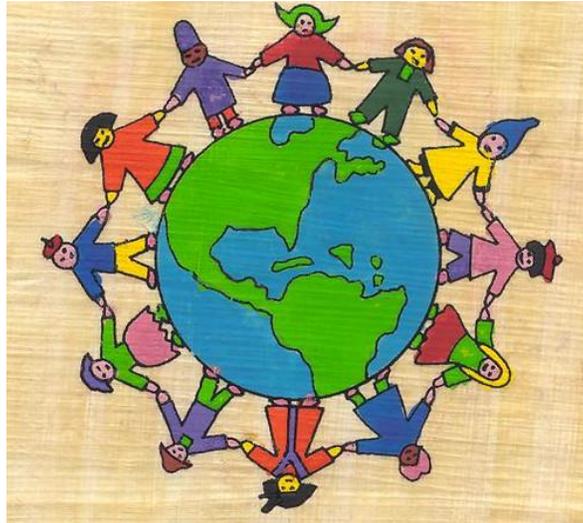
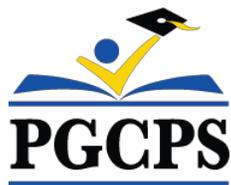


Middle School ESOL CABLE Science
Summer Enrichment Packet
for Rising 6th – 8th Graders



Prince George's County Public Schools
Division of Academics
Department of Curriculum and Instruction



NOTE TO STUDENTS AND/OR PARENT OR GUARDIANS

You have learned so much in school this year! It is important that you keep your brain active over the summer to be ready for next year. In this packet, you will find weekly activities to last you all summer long. The activities consist of a series of topics for you to continue **building the language of Science**, which will enable you to progress to more advanced ESOL classes. You should complete five activities each week. Make sure you use a notebook for all your writing activities.

This summer enrichment packet is based on the following standard:

WIDA English Language Development Standard 4: English Language Learners communicate information, ideas and concepts necessary for academic success in the content area of Science.

The following are some of the skills the English Learners who attended the CABLE (Cognitive Academic Based Language Experience) Science course should have acquired this year:

- Apply the English vocabulary associated with and commonly used in science classes.
- Implement basic academic literacy skills common to science classes.
- Display oral and written English language proficiency through science content area material.
- Understand and practice cognitive, academic English as it is integrated with content material.
- Prepare oral and one-paragraph written reports in English on science topics.
- Apply the Scientific Method through inquiry-based learning
- Utilize higher-order thinking and learning skills.

Activities
Week 1

Review of Body Parts and the Five Senses.

Task 1. Match the picture with the correct names of body parts.

Body Parts 1

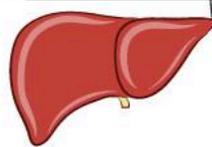
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14 _____



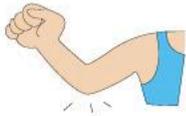
13 _____



2 _____



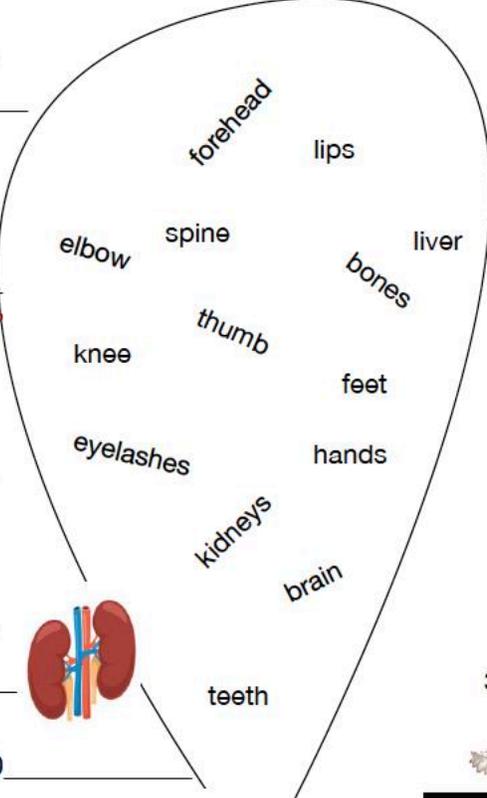
11 _____



9 _____



8 _____





1 _____






2 _____



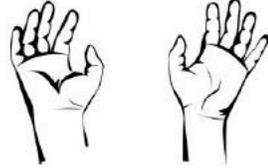
3 _____




4 _____

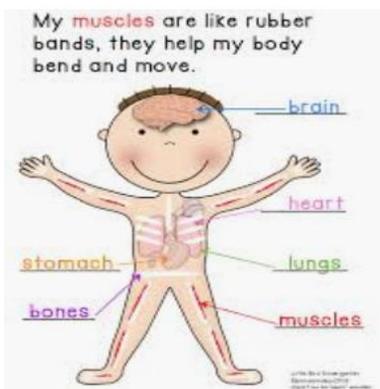



5 _____



6 _____

Task 2. Read the text below. Find the meaning of new words in the glossary on page 6, and then answer the questions.



