a variable, called normal.

1) Write code to find out what 'normal' is.
Example: set normal = how many seconds apart the heart beats

2) Th[illegible] should beat every 1 second. Now that you know how many [illegible]nds ap[illegible]art is supposed to beat, write an if/then code that sends an electrical [illegible] hea[illegible] needed.

Directions Based on the code given, w[illegible]e pa[illegible]ker send a signal?



set normal = how many seconds apart the[illegible]

normal = 1.1 seconds

if heartbeat skips by 1 second more than normal

then send electrical signal

Patient's Heartbeat	Yes	No
1.5 seconds	Yes	No
2.2 seconds	Yes	No
1.1 seconds	Yes	No
1.5 seconds	Yes	No

Patient's Heartbeat	Yes	No
2.5 seconds	Yes	No
3 seconds	Yes	No
1.1 seconds	Yes	No
2 seconds	Yes	No

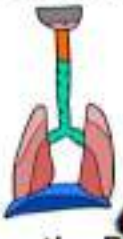
Name: _____ 27

Curriculum Connection
L5.3

Respiratory System

What is the Respiratory System?

The **respiratory system's** main function is to provide us with a steady supply of oxygen and to get rid of carbon dioxide. All animals need oxygen in order to survive. Oxygen allows us to break down food in order to get the energy we need.

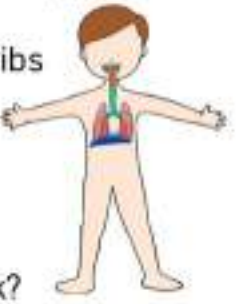


Luckily for us, oxygen is found in the air. Our respiratory system is designed to bring oxygen in through the process of breathing (inhalation), and send carbon dioxide out through the process of exhalation.

How the R ry System Works

The brai breathing. When we breathe in, our diaphragm moves down towa the ribs expand outwards. This makes our chest bigger and pulls o our l

When we gm moves upward and the chest and ribs relax, causing small ir pushes out of the respiratory system through th h or



Blood and the Respirator

If you have learned about t ory know that blood circulates oxygen through our b s to w does this work?

Steps	What is Happening
1	We breathe in air to our lungs. They fi nd e
2	Blood in our lungs picks up the oxyge m t oli
3	The oxygen rich blood is then sent through rculat stem
4	As the blood picks up oxygen, it also brings carb oxi he body to the alveoli (tiny air sacs on the end of the bronc
5	The air is exhaled, and the carbon dioxide (waste) is sent out body

Parts of the Respiratory System

Lungs	Bag like organs used for breathing. We have 2 lungs that fill with air when we inhale. They push carbon dioxide out when we exhale.
Bronchus	Major airways that go into the lungs from the trachea (windpipe).
Larynx	A tube that lets air pass from your throat to your trachea. Also contains your vocal cords, which allow you to speak.
Diaphragm	A muscle that is below your lungs. It contracts and relaxes to allow your lungs to expand and relax
Trachea	Known as the windpipe that connects the nose/mouth to the lungs

Name: _____ 28

Curriculum Connection
L5.3

Multiple Choice — Circle the best answer

1. The respiratory system is responsible for:

a) Pumping blood in your body

b) Breaking down food

c) Bringing in fresh air

d) Fighting [illegible]ases/bacteria

2. The main organ for the respiratory system is:

a) Heart

b) Lungs

c) Kidneys

d) Brain

3. The av[illegible]o[illegible] takes how many breat[illegible]

a) 23,0[illegible]

b) 120,000

c) 585

d) 2750

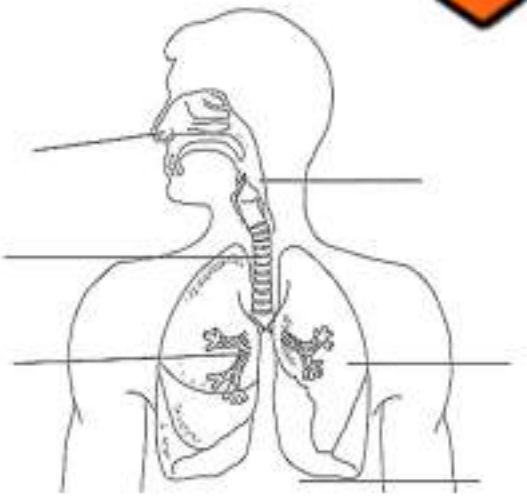
4. How many lungs are you born with?

a) 1

b) 2

c) 3

Diagram — Label the diagram [illegible] words from the word bank



[illegible]rd Bank

- [illegible]gs
- [illegible]ach
- Diaph[illegible]gm
- Larynx
- Bronchus

How can you take care of your lungs? What are some things people do that damage their lungs?

Name: _____ 29

Curriculum Connection
L5.3

Matching

Write the letter from the description beside the correct term

_____ 1. Bronchus	a) Hollow cavity that allows food and air to enter the body
_____ 2. Trachea	b) Muscular wall that separates the lungs from the stomach
_____ 3. Alveoli	c) Hollow cavity that lets air in and sends it to the lungs.
_____ 4. Lungs	d) Air passageway **directly** to the lungs
_____ 5. Nose	e) Wide hollow tube that allows the flow of air to and from the lungs – "Windpipe"
_____ 6.	f) Bag like organ that transports oxygen into the bloodstream and releases carbon dioxide when exhaling.
_____ aphrag	Tiny air sacs in the lungs that exchange oxygen and carbon xide

Activity

Whe exerc thing rate will increase just like you heart rate

1. Count how many breaths y n 3 uble that number to get your breathing rate in a minute. Write it here _____

2. Stand up and run or exercise for 30 seconds. Co our b g rate again:

_____

3. Stand up and run or exercise for 1 minute. Count you g rat

_____

Questions

Use information from the text to support your answer

1) What happened to your breathing as you exercised? Why do you think this happens?

_____

_____

_____

2) How does your circulatory and respiratory system work together?

_____

_____

Name: _____ 30

Curriculum Connection
L5.3

Lung Activity - Paper Bag Lungs

Materials

What you will need for the activity

1) 2 paper bags
2) Strong tape (duct tape or packing tape)
3) 2 straws
4) marke

Proce

tructions – How to complete the activity

1) Dra a pictu and right lung on both paper bags. See picture at the bottom o gui Or research what a lung looks like for yourself.
2) Label your t h the bels:
   - Bronchi, Br Lung, Left Lung
3) Insert one straw into
4) Tape the straws so they a ght
5) Blow into the straws to simulate fi ngs air. Interestingly, as you blow air into the model lungs, you are d e opp lungs. Your lungs are emptying, and the model lungs are filling with

Name: _____ 31

Curriculum Connection
LS.3

Lung Activity - Paper Bag Lungs

What is Asthma?
Asthma is a disease that causes breathing problems because the airways in the lungs swell, shrink, and fill with mucus. It can be mild or severe, requiring daily medication and avoiding strenuous activity.

What Causes Asthma?
Experts aren't 100% sure what causes asthma. It is common in kids and tends to run in families. P[illegible]e with asthma get flare-ups from time to time. A **flare-up** is when the airways in [illegible]s get swollen and shrink. Flare-ups happen due to triggers, like:

- [illegible]e kids only get asthma flare-ups when they exercise
- [illegible]ns [illegible]r like pollen, mold, and pet dander
- [illegible]hen th[illegible]d or flu
- Weat[illegible]s

Treating Asthma
Avoid flare-ups by a[illegible]ng t[illegible]e. People with asthma can also take medicine that is inhaled t[illegible]o the [illegible]is medicine opens up tight airways.

Questions Use information fro[illegible]t to s[illegible]t your answer

1) What is asthma? What happens to people wit[illegible]a?

2) How can someone treat asthma?

Making Connections Do you know anyone who has asthma? Have they had a flare-up?

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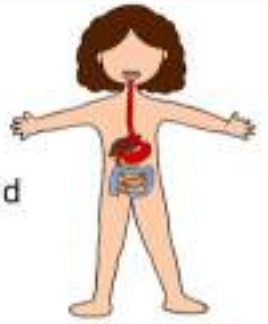
Curriculum Connection
LS.2

Digestive System

What is the Digestive System?

The **digestive system** has the important job of breaking down food and extracting the nutrients from it so that our body can have the energy it needs to survive. From start to finish, the digestive system has organs that allow us to eat food, get nutrients from the food, break down the food so that we can get rid of the food that as waste.



Major Stages of Digestion

Step	What is Happening
1 – Chewing	When we chew food, we break up big pieces into little pieces that are easier to digest and swallow. The saliva in our mouth helps as well. Saliva has special enzymes that act like acids to break down food.
2 – Swallowing	When we swallow, our tongue first pushes the food into the back of our throat. Then our pharynx (throat) muscles carry the food to our esophagus. The esophagus is a long tube that leads to our stomach.
3 – Stomach	The stomach has many acids (and enzymes) that break down things like proteins that our body can use. The food in the stomach usually sits for around four hours before being ready for the small intestine.
4 – Small Intestine	The small intestine gets acids from the liver and pancreas to break down food even further. As food travels through the intestine, its nutrients are absorbed by the intestine and our blood carries these nutrients to the cells in our bodies.
5 – Large Intestine	Any food that has no nutrients left needs to be disposed of by the body. Our large intestine takes this leftover food and sends it through the intestine and out of our bodies.

Helping Your Digestive System

Check out the tips below to learn more about how to help your digestive system.

1. Drinking lots of water will help the digestion system as the water we drink softens foods.
2. Chewing your food more makes it easier for the digestion process as you have done some of the work for it. Experts say we should chew around 32 times before swallowing.
3. Eat healthy foods with a lot of nutrients. Our bodies need nutrients and our digestive system wants to spread the nutrients to the rest of the body.
4. Eat food that is high in fibre. Fibre helps clean our digestive system and makes it easier for us to get rid of waste. Fibre rich foods include fruits, vegetables, and whole grains.

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Curriculum Connection
LS.2

Picture this – You've just finished eating your pizza at lunch and have forgotten all about how delicious it was. Meanwhile, your digestive system hasn't forgotten. It has just started the process of breaking down the food to extract all the nutrients and prepare to get rid of the waste.

Matching

Write the letter from the description beside each digestive system part

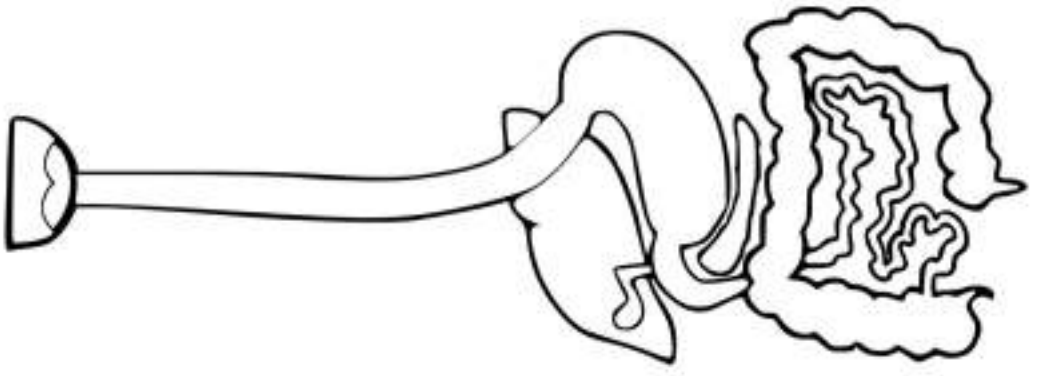
	Mouth	a) Holds food to be broken up by acids
	E s	b) Last stage in digestion. Food travels through this tube and becomes waste.
	omach	c) Food travels through this tube while the nutrients are being absorbed
	Small t	s acids to the small intestine to break food down
	Large Intesti	o the stomach
	Liver and Pancreas	od tem here

Summarize

In your own words, explain hat hap o f hen it enters the mouth

Diagram

Turn your page sideways and label the diagram. Colour it when you are done



Mouth
Esophagus
Stomach
Small Intestine
Large Intestine
Liver
Pancreas

Name: _____ 34

Curriculum Connection
LS.2

Directions Number the steps from 1 – 6 from the first (1) step of digestion to the last (6)

Process of food digestion	Steps
Food is stored and mixed up in the stomach by acids to form a liquid	
You smell/see/think of food and saliva begins to form in your mouth	
The small [illegible]ine breaks down food even more and absorbs the nutrients in the foods we	
Chew[illegible]d calle[illegible]ets pushed to the back of your throat and swallowe[illegible] into th[illegible]s	
The large intestine t[illegible]ll t[illegible] that has no more nutrients in it and passes it as waste	
Food travels through the esophagus - a[illegible]pe to [illegible]tomach	

O	P	K	L	U	X	W	U	E	M	U	W	[illegible]		A	[illegible]	[illegible]
E	G	N	R	M	S	W	Q	S	K	A	W	X	[illegible]	[illegible]	[illegible]	U
Y	G	K	X	V	E	Z	T	Y	Q	T	V	P	D	E	[illegible]	G
J	X	Q	T	V	E	E	L	C	T	O	R	D	X	N	P	[illegible]
O	Z	I	I	E	E	F	D	Q	C	R	A	X	J	I	F	A
Z	P	E	L	W	E	A	D	Z	D	H	S	K	H	T	M	V
N	Q	T	Q	I	P	K	Y	A	W	U	A	Z	F	S	I	I
D	I	G	E	S	T	I	O	N	C	B	U	U	O	E	M	L
J	X	X	S	S	Z	Q	H	Q	W	I	O	T	O	T	U	A
J	U	Q	B	R	I	A	A	D	W	Y	D	Y	D	N	T	S
Z	N	N	F	B	E	S	O	P	H	A	G	U	S	I	C	I
O	J	W	Y	R	A	V	X	D	B	U	R	S	W	N	E	V
Y	Z	J	L	I	V	E	R	M	O	U	T	H	O	X	R	D
N	U	V	W	T	P	B	E	T	U	L	I	K	I	M	E	G

ACID

DIGESTION

[illegible]US

FOOD

INTESTINE

LIVER

MOUTH

RECTUM

SALIVA

STOMACH

Name: _____ 36

Curriculum Connection
L5.2

Common Disease - Celiac

What is Celiac Disease?

Celiac disease is a digestive system disease that means someone cannot digest gluten properly. When someone with celiac disease eats gluten, their body overreacts to the gluten (protein) and damages their villi. When the villi are injured, the small intestine cannot properly absorb nutrients from food.

If your body cannot absorb nutrients, it will have issues because our bodies need vitamins and minerals like iron to survive. For example, iron is needed to produce blood.

Treatment for Celiac Disease

The treatment for celiac disease is simple – have a diet with no gluten. This is easier said than done. Gluten is in a lot of things, including wheat, which means bread, pasta, and crackers are off-limits. Gluten is even in some sauces as well as breading for your favourite chicken nuggets!

Luckily, living with the disease is no longer as hard as it was in the past. Many companies, restaurants and factories are offering gluten-free options.

Symptoms of Celiac Disease

Someone with celiac with [illegible] of stomach issues, diarrhea, weight loss, and a loss of appetite. It is estimated that 1 [illegible] people [illegible]

Questions Use information from the text to support your answer

1) How does gluten affect someone with celiac disease?

2) Is it hard to be someone with celiac disease? What do they need to do to [illegible]?

Reflect Have you seen gluten-free options at a grocery store or restaurant? Explain.

Name: _____ 37

Curriculum Connection
LS.2

Lab Experiment - Digestive System

Materials

What you will need for the experiment

1) Food to be digested (below are options that work)
   - 1 banana, 3-4 crackers
2) Lemon juice or clear vinegar
3) Water
4) Stron[illegible]lock bag
5) 1 cut[illegible]f tights/stockings (i.e. small intestine)
6) 1 tr[illegible]tch the mess
7) [illegible]he food that passes through (large intestine)

Procedure

[illegible]ow to complete the experiment

1) Place the banana a[illegible] inside [illegible]plock bag (eating the food)
2) Slowly add a little bit of [illegible]
3) Let all the air out of the bag and s[illegible]
4) Smash the ingredients with your hands unt[illegible] are [illegible]umps (chew)
5) Squeeze the chewed-up food into one end of t[illegible]d a s[illegible]mount of acid to it (the food has moved from the mouth to the st[illegible]
6) Continue mashing the food in the stomach with the acid br[illegible]
7) Now the food from the stomach will need to travel into the small int[illegible] Tilt the bag up slightly so the food is on one side of the bag. Cut a small hole [illegible]he other corner of the bag (the corner you are not tipping)
8) Squeeze the chewed food into the cut-off tights while holding everything over the bowl/tray
9) Squeeze the food through the tights (small intestine)
10) When the food is through the tights, cut a small hole in the end of the tights to let the waste move to the cup (large intestine)
11) Optional – cut a small hole in the bottom of the cup to represent getting rid of the waste in a trip to the toilet.

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Curriculum Connection
LS.2

Explain Explain what each part of the experiment represented in our digestive system

Part in the Experiment	What it Represented in our Digestive System
Bag when we added just water	
Bag when we added	
Cup	

Results Answer the question[illegible]pleted the experiment

1) Which was easier to digest - the crackers or th[illegible]ana? [illegible]you think that was?

2) Do you think some foods we eat are easier to digest than others? [illegible]ple of food that might be hard to digest and food that is easy to digest.

3) Has your digestive system ever had trouble digesting food? (cramps, stomach pain, problems going to the bathroom). Why do you think this happens?

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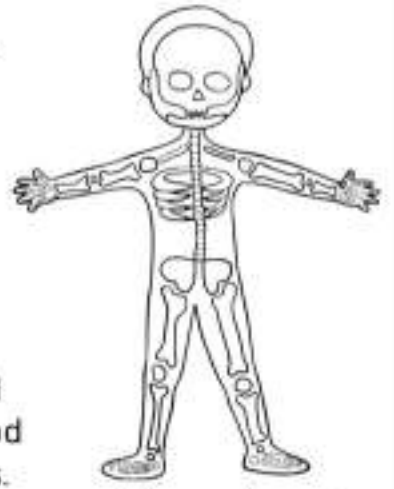
Curriculum Connection
LS.5

Skeletal System

What is the Skeletal System?

The **skeletal system** is all of the bones in our bodies. We need our skeletal system to provide us with support, so we can be upright and not flop around like a jellyfish. When babies are born, they have around 300 bones. As babies grow, some of their bones fuse together, which leaves an adult with 206 bones when fully grown.



Bones

Our bones are living connective tissue that are reinforced with calcium. You have likely been told that milk is good for your bones! Our bones are attached by ligaments in our bodies.

Our bones contain marrow in them. Bone marrow is a spongy substance found in the middle of our bones. Bone marrow makes the white blood cells we need to fight infection and the red blood cells we need to carry oxygen.

Why We Need Our Skeletal System

The skeletal system has more than just bones. Here are some important functions it does for us:

1 - Support	Yes, the most obvious function is that it allows us to stay upright. Humans are lucky to have only 2 legs which allows our arms to be free to do things.
2 - Protection	Our bones protect our internal organs. Our internal organs are the organs inside our body. For example, our ribcage protects our heart and lungs. Our skull protects our brain. Our spine protects our spinal cord.
3 – Movement	Our bones hold our muscles in place and allow our muscles to move us. Without our bones holding our muscles, we would be a blob on the ground!
4 – Blood	Our bones produce white and red blood cells.

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Curriculum Connection
LS.5

Summarize

What does the skeletal system do for us?

True O

whether the statement is true or false

1) Bones are m	True	False
2) Adults have more	True	False
3) Our skeletal system make	True	False
4) Our bones protect our internal organ	True	False
5) Our skeletal system works by itself to move our	True	False

Questions

Use information from the text to

our an

1. What is bone marrow? Why is it important?

2. Which organs do the bones below protect?

Ribcage	
Skull	
Spine	

Name: _____ 41

Curriculum Connection
LS.5

Fill In The Blanks

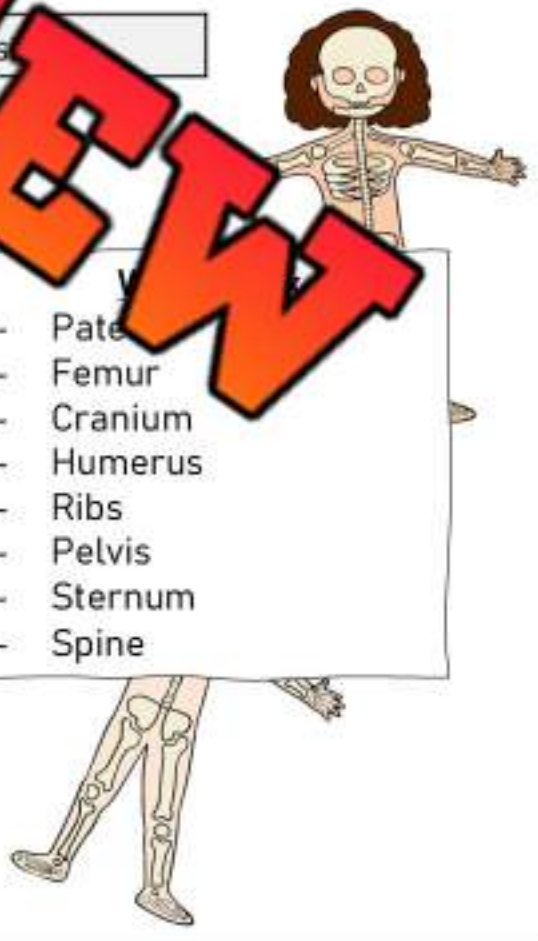
Fill in the blanks using words from the word bank

Word Bank				
Grow	Brain	Calcium	Spinal Fuse	206
Skull	Ribs	Equipment	Move	

An a[illegible]ge adult has _____ bones. Bones _____ as we get older. A baby is born with [illegible]s, but they _____ together as they get older. Your skeletal syste[illegible]p[illegible]our muscles, allowing you to _____. Your spine is made [illegible]83 bon[illegible]tect your _____ cord and allow you to twist, bend, an[illegible]t. Yo[illegible] _____ protect your vital organs, like your heart. Your _____ pr[illegible]t important organ, your brain! You can protect your bones by wearing pr[illegible] _____ when playing sports. You can strengthen your bones by eati[illegible]y, w[illegible] _____.