How does your body work?

The skeleton is the body's frame. It gives the body its shape. The skeleton is made of bones. Some important bones in the skeleton are: the skull, the shoulder blade, the ribs, the backbone (or spine), the pelvis, the thighbone, the kneecap, the shinbone.

Muscles help your body work. Most muscles work with your bones. They pull the bones to make them move. When this muscle, the biceps, contracts, or gets shorter, it pulls up the arm. You use 17 muscles to smile. You use 43 muscles to frown.

The heart is a special muscle. The heart helps your body work. It **pumps** blood to all parts of the body. Exercise makes the heart **beat** faster. How fast does your heart beat?

Blood helps your body work. Blood takes **oxygen** to all part of the body. It takes away **carbon dioxide** and other **waste**. When you run, your heart **beats** faster to pump more blood. The blood takes more **oxygen** to the body. Then the body can work harder.

Lungs help your body work. Lungs breathe in **oxygen**. They release **carbon dioxide**. Swimmers need strong lungs to hold their breath while they are underwater.

The nervous system helps your body work. It takes messages to and from the brain. For example, when a soccer player sees the ball coming, the nerves send a message. The brain tells the body what to do. They tell the brain what the eyes see. The **spinal cord** carries messages between the nerves and the brain. Thirty-one spinal nerves are attached to the spinal cord.

The brain helps your body work. Different **centers** in the brain **control** how you think, feel, and move. The brain also controls other body systems. The brain is the most important part of the nervous system.

The five senses help your body work. Your senses help you see, hear, smell, taste and touch. The nerves carry messages to the brain. Eyes see, ears hear, the skin touches and feels, the nose smells, the tongue tastes.

GLOSSARY

alveoli: tiny air pockets in the lungs. *The blood gets oxygen in the alveoli.*

beat: a steady rhythm of sound. *The beat of your heart sounds like this: lub-dub, lub-dub, lub-dub.*

carbon dioxide: a gas. *Carbon dioxide is a waste in the blood stream.*

center: a special place. *There are centers in your brain for each of your senses.*

cluster: a group of things that are alike. *Many clusters of alveoli in your lungs help you breathe.*

contract: to get shorter. *When you move your arm, one muscle contracts while another stretches.*

control: to tell what to do. *Your brain helps control your muscles when you move.*

energy: the power you need to move your body. *Food gives your body energy.*

exercise: to move your body. *When you exercise, you make your heart pump faster.*

germ: a small living thing that can make you sick. *Some germs can give you a cold.*

oxygen: a gas found in the air we breathe. *The body needs oxygen to live.*

pulse: a beat you feel in your arteries as your heart pumps. *Your pulse speeds up when your heart beats faster.*

pump: to move fluid. *Your heart pumps blood through your arteries and veins.*

system: parts of the body that work together to do a special job. *Your skeleton is a system of bones.*

vitamin: a natural material found in food that keeps the body healthy. *Some vitamins are made within the body.*

waste: something that is no longer needed. *Carbon dioxide is a waste from your body.*

In your notebook, answer the questions on pages 6 and 7, using complete sentences.

1. How does blood help your body work?
2. Do the heart, the lungs or the skeleton give the body its shape?
3. What are some important bones in the human body?

What Body Parts Do

help you move	pumps blood	tells your body how to act
sense feelings	digests food	breathe air

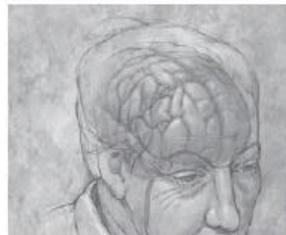
1.



What do nerves do?

They sense feelings .

2.



What does the brain do?

It _____ .

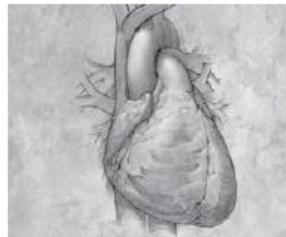
3.



What do muscles do?

They _____ .

4.



What does the heart do?

It _____ .

5.



What do the lungs do?

They _____ .

6.



What does the stomach do?

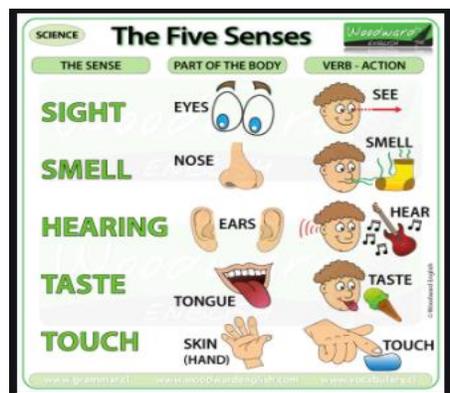
It _____ .

Task 3. How fast does your heart beat? Find it out on your own! Directions:

1. Put two fingers on the inside of your **wrist**, below your **thumb**. You should feel a **beat**, called your **pulse**.
2. Count **how many beats** happen in **10 seconds**.
3. **Multiply** this number by six. That's the number of times your heart beats in a minute.
4. Write the number here: _____.



Task 4. Review the five senses looking at the picture. Then in your notebook, answer the questions using complete sentences.

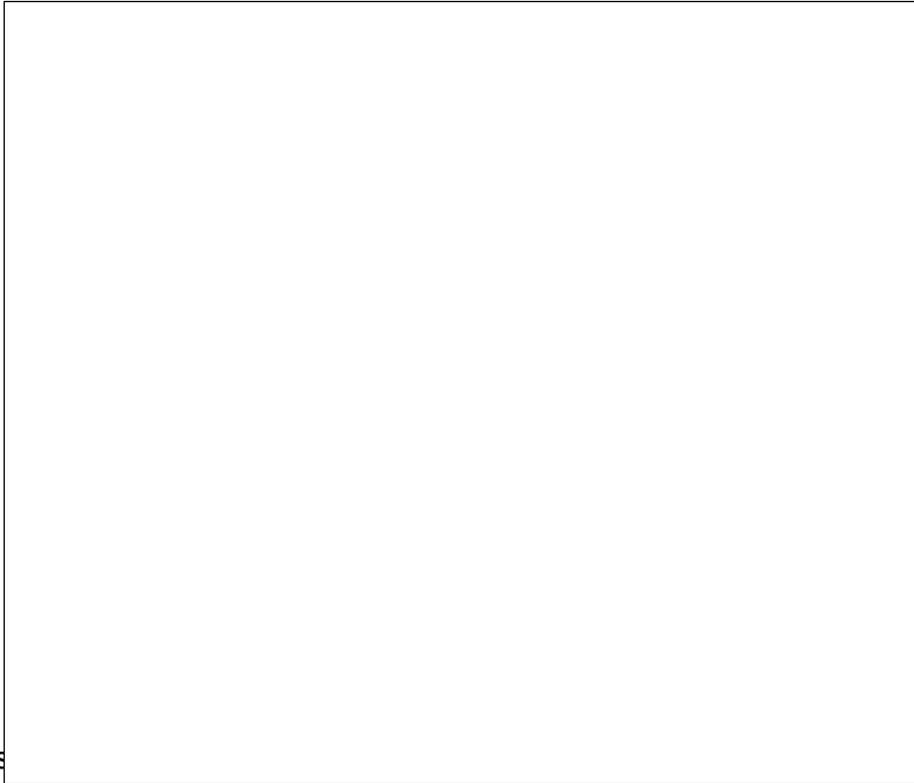


The Five Basic Senses

Our senses allow us to experience the world around us. The senses allow us to see, hear, smell, taste and touch things. Each sense is associated with a specific sensory organ.

1. When you wake up in the morning, what are the first things you see? Hear? Smell? Touch? Taste?
2. What can your senses tell you about a flower? A dog? A spider? A carrot?
3. Which sense is the most important to you? Why?
4. How can your sense of smell keep you safe?

Task 5. Directions: Draw a picture of yourself in the box. In your notebook, copy the sentence frames, and fill in the blanks with the correct words to describe yourself. Use words from the word box.



This is

round. My _____ are strong. My _____ are long. I have two _____.

I have two _____. I have a _____ and a _____, too

head	tall	mouth	short	legs
arms	eyes	hands	nose	of medium height

Activities Week 2

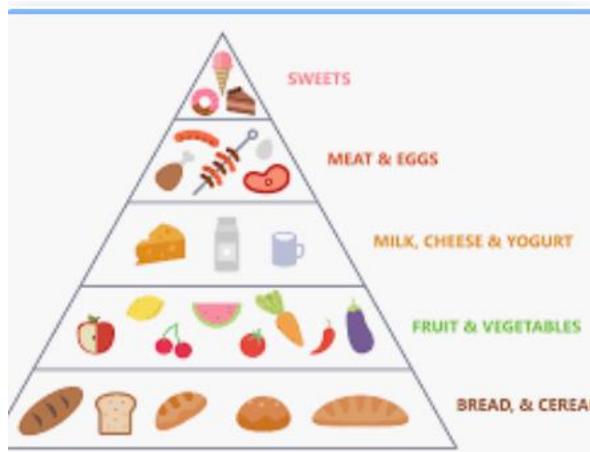
Review of Healthy Behaviors, Scientific Method

Task 1. Read the text below. Find the meaning of new words in the glossary on page 11.