Diagram

Label the Bones [illegible] the Ske[illegible] Sys[illegible]



- Pate[illegible]
- Femur
- Cranium
- Humerus
- Ribs
- Pelvis
- Sternum
- Spine

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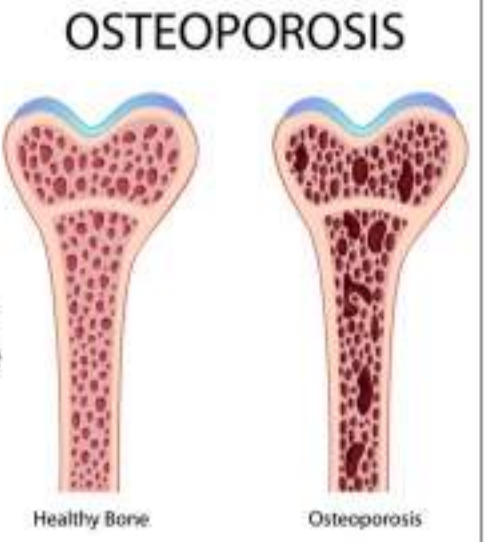
Curriculum Connection
LS.5

Skeletal Disease - Osteoporosis

What is Osteoporosis?

Osteoporosis is a condition that makes your bones weaker and more fragile. It occurs when the body doesn't make enough new bone, or when too much old bone is lost. As a result, the bones become thinner and more porous, and they are more likely to break.



Bone density is a measure of how strong and healthy your bones are. When bones are dense, they are less likely to break. When bones are less dense, they are more likely to break. Bone density is often used to diagnose and monitor osteoporosis.

In osteoporosis, bone density is reduced, meaning the bones are less dense and are more likely to break. The most common areas affected by osteoporosis are the spine, the hip, and the wrist.

What Causes Osteoporosis?

There are several factors that contribute to the development of osteoporosis. Some of them include:

- Age: As you get older, your body doesn't make new bone as quickly as it used to.
- Genetics: Some people are born with a higher risk because of their genes.
- Gender: Women are more likely to develop osteoporosis than men.
- Low levels of calcium and vitamin D: Calcium and vitamin D are important for healthy bones. If you don't get enough of these nutrients, your bones can become weaker.
- Lack of physical activity: Regular exercise helps keep your bones strong.
- Smoking and excessive alcohol consumption: Both of these can harm your bones.

How To Avoid Osteoporosis

1) Getting enough calcium and vitamin D: Calcium is essential for healthy bones, and vitamin D helps your body absorb calcium. Good sources of calcium include dairy products, leafy green vegetables, and calcium-fortified foods. Good sources of vitamin D include sunlight, fatty fish, and fortified foods.

2) Engaging in regular weight-bearing exercise: Weight-bearing exercises, such as walking, running, dancing, and weightlifting, help keep your bones strong.

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Curriculum Connection
LS.5

True Or False

Circle whether the statement is true or false

1) Osteoporosis means bones have less density and will break easier	T	F
2) Getting enough vitamin C is important to not getting osteoporosis	T	F
3) Vitamin D helps your body absorb calcium	T	F
4) Eating a bad diet without any calcium or vitamin D can lead to osteoporosis	T	F
5) Osteop[illegible] happens more in young males than older females	T	F

Que[illegible]

[illegible]r the questions below using evidence from the text

1) What is oste[illegible] d[illegible]t happen?

2) How can you prevent getting osteoporosis?

Draw

Draw and explain healthy foods you could eat that will keep your bones strong

Name: _____ 46

Curriculum Connection
LS.5

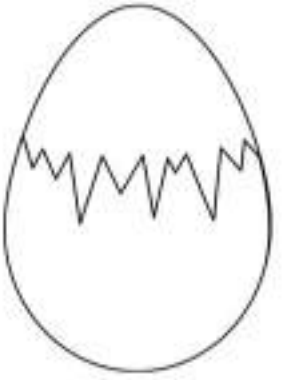
Experiment - Egg with Osteoporosis

Research Question — What are we learning about?

Osteoporosis causes bones to get weak and brittle. Calcium is a nutrient that can keep our bones dense and strong. When we don't get enough calcium, our bones get weak. Today, you will do an experiment that takes the calcium out of an eggshell to see how it affects the strength of the shell.

Materials — What you will need for the experiment

- ❑ 2 eggs
- ❑ 2 clear glass jars
- ❑ White vinegar
- ❑ A spoon



Method — How you will complete the experiment

1) Gently place an egg in each glass or jar.
2) Fill one glass or jar with enough white vinegar to completely cover the egg.
3) Leave the other egg in a glass or jar with no vinegar.
4) Leave the eggs in their respective glasses or jars for 3 days.
5) After 3 days, gently remove the eggs from the glasses or jars and compare them.

Explanation — What is happening?

The acid in the white vinegar is dissolving the calcium in the eggshell. This is similar to how osteoporosis causes the loss of calcium in bones. The egg in the other jar represents a healthy bone.

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Curriculum Connection
LS.5

Hypothesis

What do you predict will happen?

1) What will the eggs feel like in each of the jars after the 3 days?	
Vinegar Egg	
Empty Jar Egg	

2) How st… the eggs be?	
V… Egg	
Empty Jar Egg	

Results

What happe… er t… …lain the results.

1) How did the eggs feel after the 3 days? …escribe … feel … how strong their shells were.

2) With the loss of calcium in the shells, what happened to them?

3) How is this experiment a demonstration of how osteoporosis affects our bones?

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Curriculum Connection
LS.5

Muscular System

What is the Muscular System?

The muscular system is all the muscles in our body that work to move us. If your body has moved, the muscular system was responsible for that movement. For example, the blinking of one eye uses multiple muscles, including the 4 muscles in your eyelid. To smile, your body will use about 43 different muscles!

In total, the muscular system has about 600 muscles. There are 3 types of muscles – skeletal, smooth, and cardiac.

- **Skeletal Muscle** – muscles that attach to bones. These muscles pull on bones to move. Tendons attach muscles to bones.
- **Smooth Muscle** – muscles we cannot control. These muscles work without us knowing. For example, our intestines have muscles that move food.
- **Cardiac Muscle** – a muscle known as the cardiac muscle

How Do Muscles Work?

Our muscular system works together with our skeletal system and our nervous system. Our skeletal muscles connect to our bones and tell us where we want to go. But where do we want to go? Our nervous system works with our muscular system to tell our muscles where to move.

When our brain makes a decision to move, it sends signals to nerves in our muscles. Our muscles will then contract, meaning they will tighten, causing movement. This happens when we pick something up or when we walk.

Muscle contraction is followed by muscle relaxation, where our contracted muscles return back to their normal state.

Exercising

When we exercise, we make our muscles bigger and stronger by performing many muscle contractions. When a skeletal muscle is worked hard after many contractions, it may have micro-tears. These tiny tears are a good thing, as our body will use the nutrients from our digestive system to grow bigger and stronger muscles.

If you have ever had sore muscles, you have experienced these micro-tears. Hopefully afterwards, you ate some healthy foods that your body could get nutrients from. That way, your blood could send nutrients to these tears to allow them to grow back stronger.

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Curriculum Connection
L5.5

True Or False

Circle whether the statement is true or false

1) A smooth muscle connects to our bones	T	F
2) Smooth muscles are involuntary, meaning they work without us knowing	T	F
3) Micro-tears in our muscles are bad for us	T	F
4) Muscles work by contracting and relaxing	T	F
5) The hea own as the cardiac muscle	T	F

Qu formation from the text to support your answer

1) How can y nger s?

2) How does the muscular system work with th eleta rvous systems?

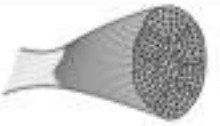
Making Connections

Have you ever had sore muscles? Explain.

Name: _____ 50

Curriculum Connection
LS.5

Your body has **3** types of muscles: **Smooth, Cardiac, and Skeletal.**



Directions Write an example of each type of muscle using words from the word bank

Word Bank				
Biceps	Quadriceps	Heart	Esophagus	Stomach

Type	Function	Example
Smo	Muscles you cannot control. They are ...times referred to as involuntary m...	
Cardiac	...that pumps blood throughout ...	
Skeletal	...dition... ...hat allow you to mo... ...scles becaus... ...contro...	

Questions Use information fro... ...xt to ... ...your answer

1) A muscle strain is worse than a micro-tear. T... ...scle w... ...e rested before you contract it hard again. What can you do befor... ...or... ...cle strains?

2) How can you strengthen your muscles?

3) What would happen if your smooth muscles stopped working?

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Curriculum Connection
LS.5

Your muscles work with your skeleton to allow you to move. Muscles contract to move the bones in your skeleton – allowing for movement. Your muscles work together to perform daily tasks. Some muscles have an opposing muscle. While one muscle contracts, the opposite relaxes. People who don't exercise their muscles, can experience atrophy. **Atrophy** is when a muscle gets smaller.

Muscle Contracting	**Muscle Relaxing** (Quadricep or Triceps)
Bi	
H	

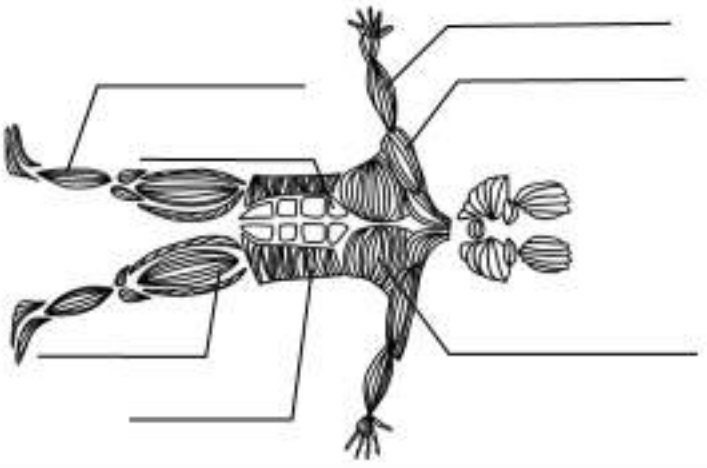
True Or False

Write whether the statement is true or false

1. A tendon connects	True	False
2. A ligament connects bon s	True	False
3. Opposing muscles are quadric s an	True	False
4. If you stop exercising, your muscles into a	True	False
5. A smooth muscle can be controlled	True	False
6. A cardiac muscle controls your breathing	True	False
7. Skeletal muscles can be strengthened by exercising	Tru	False
8. The esophagus is a muscle		lse

Diagram

Turn your page sideways and label the diagram



Word Bank
Biceps
Rectus Abdominis
Oblique
Quadriceps
Deltoid
Pectoral Muscles
Gastrocnemius

Name: _____ 52

Curriculum Connection
LS.1

Nervous System

What is the Nervous System?