Healthy Behaviors

Healthy behaviors help your body work. **Keep your body clean to kill germs that make you sick.** Wash your hands often. Keeping hands clean is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases are spread by not washing hands with soap and clean, running water.

Eat healthy foods to give the body energy. They have lots of vitamins. Good nutrition is an important part of leading a healthy lifestyle. Combined with physical activity, your diet can help you to reach and maintain a healthy weight, reduce your risk of chronic diseases (like heart disease and cancer), and promote your overall health.



Look at the food pyramid on the left.

Eat more foods from the bottom of the food pyramid.
Eat fewer foods from the top of the food pyramid.

Keep active. Exercise your body. Physical activity or exercise can improve your health and reduce the risk of developing many diseases. Exercise strengthens your heart, lungs and muscles. It helps your body work better.

Get enough rest. Quiet activities let your body rest. Sleeping is the best way to rest your body. Sleep plays a vital role in good health and well-being throughout your life. Getting enough sleep at the right times can help protect your mental health, physical health, and safety. The way you feel while you're awake depends in part on what happens while you're sleeping.

Glossary

germs: very small living things that can make you sick

disease: an illness that affects a person, animal, or plant

health: the general condition of your body and mind

healthy: good for your body. The condition of your body when you are not sick

diet: a way of eating in which you only eat certain foods, in order to improve your health

chronic disease: a chronic disease or illness is one that continues for a long time and cannot be cured

well-being: a feeling of being comfortable and healthy

Directions: Complete the chart below, using information from the text on page 10.

Behavior	Effect
Washing hands often	
Eating healthy foods	
Exercising regularly	
Getting enough sleep	

Read the text below, then complete the task on page 13.

The Scientific Method

How do scientists find out information about the world? How do scientists think and work? How do they show that their ideas are correct? When you work as a scientist, you ask questions. Scientists usually use five steps to find answers to their questions. This is called the **Scientific Method**. These are the steps:

1. **Ask a question**



First, scientists ask a question about things they don't know.

2. **Make a hypothesis**



Next, scientists make a hypothesis.

3. **Test your hypothesis**



Then, they do experiments to test their Hypothesis.

4. **Observe**



During the experiments, they observe very carefully what happens

5. **Draw conclusions**



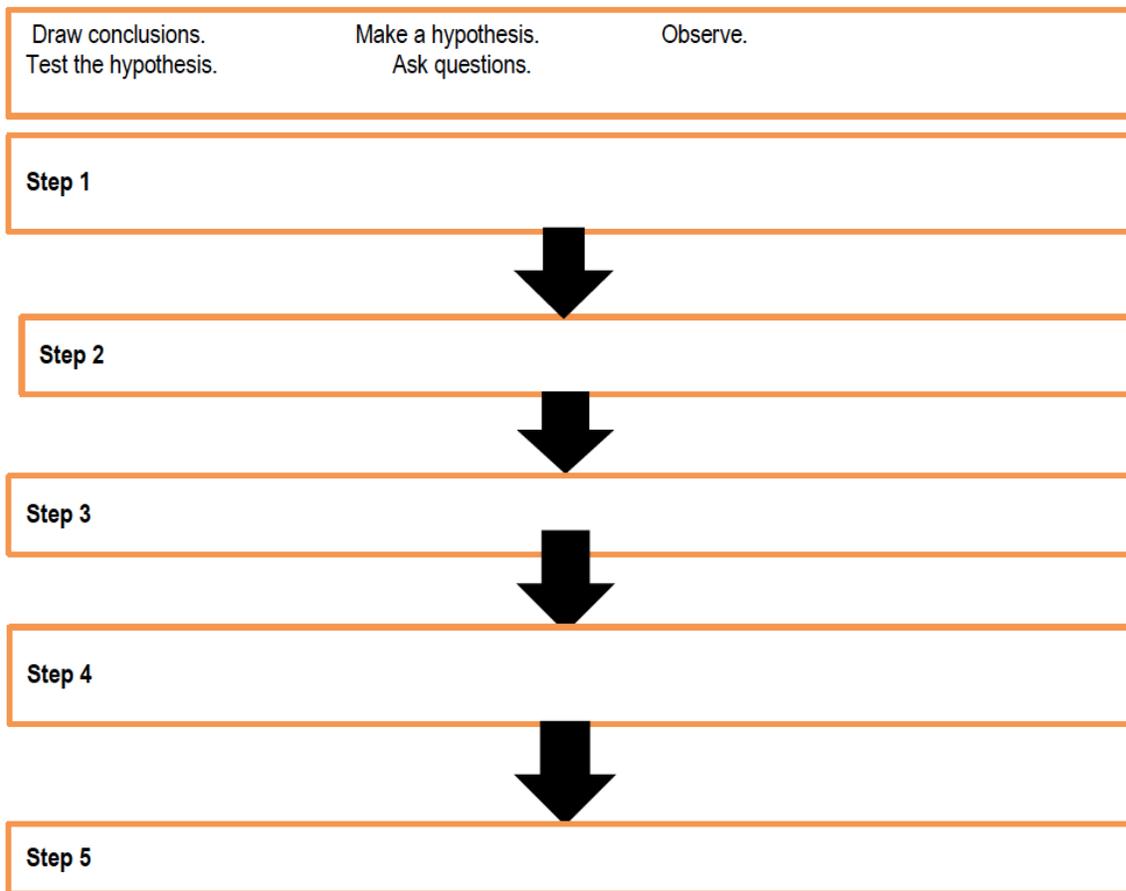
Finally, they decide if their hypothesis was correct or not.