The **nervous system** controls everything we do, including breathing, walking, thinking, and feeling. The nervous system is made up of the brain, spinal cord, and all the nerves in our bodies. These three organs work together to allow us to move and understand the world around us.

How Does [illegible]vous System Work?

The brai[illegible] centre of the body. It makes the decisions and [illegible]ssages to and from the rest of the body. The spinal cord is the ma[illegible]ighwa[illegible] messages to be sent through. The nerves are the smaller roads that rea[illegible] t[illegible]dy.

The nerv[illegible]m is a[illegible] These three organs work together so that we can sense the wor[illegible]und[illegible] our surroundings. The nerves in our bodies can sense pain and sen[illegible]e qui[illegible] through the spinal cord and into the brain. For example, if you [illegible]sha[illegible] nerves in your foot will feel pain and send a message up to you[illegible]in t[illegible]

The Brain

The brain is the boss of your body. It controls [illegible]ling v[illegible]n when you're asleep. The brain is made up of the cerebrum, [illegible]ellu[illegible]ituitary gland, and hypothalamus.

Cerebrum	Controls the thinking part of the brain a[illegible] v[illegible] It helps us solve math problems, remember things[illegible] cerebrum is the largest part of the brain, locate[illegible] t[illegible]
Cerebellum	Located at the back of the brain. Controls our balance, movement, and coordination – how our muscles work together.
Brain Stem	Sits beneath the cerebellum connecting the brain to the spinal cord. Controls involuntary muscles – ones we need to work automatically, like breathing, digesting, and keeping our heart beating.
Pituitary Gland	Tiny gland that produces and releases hormones. Hormones are important in many ways, like making us grow!
Hypothalamus	Keeps our body temperature at 37°C by either shivering if were cold or sweating when we are hot. It is located right in the middle of the brain.

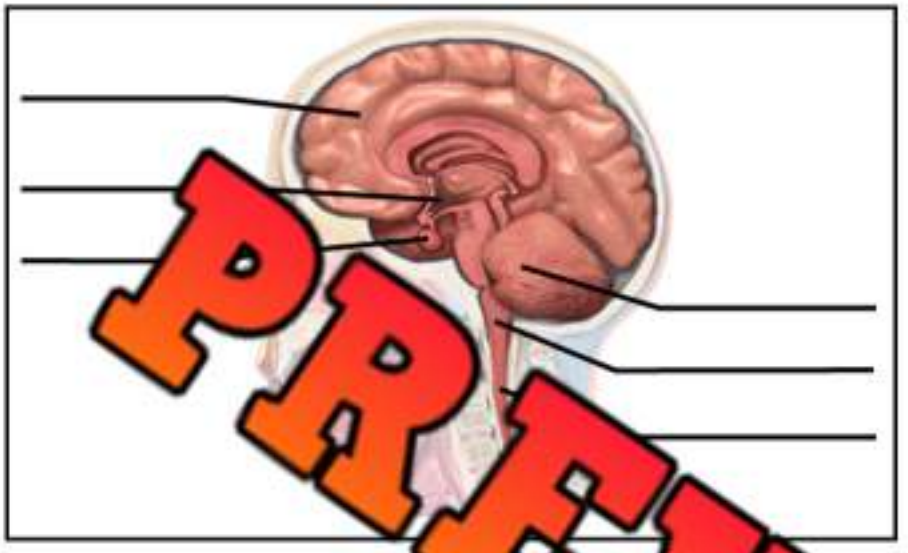
Name: _____ 53

Curriculum Connection
LS.1

Fill In The Blanks

Fill in the blanks on the diagram using words from the word bank

Word Bank					
Cerebrum	Cerebellum	Spinal Cord	Brain Stem	Hypothalamus	Pituitary Gland



What happens in your nervous system if you put your hand too close to a fire?

_____

_____

_____

_____

_____

Matching

Write the let[illegible]om [illegible]side each nervous system part

Nervous System Part	Func[illegible] Wha[illegible]s
_____ Brain Stem	a) Helps with coordinatio[illegible]ba[illegible]
_____ Brain	b) Releases hormones to the bo[illegible]
_____ Cerebellum	c) The computer that controls the bo[illegible]
_____ Spinal Cord	d) Controls thinking and memory
_____ Cerebrum	e) Connects the brain with the nerves going to the [illegible] of the body
_____ Hypothalamus	f) Connects the brain to the spinal cord
_____ Pituitary Gland	g) Controls the temperature of the body

Question

Answer the question using evidence from the text

What could happen if your nervous system wasn't working properly?

_____

_____

_____

Name: _____ 54

Curriculum Connection
LS.1

The nervous system has over 100 billion nerves throughout the body. If you stretched the nerves out, they would reach 150,000km in length! There are two main types of nerves: **Sensory Nerves, Motor Nerves.** Our nerves only send signals one way!

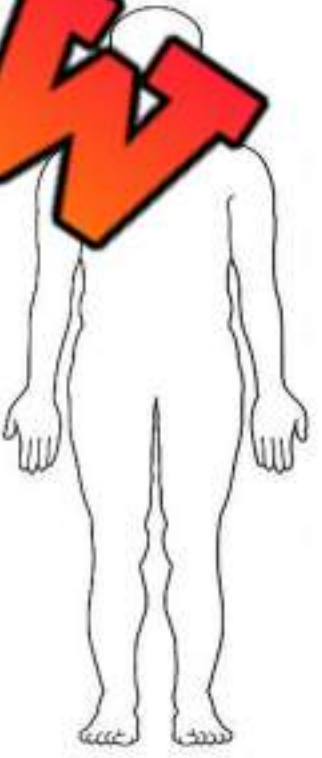
Type of Nerve	Definition
Sensory Nerves	Sensory nerves are in our skin (touch), eyes (sight), tongue (taste), nose (smell), and ears (hear) and send signals to our brain.
Motor Ne	Our brain sends signals through the motor nerves to expand or contract our muscles so we can move. The nerves only travel from the to the muscles.

Directions n type is used based on the description

	Nerves Type Sensory/Motor
1. You feel an itch on your foo	
2. You scratch your itchy foot	
3. You smell something awful	
4. You leave the room from an awful smell	

Directions Draw the nervous system on the body. Inclu the following:

Nervous System Parts	**Colour**
- Brain - Brainstem - Spinal Cord	N/A
- Sensory Nerves	Red
- Motor Nerves	Blue



Name: _____ 55

Curriculum Connection
LS.1

Experiment - Ruler Drop

Research Question

What are we learning more about?

Your brain and nervous system interacts with all of the systems in your body. When we sense something, like a sound, sight, or touch, our organs tell our brain so we can decide what to do. For example, if you see a fire nearby, you might decide to run and call for help.

So, how long does this interaction take? Do we see and then decide to move right away, or is there a delay?

Materials

What do we need for our experiment?

1) Ruler
2) Subjects to run the experiment

Method

How do we complete the experiment?

1) Find someone who you can test their reaction time
2) Have them stand in front of you
3) Hold the ruler with your thumb and index finger at the end with the highest measurement
4) Have your subject put their thumb and index finger at the bottom of the ruler on the lower measurement. Their thumb and finger should be slightly open so the ruler can fall through
5) Without warning them, drop the ruler. Tell them to squeeze it as soon as they see it drop.
6) Record their reaction time as how many centimetres the ruler fell.
7) Repeat with 5 subjects in total

Name: _____ 56

Curriculum Connection
L.S.1

Observations | What happened?

Subject Name	Reaction Time (centimetres)

Results | ...e ...tions below

1) Why do you think ... is ... we see the ruler move and when we move our muscles to squeeze it?

2) Which body systems are interacting in this experim... orga... working?

3) Did some people have better reaction times than others? Do you think a better reaction time helps people in their jobs? Explain which communities might have quick reflexes.

Name: _____ 60

Curriculum Connection
LS.1

Animals - Similar Body Systems

Animals and Their Similar Body Systems to Humans
Just like humans, many animals have body systems that perform similar functions to ours. Here are a few examples:

1. Digestive System
Animals like dogs, cats, and cows have a digestive system just like hu ns. They eat food, which goes down their esophagus eir stomach, where it is broken down. Then, it moves to the intestine ients are absorbed.

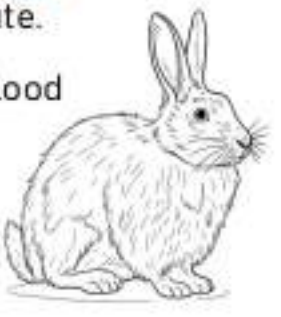
- D ogs hav er digestive system so they can digest food quicker.
- Cats: Cats s, ir digestive system is designed to process meat.
- Cows: Cows ha omp with four compartments to help them break down grass.

2. Respiratory System
The respiratory system allows animals he i an and breathe out carbon dioxide, just like humans. Birds, fish, a rses h ry systems:

- Fish: Fish use gills to extract oxygen from
- Horses: Horses, like humans, use lungs to bre y can reathe through their noses.

3. Circulatory System
The circulatory system pumps blood around the body, carrying ox ents to the cells. It is present in animals like rabbits, dogs, and birds.

- Rabbits: Rabbit hearts beat faster, around 130-325 times per minute.
- Dogs: Like humans, dogs have a four-chambered heart to pump blood



4. Nervous System
The nervous system, including the brain, spinal cord, and nerves, controls the body's functions and responds to changes in the environment. It is found in animals like cats, dogs, and dolphins.

- Cats: Cats have a keen sense of hearing and sight due to their nervous system.
- Dogs: Dogs' nervous systems help them to have a great sense of smell.

Name: _____ 61

Curriculum Connection
LS.1

True Or False

Is the statement true or false?

1) Dogs digest food slower than humans.	True	False
2) Cows have a simple stomach.	True	False
3) Fish use lungs to breathe.	True	False
4) Horses can only breathe through their noses.	True	False
5) Dogs have a strong sense of smell.	True	False

Questio

Answer the questions below

1) Des how a piratory system is different from a human's.

2) Cats and dogs have different nervous that ns. What benefits do they have?

Making Connections

What does the reading remind you of?

Name: ____________________

Curriculum Connection
LS.1

Optical Illusions

What is an Optical Illusion?
An **optical illusion** is when we see something differently than what actually exists. Illusions trick us into perceiving something else is there when it is not. Our brain interprets the signals from our senses (eyesight), but sometimes our nervous system makes mistakes in those interpretations.

Why Do Optical Illusions Happen?
An **optical [illegible]ion** happens because of how the brain and eye work together. The lens focuses li[illegible] the retina, where rods and cones respond to its wavelength. This informati[illegible] th[illegible]ough the optic nerve to the brain. The brain uses memory to inter[illegible]s[illegible] sometimes it makes mistakes and gets tricked by certain image[illegible]

[illegible]hat [illegible] see?

____

____

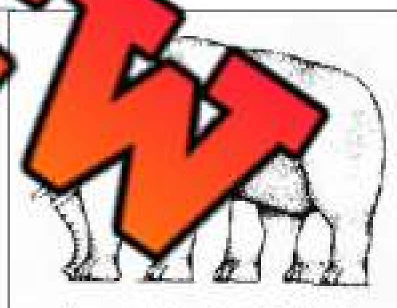
Wh[illegible]uick[illegible]s image, your brain is tricked into seeing [illegible] line[illegible]s we see movement even though the im[illegible]ot mo[illegible]is called a **physiological illusion** becaus[illegible]ur brai[illegible]ces[illegible]timulated to deceive us to see movement.

What do you see?

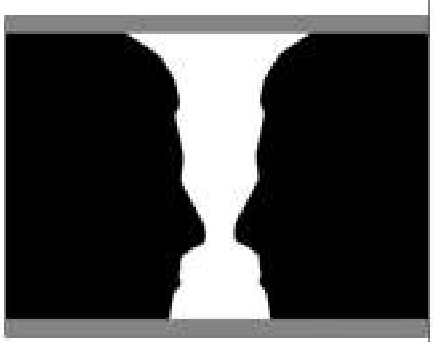
____

____

At first glance, we see a normal elephant. Then we notice that the feet are in the wrong places. This is a **literal illusion** as we see an image that is different than what is there.



How many legs does this elephant have?



What do you see?

____

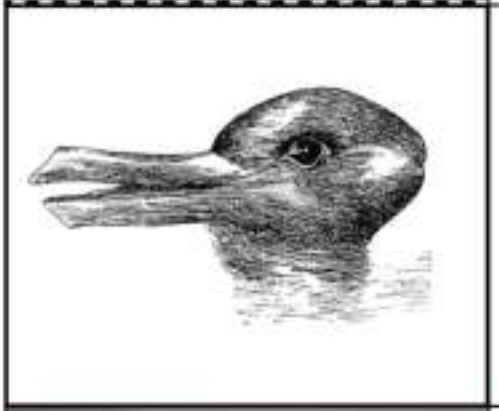
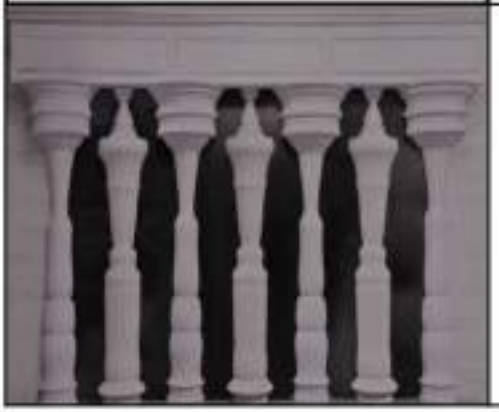
____

Some will see reversible figures (person looking at another person), while others will see a vase. This is a **cognitive illusion** as different people see different things. Our brain and our own thinking determine what we see!

Name: _____ 64

Curriculum Connection
LS.1

Activity Fill in the table below about the following optical illusions

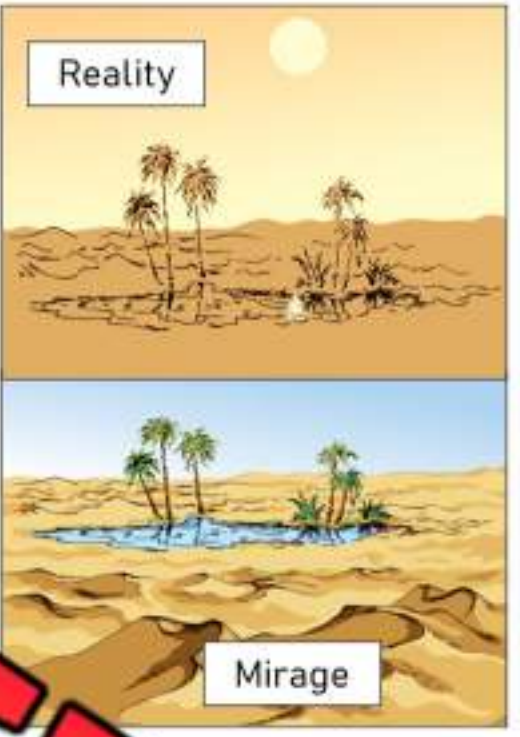
Image	What do you see?	What type of optical illusion is it? Why?
	Hint: Young or Old Lady?	
		
	Hint: Duck or Rabbit?	
		

Curriculum Connection
LS.1

Optical Illusions - Mirages

What is a Mirage?

A **mirage** is a natural optical phenomenon that occurs when light is refracted, or bent, as it passes through layers of air with different temperatures. This can cause the appea[illegible] of an image of an object or a scene that is not rea[illegible]



[illegible] in hot, dry areas, such as deserts, and ca[illegible] po[illegible] water or a distant oasis. However, [illegible] is no[illegible]re - it is just an illusion created by [illegible] irages are caused by the bending [illegible] it t[illegible]h different layers of air with differen[illegible] tem[illegible], w[illegible] can create the appearance of objects th[illegible]e not actually present.

Examples of Mirages

- If you're walking through a desert on a hot day, the air n[illegible]e g[illegible]ound can be much hotter than the air higher up. This temperature difference can c[illegible]n the sky to be bent as it passes through the air, causing it to appear to be [illegible]g from a different direction than it really is. As a result, you might see an image of a pool of water on the ground, even though there isn't really any water there.
- Mirages can occur over water when the air above it is cooler than the air above land. This can reflect the sky or distant shore, making them appear closer than they are.
- In polar regions, a mirage may be caused by light rays bending as they pass through a layer of warmer air above the ground and a layer of colder air below. This can cause the light to be bent, in a way that makes distant objects appear to be floating in the air.

Name: _____ 69

Curriculum Connection
LS.1

True Or False

Is the statement true or false?

1) A mirage is not an optical illusion	True	False
2) A mirage happens when light bends as it passes through different temperatures of air	True	False
3) Mirages are often seen in desert environments	True	False
4) In polar regions, the ground is often warmer than the air just above it	True	False
5) Blue light from the sky could appear as a lake on the ground	True	False

Visualizing

...you were picturing while you were reading. Explain the picture

Questions

Answer the questions below using ev... on ...t

1) What is a mirage? Why do they happen?

2) Why is a mirage considered an optical illusion? How is your nervous system making a mistake?

Name: _____ 70

Curriculum Connection
LS.1

Common Disease - Stroke

What is a Stroke?
A stroke is sometimes called a "brain attack" as it happens when blood flow to the brain stops, even for just a second. Since blood carries oxygen, a stroke leads to the brain not having oxygen, which causes brain cells to die.

Sometimes a person who had a stroke will have permanent brain damage, which may cause their body to stop working as it should. If treated quickly by calling 911 and getting medical attention, the person can have a full recovery with no permanent brain damage.

When to
The a[illegible] us know when to call 911.

F[illegible]	[illegible]s	Speech	Time
Is it drooping	[illegible] raise	Is it slurred or jumbled?	To call 911 right away

Questions Use inform[illegible] the [illegible] pport your answer

1) What is a stroke? What happens to th[illegible]

2) How do you know if someone is having a stroke?

True Or False Is the statement true (T) or false (F)?

1) A stroke affects the heart mainly	T	F
2) A stroke is a brain organ disease	T	F
3) Kids shouldn't call 911 if they think an adult around them is having a stroke	T	F
4) A stroke happens when the brain doesn't receive oxygen	T	F
5) A stroke always leads to permanent brain damage	T	F

Curriculum Connection
LS.1

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____ Mark

Write what each letter in F.A.S.T. stands for and explain what it means.

F	
A	
S	
T	

Name: _____ Mark

Write what each letter in F.A.S.T. stands for and explain what it means.

F	
A	
S	
T	

Name: _____ Mark

Write what each letter in F.A.S.T. stands for and explain what it means.

F	
A	
S	
T	

Name: _____ Mark

Write what each letter in F.A.S.T. stands for and explain what it means.

F	
A	
S	
T	

Name: _____ 72

Curriculum Connection
LS.1

Common Disease - Epilepsy

What is Epilepsy?

Epilepsy is one of the most common diseases of the nervous system. **Epilepsy** is a disease that causes seizures because of unusual electrical activity in the brain. Our brains are constantly sending electrical signals that travel through our nerves to the rest of our bodies.

When these electrical signals are interrupted, they can cause a seizure. A seizure will have different results depending on where in the brain the electrical signals fail. Someone with epilepsy may have a seizure that causes them to shake, pass out, fall down, stiffen up, stare into space.

What Ca

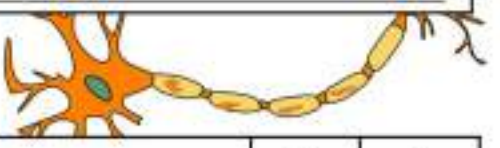
Seiz nd most often happen without warning. For some people though, y may y feeling, upset stomach, or a weird smell or taste before a seizure. Most 0 seconds to two minutes.

Some peo epilep erience seizures when they play too many vide es, n't get enough sleep.

Questions Use informat th port your answer

1) What is epilepsy? Why do seizures ha

2) What does it look like for some people having a seizure?



True Or False Is the statement true (T) or false (F)?

1) Epilepsy is a disease that affects the brain	T	F
2) Epilepsy causes seizures because of failed electrical signals in the brain	T	F
3) Seizures are the same for everyone with epilepsy	T	F
4) Seizures can be caused by video games and not sleeping enough	T	F
5) Seizures usually last 5 minutes	T	F

Name: _____ 73

Curriculum Connection
LS.1

Nervous System Injuries - Paralysis

What is Paralysis?

Paralysis is when a person is unable to move certain parts of their body. This can be caused by an injury, a disease, or a problem with the brain or nerves. When someone is paralyzed, their muscles do not work the way they should, and they cannot move the affected parts of their body even if they try. Paralysis can affect any part of the body, including the arms, legs, and even the muscles used to speak or swallow.

Paralysis and Spinal Cord Injuries

The spinal cord is a long, delicate tube of nerves that runs from the brain down through the spine. It is responsible for carrying messages back and forth between the brain and the rest of the body. This is how the body can move and do things like walk, run, and pick up objects. When someone has a spinal cord injury, it means that something has damaged the spinal cord, either cutting it, bruising it, or compressing it. This can cause the messages between the brain and the body to be disrupted, which can lead to paralysis.

For example, let's say that someone has a spinal cord injury in their lower back. This might affect the nerves that control the muscles in their legs. If the injury is severe, the person might not be able to move their legs, even if they try. They might also have trouble feeling sensations in their legs, like pain or temperature. This can make it difficult for them to walk or do other activities that require the use of their legs.

Treating Paralysis With Stem Cells

Stem cells are special cells that have the ability to develop into many different types of cells in the body. They are like blank slates that can turn into any type of cell that is needed. For example, stem cells can turn into brain cells, muscle cells, skin cells, or any other type of cell that is needed to repair or replace damaged tissue.