Glossary:

hypothesis: an idea that is suggested as an explanation for something, but that has not yet been proved to be true

draw conclusions: to decide that a particular fact is true based on the information you have

Task 2. Directions: Write the steps of the scientific method in the correct order. Use the sentences from the box.



Task 3. In the blank spaces, write T for true or F for false:

- ___ 1. Scientists don't ask questions.
- ___ 2. A hypothesis is a guess.
- ___ 3. Scientists do experiments to test a hypothesis.
- ___ 4. First scientists draw conclusions, then they make a hypothesis.
- ___ 5. Observing is not part of the scientific method.

Task 4. Growing a Beanstalk Experiment

Learn about the scientific method by doing your own experiment. Follow each step as you do an experiment on growing bean seeds. Write notes about each step while you are doing the experiment. (see page 15)



Ask questions.

Scientists ask questions about the world. They begin with things they know. They ask questions about things they don't know. For example, you know seeds grow and become plants. But you don't know how. You can ask, "What is something that seeds need to grow?"



Make a hypothesis.

After asking a question, scientists try to guess the answer. This is called making a hypothesis. You think about what you already know about plants. Then, you make a guess. You think, "The seeds need water to grow." This is your hypothesis.



Test your hypothesis.

After scientists make a hypothesis, they test it. They find out if their idea is correct by doing an experiment. You know beans are big seeds. You put paper towels and beans into two jars. Then, you add water to only one of the jars.



Observe.

Scientists observe, or look, listen, touch, and think. Observing is an important part of the scientific method. During your bean experiment, you look at the two jars every day. What happens to the bean in the jar with water? What happens to the bean in the jar without water?



Draw conclusions.

After scientists observe, they decide if their hypothesis is correct. This is called drawing conclusions. What did you learn about what seeds need to grow from your experiment? This is your conclusion. What did you learn from your experiment?

Task 5. Beanstalk Experiment Log

Directions: Follow the steps of the scientific method as you do your experiment. Write notes about each step while you are doing the experiment.

Step 1. Ask questions.

Step 2. Make a hypothesis.

Draw a picture here of the beans before the experiment



Step 3. Test your hypothesis.

Step 4. Observe.

Draw a picture here of the beans after the experiment.



Step 5. Draw conclusions.



Activities Week 3

Review: Cells, Plants, Photosynthesis

Task 1. Read the text below, then answer the questions.

What Are Cells?

The cell is the basic unit of life. All living things have cell. These tiny building blocks work together to create simple bacteria, as well as more complex organism. Some organisms are made up of a single cell, like bacteria, while others are made up of trillions of cells. Human beings are made up of cells, too.

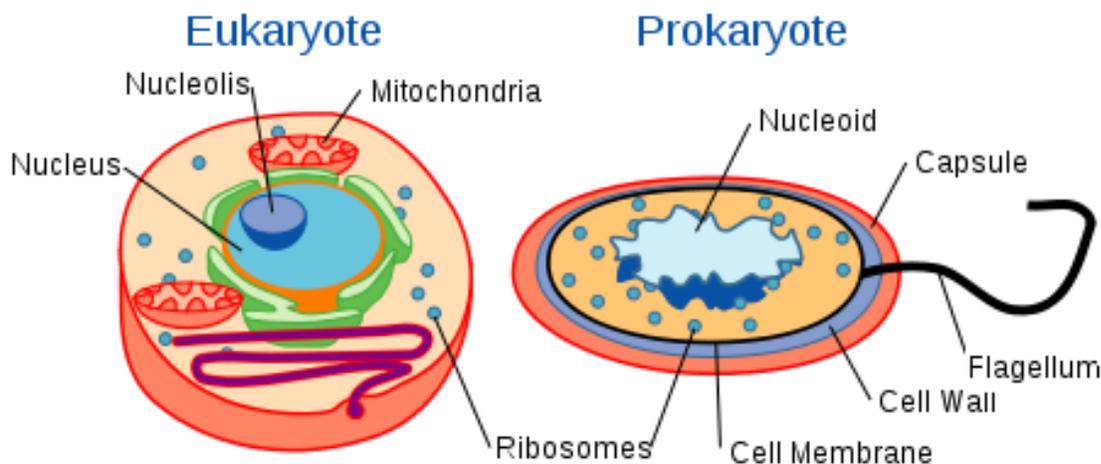
Different Types of Cells

There are lots of different types of cells. Each type of cell is different and has a different function. In the human body, we have nerve cells which can be as long as from our feet to our spinal cord. Nerve cells help to transport messages around the body. We also have billions of tiny little brain cells which help us think and muscle cells which help us move around. There are many more cells in our body that help us to function and stay alive.