In 2016, Kristopher Boesen was in a car accident that left him paralyzed from the neck down. After the incident, Kris could barely breathe due to his injuries, he was told he may never move his body again. Doctors gave Kris the options of a stem cell trial, or a surgery that will help his breathing, but not his movement. Kris chose the stem cell option.

Doctors injected Kris with embryonic stem cells into his spinal cord. The plan was for the stem cells to stimulate nerve cell growth and produce blood vessels that would bring oxygen and healing to the injured site.

After just two weeks, Kris could move his arms and hands in small motions. In three months, he was able to write his name with pen and paper and accomplish a good deal of other normal daily tasks. Kris went from being completely paralyzed and immobile to being able to function on his own again.

Name: _____ 74

Curriculum Connection
LS.1

True Or False

Is the statement true or false?

1) Being paralyzed means there is a disconnect between your brain and body	T	F
2) People can only be paralyzed from the waist down	T	F
3) Being paralyzed means you lose control of parts of your body	T	F
4) Injuring your spinal cord can lead to paralysis	T	F
5) Stem cells can be used to heal an injured spinal cord	T	F

Making C[illegible]

What does this reading remind you of in your life?

Questions

Answer the questions below us[illegible] from [illegible]xt

1) What is paralysis? How can it be caused?

2) Why does a paralyzed individual lose control of parts of their body?

Name: _____ 75

Curriculum Connection
LS.1

Nervous System Injuries - Paralysis

Research Question

What are we learning more about?

Someone who is paralyzed has a disconnect between their brain and parts of their body. We all have body parts that we cannot control. For example, it is common that some[illegible]ple can move certain body parts better than others, like their ears, eyelids, [illegible]his doesn't mean they are paralyzed, but the feeling of not being able [illegible]rt is similar to what someone who has paralysis feels

Materials

[illegible]nee[illegible]ur experiment?

None

Method

How do we compl[illegible]e the [illegible]

Try some of the following exercises below bef[illegible]nswe[illegible]e questions on the back of the page. Follow the instructions ar[illegible] a m[illegible]n your brain to the body part in the instruction. Is there a conne[illegible]

1) Try blinking with your left eye. Then try your right [illegible]eco[illegible]

2) Try moving your big toe without moving any other toe. Then try the next biggest toe, without moving the other toes. Do this until you have tried all toes by themselves. Then compare your results with your toes on the other foot.

3) Can you do the Vulcan salute? It was done famously by Spock and is shown in the picture. In addition, try the same positioning, but with your pinky alone and the three fingers together. Then try your pinky with the two fingers next to it and the index finger alone.

4) Can you move your ears? Try to wiggle them and record your results.

Name: _____ 76

Curriculum Connection
LS.1

Observations | What happened?

Activity	Results
Blink – Left Eye	
Blink –	
Move your toes themselves	
Vulcan Salute and Other Finger Placements	
Ears	

Results | Answer the questions below

How did it feel when you couldn't control a body part very well?

_____

_____

_____

_____

Name: _____ 77

Curriculum Connection
LS.6

Life Systems - Overview

Matching Draw a line from the life system to its function and main organ

System	Function	Main Organ/Parts
Circulatory	Allows your body to move	Stomach, Intestines
Respira	Breaks down the food we eat providing nutrients for our body	Smooth, Cardiac, and Skeletal
Skeletal	s i gen for the body and ets ri n dioxide	Heart
Muscular	od bri xygen to the cel out	Lungs
Digestive	Supports your and vital organs	Skull, Femur, Pelvis, Ribs

Directions You are playing a game of basketbal w eac e systems below are working hard to allow you to

Life System	How Each System is Working During a Gam
Muscular	
Skeletal	
Respiratory	
Circulatory	

Name: _____ 78

Curriculum Connection
L5.6

First People's Understanding Of Body Systems

First People's Understanding of Body Systems

Our modern world has made many breakthroughs in scientific discovery regarding our body systems so we can live long healthy lives. The First People also lived long healthy lives before European colonization. They believed that since their body systems were adapted to their environment, they needed to consume things from their environment.

The [illegible] against the use of anything artificially [illegible] can harm our body systems. For example, do not use pesticides that have harmful [illegible] on the environment and the plants they eat and [illegible]

Using the Environment to Heal [illegible] Traditi[illegible]

The First People understood which plants could heal [illegible] ailments. Food was therefore medicine! They ate a diet rich in omega 3's from [illegible] and [illegible] that were anti-inflammatory. They enjoyed berries and fruits, healthy [illegible] lots of green vegetables.

Food	Healing Power
Cedar	Chronic Coughs, Shortness of breath, aches p[illegible]
Horsetail	Hemorrhages, Internal Bleeding, Urinary tract infec[illegible]
Tree Sap	Pain relief, Muscle toner
Stinging nettle	Anti-inflammatory, Treats arthritis

The First People believe that the health and wellness of our body systems needs to start with the balance and inter-relationships between the physical, mental, emotional, and spiritual aspects of a being. Modern medicine is learning from this important idea that the connections between our body systems (example: how mental stress affects our heart health) is crucial for overall health. If we are unhealthy in one body system, we are unhealthy in all.

Name: _____ 79

Curriculum Connection
L5.6

Summarize

Write the important information from the reading

Question

Inform m the text to support your answer

1) How is food medicine a the F ple's approach?

2) What did the First People teach modern medic ealth

True Or False

Is the statement true or false?

1) Nuts and meats contain omega 3 which help with inflammation	T	F
2) Tree sap can be used for pain relief	T	F
3) Stinging nettle is used for internal bleeding	T	F
4) Horsetail is used to treat hemorrhages	T	F
5) The First People believed medicines should be made by artificial chemicals	T	F

Curriculum Connection
LS.6

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Match each food to its healing power.

		Mark
Cedar	☐ A) Anti-inflammatory, Treats arthritis	
Horsetail	☐ B) Pain relief, Muscle toner	
Tree Sap	☐ C) Coughs, Breath issues, Aches	
Stinging nettle	☐ D) Bleeding, Urinary infection	

Name: _____

Match each food to its healing power.

		Mark
Cedar	☐ A) Anti-inflammatory, Treats arthritis	
Horsetail	☐ B) Pain relief, Muscle toner	
Tree Sap	☐ C) Coughs, Breath issues, Aches	
Stinging nettle	☐ D) Bleeding, Urinary infection	

Name: _____

Match each food to its healing power.

		Mark
Cedar	☐ A) Anti-inflammatory, Treats arthritis	
Horsetail	☐ B) Pain relief, Muscle toner	
Tree Sap	☐ C) Coughs, Breath issues, Aches	
Stinging nettle	☐ D) Bleeding, Urinary infection	

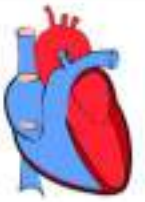
Name: _____ 81

Curriculum Connection
LS.6

Interrelations Between Systems

Interrelations Between Body Systems

None of our life systems work independently on their own. Each system relies on other systems in order to complete the jobs they need to do. Check out some of the relationships between systems below.



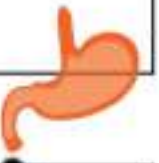
Skeletal System – Relationship with the Systems Below

[illegible]lar	Respiratory	Circulatory
Co[illegible]le [illegible]ular sys[illegible] we ca[illegible] bodies	Protects the lungs, trachea and diaphragm	Protects the heart. Bone marrow produces white and red blood cells

Muscular System – [illegible]ions[illegible] [illegible]stems Below

Skeletal	[illegible]ry	Digestive
Skeletal muscles move our bones. Bones are connected to muscle with tendons.	The he[illegible]rdia[illegible]le. There [illegible]so smo[illegible] muscles in veins a[illegible]terie[illegible]	Smooth muscles in the esophagus, [illegible]tomach, and [illegible]tines

Digestive System – Relationship with the Systems Be[illegible]



Circulatory	Muscular	[illegible]
Provides nutrients for the circulatory system to send to the cells throughout our bodies	Provides nutrients and energy for our muscles (for repair and to do work)	Pr[illegible]s for bone gr[illegible]nd repair

Respiratory System – Relationship with the Systems Below

Circulatory	Digestive	Muscular
Provides the oxygen that is carried by red blood cells to all cells in the body. Removes carbon dioxide as well.	Gives the digestive system oxygen so it can digest food	Provides muscles with oxygen and removes carbon dioxide (waste) from muscle

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Curriculum Connection
LS.6

True Or False

Circle whether the statement is true or false

1) Oxygen is needed to digest food	T	F
2) The digestive system provides nutrients to the other systems	T	F
3) The respiratory system's only job is to provide oxygen to the other systems	T	F
4) Our life systems can do their jobs without the help from other systems	T	F
5) The skel[illegible] system protects many of our other systems	T	F

Questi[illegible]

[illegible] information from the text to support your answer

1) What [illegible]ould h[illegible]er [illegible]tems if the digestive system stopped working? Be specific?

2) What would happen to other systems [illegible]he respi[illegible]y sy[illegible]stopped working? Be specific.

Questioning

Write 2 questions you have about the relationship between systems

1)	
2)	

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Curriculum Connection
LS.6

Circulatory Relationship With Other Systems

Questions Research how the circulatory system interacts with other systems

Other System	How Does the Circulatory System Interact with the Other System?
Respirat Syst	
Muscular System	
Skeletal System	
Digestive System	

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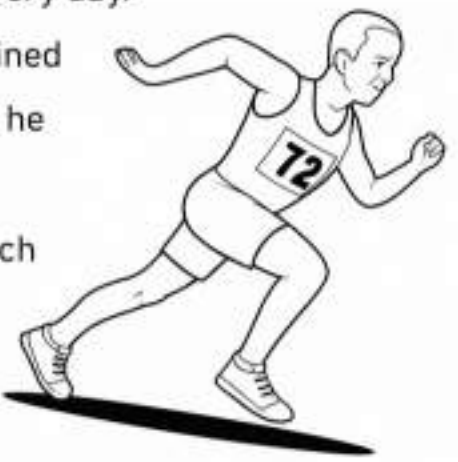
Curriculum Connection
L5.6

Story - Body Systems Working Together

Jack the Future Olympian

Once upon a time, there was a young athlete named Jack. Jack was determined to become the best runner in his school, so he trained hard every day.



Jack's training helped strengthen his heart. As he trained more and more, his heart didn't have to work as hard when he ran. This helped him run faster. The circulatory system, made up of the heart and blood vessels, pumped oxygen-rich blood to Jack's muscles to give them the energy they needed to perform.

Jack was also focused on his breathing while he ran. His respiratory system, made up of his lungs and airways, brought oxygen into Jack's body and removed carbon dioxide. As Jack trained more and more, he was able to slow down his breathing, which saved his energy during the races.

Jack made sure to eat healthy foods in order to provide the nutrients they needed to repair themselves after an intense workout. He ate fruits, vegetables, and proteins that would get broken down by his digestion system. His circulatory system brought the nutrients to his muscles. The calcium in the milk he drank made his bones stronger and denser.

With his strengthened muscles and bones, Jack was able to run fast as they could support his body easily. He felt light on his feet!

Jack's training paid off, and soon he was the fastest runner in his school. He knew that the key to his success was the way his body systems worked together to keep him healthy and strong.

He decided to pursue his dream of becoming an Olympic gold medalist, and he knew that his body would continue to work together to help him achieve his goal.

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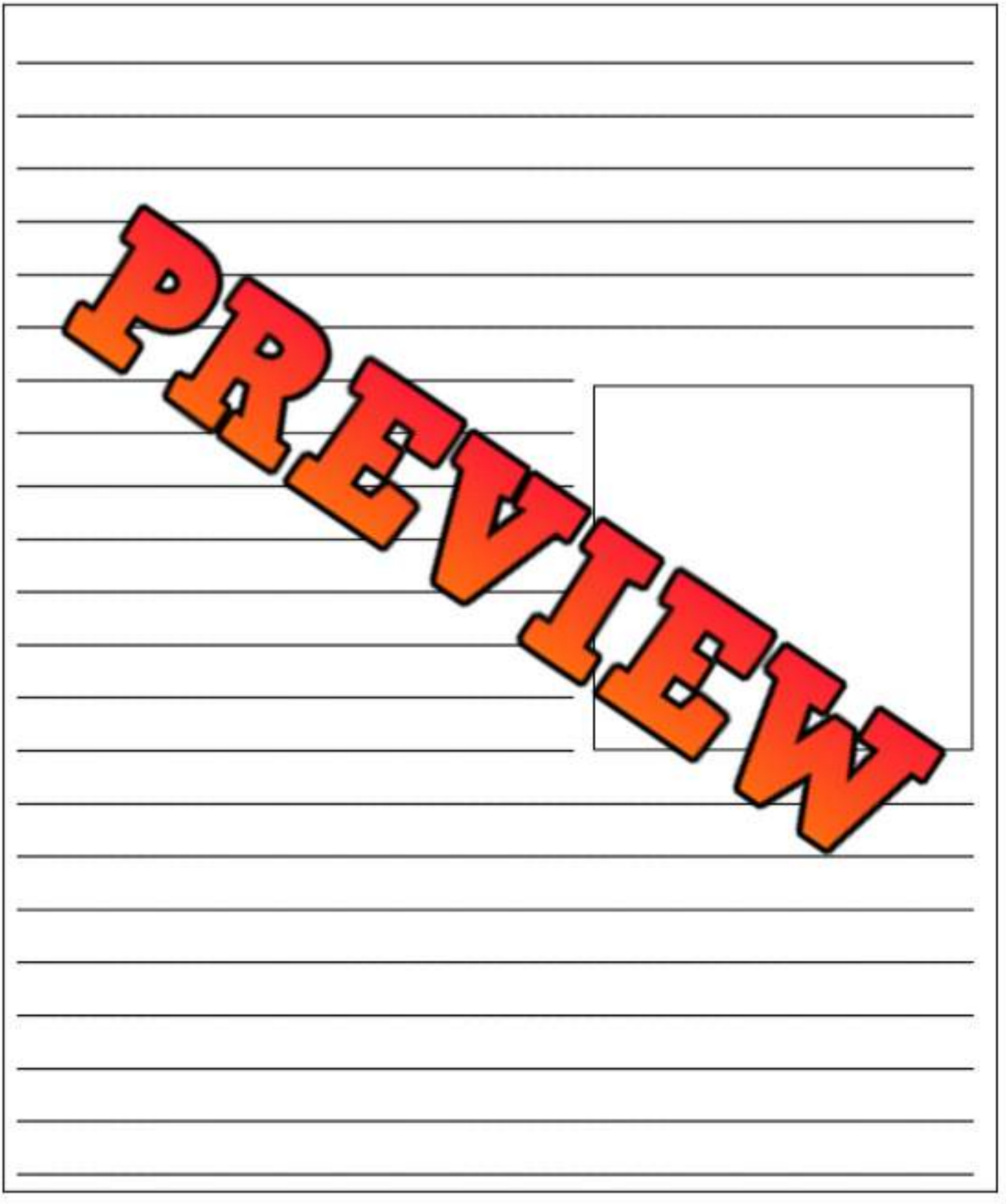
Curriculum Connection
LS.6

Write Write your own story that helps teach about how our body systems work together



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Curriculum Connection
CS.1

Robotic Surgery

What is Robotic Surgery?

Robot-assisted surgery, also known as robotic surgery, is a type of minimally invasive surgery that is performed using specialized surgical robots. The surgeon controls the robot using a console, which allows for very precise and delicate movements.

During the surgery, small incisions are made in the patient's body, and the surgical instruments are then inserted through these incisions. The robot's arms and hands move in a similar way to the surgeon's own hands, but with a greater range of motion and precision. The robot also provides a magnified 3D view of the surgical site, which allows the surgeon to see the patient's body more clearly than with traditional surgery.

Robot-assisted surgery can be used for a variety of procedures, including heart surgery, gynecological surgery, urological surgery, and general surgery. Some of the benefits of robot-assisted surgery include fewer incisions, less blood loss, less pain, and a faster recovery.

Future of Robotic Surgery

In 2021, there were more than 10 million robotic surgeries done around the world. In 2012, less than 2% of all surgeries were done robotically. By 2018, that number had risen to over 15%. Today, an even higher percentage are performed by robot tools. Many scientists believe robots have the potential to replace most of the medical workers in hospitals.

This doesn't mean we won't always have doctors and nurses. Instead, medical professionals will use the technologies available to them to offer better diagnosis and treatment of what people are suffering from. Part of a medical professional's job is to empathize with their patients by listening to them, offer support, and understand their concerns so they can act in their best interest. Since healthcare is complicated, we need humans who can adapt to changing situations and who can use the technologies available to them to help people in need.

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Curriculum Connection
CS.1

True Or False

Is the statement true or false?

1) Robotic surgeries are done only by robots	True	False
2) A robotic surgery means a surgeon uses robotic tools	True	False
3) Robotic surgeries are not happening much today	True	False
4) A robotic surgery requires a smaller incision	True	False
5) Robotic geries are less painful	True	False

Questio

nswer the questions below

1) What is a robo Ho ften are they done?

2) What are the benefits of robotic sur

Reflect

Do you think we will ever have hospitals with mos bots?

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Curriculum Connection
CS.1

Research - Robot Surgery

Research | Answer the questions below

1) What is robot surgery?

2) W[illegible] the be[illegible] drawbacks to robot surgery?

	Drawbacks

3) What surgeries are robots good at doing?

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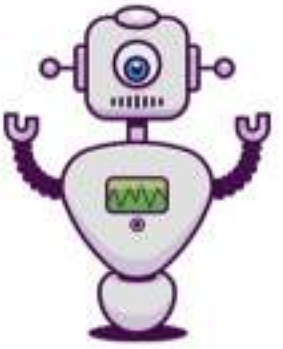
Curriculum Connection
CS.1

Research | Answer the questions below

4) Imagine you broke your leg and were having a robot do the surgery. Write code below to instruct the robot what to look for and what to do when it finds it.



Ideas:
- Find the bone break
- Line up the bones
- Wrap a[illegible]st around the body part

Remember [illegible]f/Then statements.

5) How could robot surgeries help doctors, hospitals, and people?

_____

_____

_____

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Curriculum Connection
CS.1

Coding - Following Instructions

Directions Read the program and follow the instructions to draw the output

If ► is clicked
aw bigger heart
heart red and blue
gr background
Draw a al d the heart

Original	Output
	

Name: _____ 97

Curriculum Connection
CS.1

Directions	Write your own program and have a friend follow the code

If ► is clicked
Draw the
Add a
Co

Original	Output

Name: _____ 98

Curriculum Connection
CS.1

If Then Conditional Statements - Activity

Directions Follow the if/then statements to move the ambulance to the hospital

1)	If the circulatory system controls blood flow	then	Move down 6 spots
2)	If the respiratory system processes food	then	Move right 4 spots
3)	If t muscular system gives our body support	then	Move down 1 spot
4)	If mainly affects the respiratory system	then	Move left 3 spots
5)	e respiratory system	then	Move right 7 spots
6)	pileps ne ous system	then	Move up 4 spots
7)	If the bi gs to tory system	then	Move right 2 spots
8)	If the heart be ystem	then	Move left 3 spots
9)	If washing your hand m ce	then	Move up 4 spots
10)	If the biggest bone in our body ur	then	Move down 5 spots

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Curriculum Connection
CS.1

Coding - Else Statements

An **else** statement works like an if statement. When an if statement is false, we can have another command, instead of nothing happening.

Player 1 is not feeling well

IF they are coughing

THEN give them cough medicine

ELSE

Lay down and rest

Directions ELSE commands below with your own ideas

My asthma is flaring up

ELSE

THEN

I feel warm and sick

If my temperature is above 38° C

ELSE

THEN

Name: _____ 100

Curriculum Connection
CS.1

Coding - Else Statements

Directions Fill in the ELSE commands below with your own ideas

I think I felt a bone break in my arm

If the x-ray shows a broken bone

THEN

ELSE

I think I pulled a muscle in my leg

If I pulled a muscle

THEN

ELSE

My stomach hurts after that meal

If the meal had gluten

THEN

ELSE

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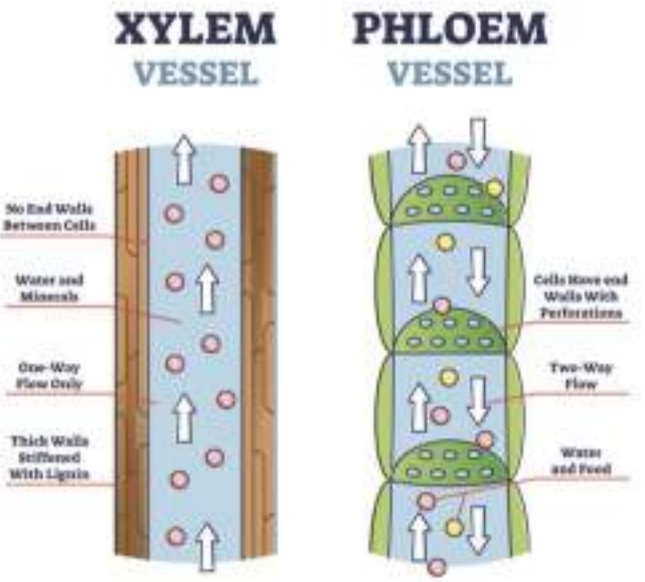
Curriculum Connection
LS.7

Xylem And Phloem

Plant Transport Systems: Xylem and Phloem

Did you know plants have their own transport systems just like animals? Yes, they do! The plant transport system is made of two main parts – the xylem and the phloem. These parts work together to move food and water around the plant.



Xylem: The Water Transporter

Think of the xylem as the plant's water pipes. This system transports water and nutrients from the roots up to the rest of the plant, including the stems and leaves. Just like our body needs water to survive, so do plants! And the xylem helps them get the water they need.