Even if there are lots of different kinds of cells, they are often divided into two main categories: prokaryotic and eukaryotic.

Prokaryotic Cells - The prokaryotic cell is a simple, small cell with no nucleus. Organisms made from prokaryotic cells are very small, such as bacteria.

Eukaryotic Cells - These cells are typically a lot bigger and more complex than prokaryotic cells. They have a defined cell nucleus which houses the cell's DNA. These are the types of cells we find in plants and animals.



Parts of the Cell

There are a lot of parts and functions to some cells. Here are some of the main components many cells have:

- **Membrane** - This is the outer part of the cell. Sort of like the skin. It allows some substances in and keeps others out.
- **Mitochondria** - This is where the cell gets its energy. In the human body, food we have digested reacts with oxygen in the mitochondria to make energy for the cell.
- **Ribosomes** - Ribosomes are like tiny factories that make different things the cell needs to function, like proteins.
- **Nucleus** - The nucleus is the brains of the cell. It uses chromosomes to instruct the rest of the cell what to do next.
- **Cytoplasm** - This is the stuff that fills up the rest of the cell. The other components of the cell float around in the cytoplasm. It's mostly water.
- **Lysosomes** - These guys clean up the place getting rid of waste and other unwanted substances that may get into the cell.

The machines inside the cell like the nucleus, ribosomes, and lysosomes are called organelles.

Directions: Choose the correct answer for each question.

1. Which of the following is a function of the nerve cell?

- a. To help us think
- b. To produce energy
- c. To transport messages around the body
- d. To fight off bacteria

2. True or False: Eukaryotic cells are typically a lot bigger and more complex than prokaryotic cells.

TRUE FALSE

3. True or False: The cell membrane allows all substances into the cell.

TRUE FALSE

4. True or False: Only human beings have cells.

TRUE FALSE

Task 2. Fun Experiment: Shrinking Cells

Directions: Fill two glasses half full with warm water. Dissolve three tablespoons of salt into one of the glasses. Break a carrot in half and place the cut end of each piece into each glass. Leave overnight and then check the size of the carrots. Write what happened to each carrot on the lines below:

One carrot _____.
The other carrot _____.

Plant and animal cells are like tiny water balloons. The cells balance the saltiness by releasing cell water through the cell wall to the salt water surrounding them. The cell lost water it needs to live and it collapsed and died. The carrot in plain water absorbed the water into the cells and expanded.

Read the text below, then complete the tasks.

Plants



What are plants? Plants are **living organisms** that cover much of the land of planet Earth. You see them everywhere. They include grass, trees, flowers, bushes, ferns, mosses, and more. Plants are members of the kingdom **plantae**.

What makes a plant a plant? Here are some basic characteristics that make a living organism a plant:

- Most plants make their own food through a process called **photosynthesis**.
- Plants have a **cuticle**, meaning they have a waxy layer on their surface that protects them and keeps them from drying out.
- They have **eukaryotic** cells with rigid cell walls.
- They reproduce with spores or with sex cells.

Basic Structure of Plants

The basic parts of most plants are the **flower**, the **leaf**, the **stem**, and the **roots**. Each part has different **functions**.

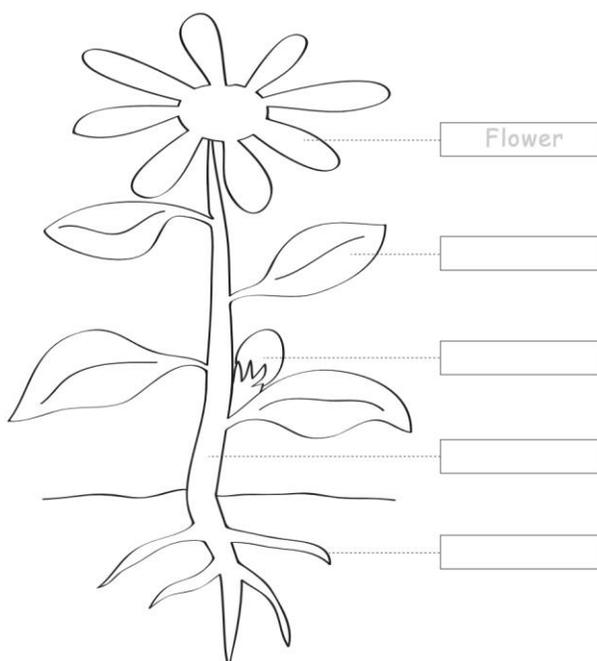
Flower – Flowers are the reproductive part of plants. They often have showy petals and fragrances to attract pollinators such as birds, bees, and other insects.