Phloem: The Food Distributor

Phloem is like the plant's delivery truck for food. It carries a type of food for the plant, from the leaves to the rest of the plant. The leaves are the plant's kitchen, where they make food in a process called photosynthesis. The phloem takes this food and distributes it to all parts of the plant.

Xylem and Phloem: Similar to Our Circulatory System

The way xylem and phloem move things around the plant is similar to how our circulatory system works in our bodies. Our circulatory system carries blood, oxygen, and nutrients around our bodies. Just like the xylem and phloem, it makes sure that all parts get what they need to grow and stay healthy!

Isn't it amazing how plants and animals have such similar systems? Remember, every time you water a plant, you're helping the xylem do its job. And every time the sun shines on the leaves, you're helping the phloem get ready to deliver food!

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Curriculum Connection
LS.7

True Or False

Is the statement true or false?

1) The xylem transports water in plants.	True	False
2) The phloem carries sugars to the roots only.	True	False
3) Leaves make food for plants.	True	False
4) Phloem carries water from the roots.	True	False
5) The xyle[illegible]s like the plant's water pipes.	True	False

Questio[illegible]

Answer the questions below

1) What [illegible]he ma[illegible] xyl[illegible]m in plants?

2) How is the phloem in plants similar t[illegible]rculat[illegible]em in humans?

Draw

Draw diagrams of the phloem and xylem showing the di[illegible]ecti[illegible] flow of water and sugars

Xylem	Phloem

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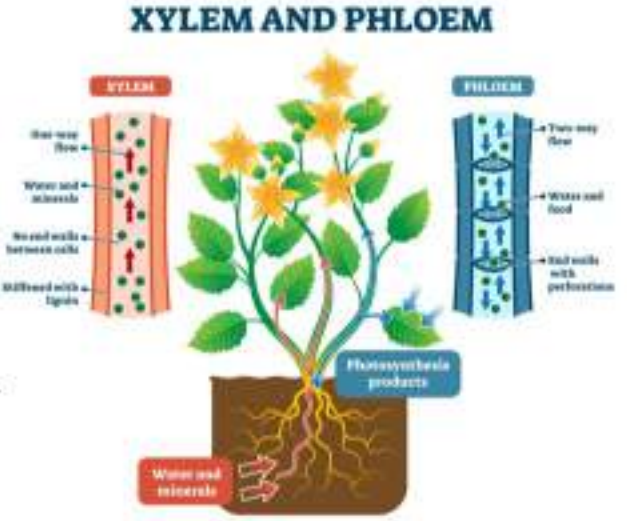
Curriculum Connection
LS.7

Steps For Water And Nutrients In A Plant

The Big Journey of Water and Nutrients in a Plant



Have you ever wondered how a plant eats and drinks? Just like how our bodies have a system to move food and water around, plants have their own s ial system too! It's all thanks to two im arts of the plant called the xylem how they work together to help ant sta nd grow

1) Entering th Water ts from the soil enter the plant through the roots. Think of th cking up water and nutrients from the soil!

2) Traveling Upwards: These and move upwards through tiny tubes in the plant called xylem. The xyle like a ay, carrying the water and nutrients from the roots to the rest of the pla

3) Reaching the Leaves: The water and nutrients es w they're used to make food for the plant. This process is called photo . D hoto nthesis, the plant uses sunlight to turn the water and nutrients int suga

4) Transporting Sugars: The sugars (food) made in the leaves need to g he rest of the plant. The phloem is another set of tubes that transport these sugars from the leaves to all the other parts of the plant, like the stem and roots.

5) Feeding the Plant: The plant uses these sugars as food to help it grow and stay healthy. This food can be stored in the roots, stem, or fruits of the plant for later use.

6) Leaving the Plant: Any extra water the plant doesn't need gets released back into the air through tiny holes in the leaves called stomata. This process is known as transpiration. Think of it like the plant's way of sweating!

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Curriculum Connection
LS.7

True Or False

Is the statement true or false?

1) Xylem moves sugars around the plant.	True	False
2) Phloem carries water from the roots to the plant.	True	False
3) Roots absorb water and nutrients.	True	False
4) The plant's leaves make sugars using sunlight.	True	False
5) The ph carries sugars to the roots.	True	False

Expla

ps a plant takes to take in water and nutrients and get rid
f them them

1)	
2)	
3)	
4)	
5)	
6)	

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Curriculum Connection
LS.7

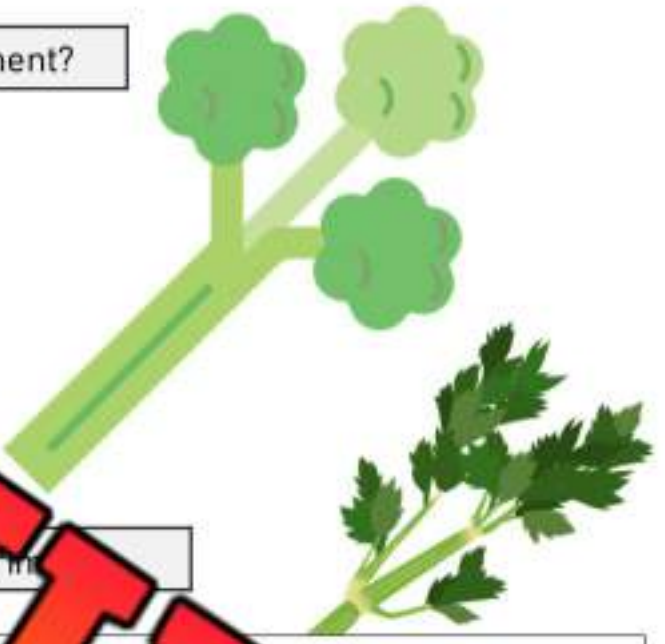
Experiment - Plant Transport Systems

Research Question What are we learning more about?

To understand the functions of xylem and phloem in plant transportation systems.

Materials What do we need for our experiment?

1) Two [illegible] with leaves
2) [illegible] containers
3) Water
4) Food color[illegible]
5) Paper and pencil[illegible]



Method How do we complete [illegible]

1) Fill both jars half full with water.
1) Add several drops of blue food coloring to one [illegible] red to [illegible]ther.
2) Place one celery stalk in each jar and make sure the botto[illegible] submerged in the colored water.
3) Leave the celery in the jars for 24 hours.
4) Observe and write down any changes you notice in the celery stalks and leaves.
5) After another 24 hours, remove the celery from the jars and observe the color changes in the stalk and leaves. Record your findings.
6) Cut across the bottom of the celery stalks. Observe and sketch the coloured rings you see, which represent the xylem and phloem.

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Curriculum Connection
LS.7

Observations

What happened? What do you see?

After 24 Hours	
After 4[illegible]rs	
Sketch the Results	

Results

Answer the questions below

1) Which colour traveled up the stalks to the leaves? What [illegible]s t[illegible] the role of the xylem?

2) Did you observe any colour in the celery stalk that wasn't near the leaves? If so, which colour? What might this tell you about the role of the phloem?

Name: _____ 111

Curriculum Connection
LS.1 – LS.7, CS.1

Memory Game: Systems, Health, And Plants

Objective

What are we learning about?

The goal of this activity is to help students review key science concepts related to body systems, health, diseases, and plants through a fun and interactive memory game.

Materials

What you will need for the activity.

- [illegible] terms on one set (e.g., heart, lun[illegible]as[illegible]tosynthesis) and matching de[illegible]or e[illegible]another.
- A flat surface like a ta[illegible]flo[illegible]t the cards.

Instructions

How you will complete the ac[illegible]

1. Divide the class into groups of 3 or 4. Give each [illegible]et of [illegible]y Game cards. (Provided)
2. Have each group lay all the cards face down in a grid on a ta[illegible]
3. Each group takes turns flipping over two cards at a time, aiming t[illegible]a matching term and definition/example.
4. If a student finds a match, they remove those cards from the grid and keep them.
5. If the cards do not match, they are turned back over, and the next student takes a turn.
6. The game continues until all the cards have been matched.
7. After the game, review each term and its meaning with the group.
8. Discuss how these concepts apply to real-life health, the human body, and plant systems.

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Curriculum Connection
LS.1 – LS.7, CS.1

Cards | Memory Game Cards

Term	Definition
Circulatory System	Moves blood, oxygen, and nutrients through the body.
m	Plant tissue that carries sugars from leaves.
Diaphragm	**te u** **ngs** that helps **ing.**
Osteoporosis	Disease that **mak** bones weak and easy to break.
Stroke	Brain loses oxygen when blood flow is blocked.

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Curriculum Connection
LS.1 – LS.7, CS.1

Cards | Memory Game Cards

Term	Definition
Paralysis	Loss of movement from nerve or spinal cord damage.
C um	Largest part of the brain; controls thinking and muscles.
Pacemaker	vice the chest to heat.
Mirage	Illusion caused by air that looks like water.
Lungs	Organs that take in oxygen and release carbon dioxide.

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Curriculum Connection
LS.1 – LS.7, CS.1

Cards | Memory Game Cards

Term	Definition
Respiratory System	Brings oxygen in and removes carbon dioxide.
Cel[illegible]seas	Illness where gluten damages the small intestine.
Cedar	[illegible] use[illegible] First Peoples to [illegible] pain.
Veins	Blood vessels that [illegible]rry blood back to the heart.
Cardiac Arrest	Heart suddenly stops beating.

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Unit Test - Living Systems

Multiple Choice /10

1) This system controls your blood flow. a) Respiratory b) Circulatory c) Skeletal d) Digesti	2) This system controls your breathing – flowing oxygen in and carbon dioxide out. a) Respiratory b) Circulatory c) Skeletal d) Digestive
3) Wh ur muscles allow to mo a) Circulatory b) Digestive c) Nervous d) Skeletal	4) What does xylem transport? a) Sugars b) Water) Air ight
5) The lungs belong to which system? a) Muscular b) Circulatory c) Respiratory d) Digestive	belongs to which system? a) Ne tal c) d) Digesti
7) What is the phloem's job? a) Transport water b) Make sugars c) Move sugars d) Absorb nutrients	8) The intestine belo system? a) Respiratory b) Skeletal c) Digestive d) Circulatory
9) If someone has a stroke, which body part isn't getting enough blood? a) Heart b) Lungs c) Brain d) Liver	10) Which blood vessels take blood away from the heart to the rest of the body? a) Veins b) Arteries c) None of the above d) Both of the above

Diseases Fill in the table below about diseases affecting our body systems

Disease	Life System Affected	How the Disease Affects the Body
Stroke		
Epilepsy		
Asthma		

Short Answer Answer the questions below. Each question is worth 3 marks

1) What is the main job of the heart?

2) How do the lungs and heart work together to get oxygen to our cells?

3) How do our systems work together to allow us to move our bodies?

Long Answer Answer the questions below – Each question is worth 5 marks

1) How does a plant use its phloem and xylem to transport water and nutrients. Explain the steps.

2) How does the circulatory system interact with o body s? Be specific and make sure to include 5 interactions in your ans