Leaf - The leaf is an organ of a plant that is specialized for photosynthesis. Leaves capture energy from sunlight as well as collect carbon dioxide from the air. Many leaves are flat and thin in order to catch as much sunlight as possible. However, leaves come in many different shapes including long skinny needles that are found on pine trees.

Stem - The stem is the main structure that supports leaves and flowers. Stems have vascular tissues that move food and water around the plant to help it grow. Plants often store food in their stems.

Roots - The roots of a plant grow underground. Roots help to keep the plant from falling over and gather water and minerals from the soil. Some plants store food in their roots. The two major types of roots are fibrous roots and taproots. Taproots tend to have one major root that grows very deep, while fibrous roots have many roots that grow in all directions.

Task 3. Write the names of the parts of the plant in the boxes.



Task 4. In your notebook, answer the following questions.

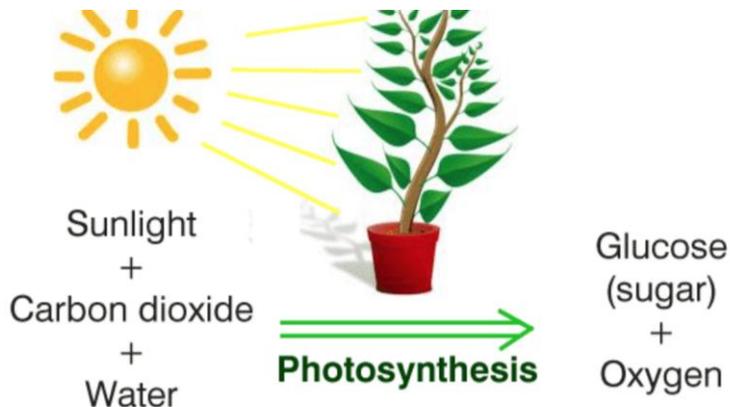
1. What is one function of a **root**?
2. What is one function of a **flower**?
3. What is one function of a **leaf**?
4. What is one function of a **stem**?

Task 5. Read the text below, then answer the questions.

Photosynthesis

What is photosynthesis?

Have you ever noticed that plants need sunlight to live? How can sunlight be a type of food? Well, sunlight is energy and photosynthesis is the process plants use to take the energy from sunlight and use it to change carbon dioxide and water into food.



Three things plants need to live

Plants need three basic things to live: water, sunlight, and carbon dioxide. Plants breathe carbon dioxide just like we breathe oxygen. When plants breathe carbon dioxide in, they breathe out oxygen. Plants are the major source of oxygen on planet Earth and help keep us alive. We know now that plants use sunlight as energy, they get water from rain, and they get carbon dioxide from breathing. The process of taking these three key ingredients and making them into food is called photosynthesis.

How do plants capture sunlight?

Plants capture sunlight using a compound called chlorophyll. Chlorophyll is green, which is why so many plants appear green.

More details on Photosynthesis

Inside a plant's cells are structures called chloroplasts. It's in these structures where the chlorophyll resides.

There are two main phases to the process of photosynthesis. In the first phase, sunlight is captured by the chloroplasts and the energy is stored in a chemical called ATP. In the second phase, the ATP is used to create sugar and organic compounds. These are the foods plants use to live and grow.

The first phase of the process must have sunlight, but the second phase can happen without sunlight and even at night. The second phase is called the Calvin Cycle because it was discovered and described by scientist Melvin Calvin.

Task 5. Directions: Choose the correct answer below.

1. What three things do plants need for the process of photosynthesis?

- a. Sunlight, oxygen, and sugar
- b. Water, soil, and oxygen
- c. Sunlight, carbon dioxide, and water
- d. Sunlight, soil, and water

2. If plants breathe in carbon dioxide, what do they breathe out?

- a. Nitrogen
- b. Oxygen
- c. Carbon Monoxide
- d. Hydrogen

3. What is the compound that plants use to absorb the energy from light?

- a. Carbon dioxide
- b. Chlorophyll
- c. DNA
- d. Nitrogen

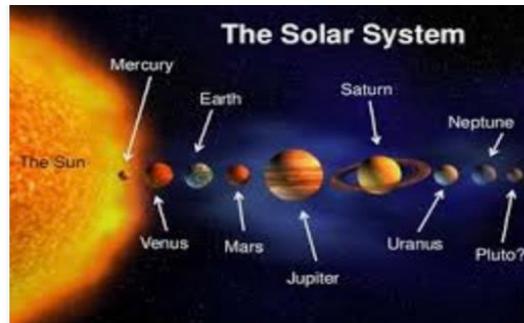
4. What color is chlorophyll?

- a. Red
- b. Blue
- c. Brown
- d. Green

Review: The Universe and the Solar System, The Sun, Earth and the Moon

Read the text below, then complete tasks 1 and 2.

The Universe and Our Solar System



The **universe** includes all matter and energy. Everything around us is part of the universe.

A **galaxy** is a huge cloud of dust, gas, and stars. One galaxy can have billions of stars. Our sun is a star, a ball of burning gas. During the day, we see light from our sun. At night, we see the light from other stars. People often see star patterns in the sky. These patterns are called **constellations**. **Ursa Major** is a constellation. Part of this constellation is called the **Big Dipper**.

A **solar system** is a star and everything that goes around it. Eight **planets orbit** our sun. **Mercury** is closest to the sun. They come **Venus, Earth, and Mars**. Next are **Jupiter, Saturn, Uranus, and Neptune**.

Asteroids and **comets** are also part of our solar system. Asteroids are rocky objects. They are smaller than planets. There is an asteroid belt between Mars and Jupiter. Comets are small bodies of ice, frozen gases, rock dust. When a comet nears the sun, water and gases melt. They blow outward to make glowing tails.

A moon orbits a planet. Some planets have many moons. Earth has one. We live on Earth. It is one part of our galaxy, and our galaxy is part of the universe.

Task 1. Directions: In your notebook, answer the following questions, using complete sentences.

1. What is a solar system?
2. What is an asteroid?
3. What is a constellation?
4. What is our sun?

Task 2. Directions: Complete the sentences below, based on the text you read.

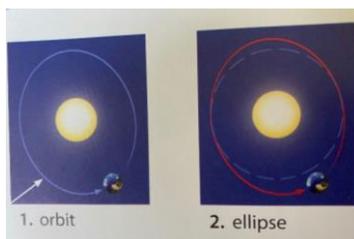
1. A _____ can have planets in it.
2. There are many solar systems in a _____.
3. Comets are part of a _____.
4. Galaxies are part of the _____.
5. A planet is part of a _____.

Read the text below, then complete tasks 3, 4 and 5.

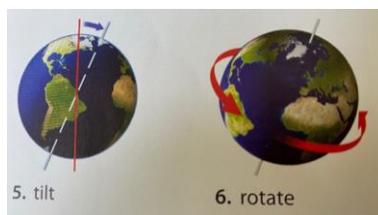
The Sun, Earth and the Moon

The sun and Earth are a system. Earth and the moon are another system. The sun, Earth and the moon affect each other.

Earth **revolves** around the sun. Its path is an **orbit**. The orbit's shape is an **ellipse**. It makes one complete trip each year.



Imagine a line between the Earth's poles. The imaginary line is called an **axis**. Earth **rotates** on its axis. This causes day and night. It is day on the side of Earth facing the sun. At the same time, it is night on the side of facing away from the sun. Earth's axis **tilts**. This tilt causes **seasons**. Earth tilts towards the sun in spring and summer. It tilts away from it in fall and winter.



The moon is a **satellite**. It **revolves** around the Earth. It reflects sunlight, so we see it from Earth. We see the moon's phases. They are part of a **cycle**. The moon has one-sixth of Earth's **gravity**. But it is close enough to pull on Earth. The pull creates **tidal bulges**. Water flows to areas where the moon's pull is strong. These changing flows cause **high and low tides**.



The moon has one-sixth of Earth's **gravity**. But it is close enough to pull on Earth. The pull creates **tidal bulges**. Water flows to areas where the moon's pull is strong. These changing flows cause high and low tides. Earth's relationship with the sun and the moon affects our lives in many ways.

Task 3. Directions: In your notebook, answer the questions below, using complete sentences.

1. What is an orbit?
2. What is a satellite?
3. What is an axis?
4. What causes day and night?

Task 4. Directions: Complete the cause-and-effect chart.

Cause		Effect
Earth revolves around the sun.	➡	Earth makes on complete trip each _____.
Earth rotates on its _____.	➡	We have day and night.
Earth tilts toward or away from the sun.	➡	Parts of Earth have four _____.
The moon pulls on Earth.	➡	Earth has a _____.

Task 5. Directions: Complete the paragraph below using words from the word bank.

The Sun, Earth, and the Moon

Word Bank

tidal bulges low see Earth pull tide(s)

Earth and the moon affect each other. Because the moon reflects sunlight, we can _____ it from _____. Another effect of the moon is that it creates _____. Water flows to areas where the moon's _____ is strong. These changing flows cause _____ and low _____.