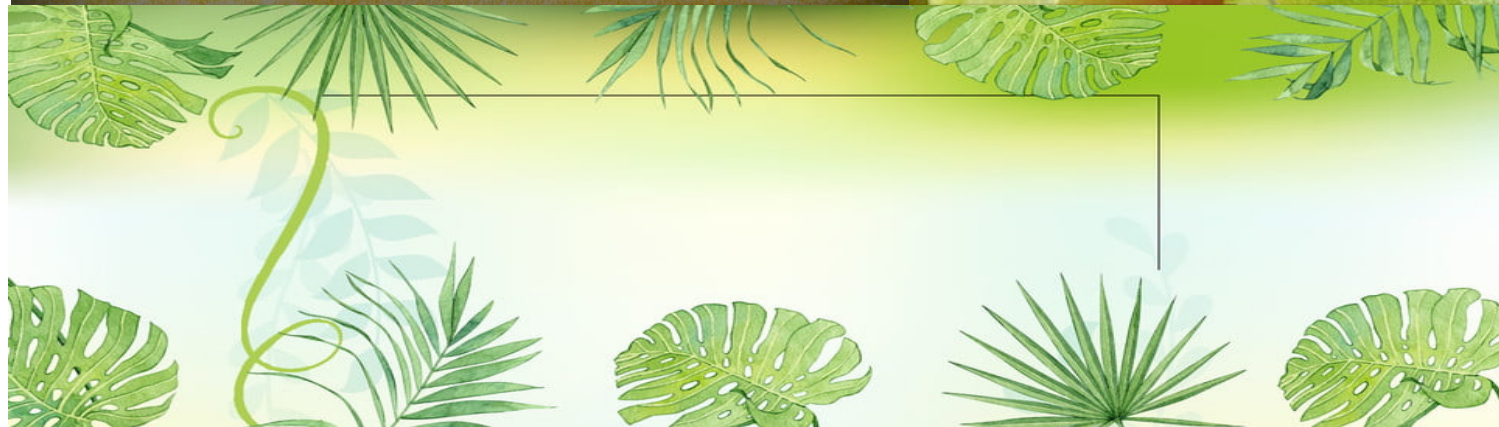
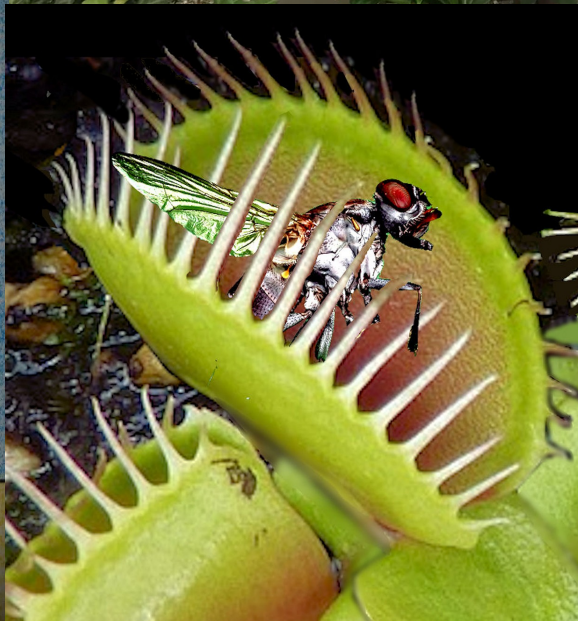
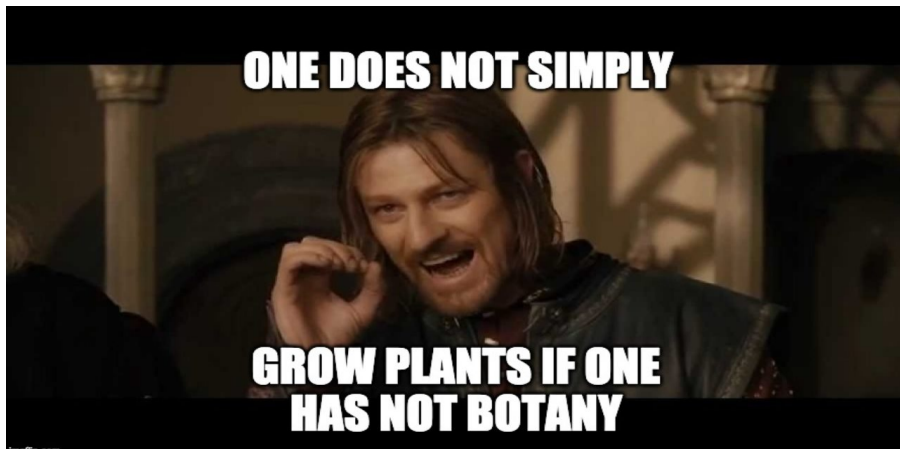


# Unit E: Plant Growth & Changes

Name: \_\_\_\_\_



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# Key Terms

**Define**

Research the meaning of each of the key terms

Plants	
Flower	
Roots	
Leaf	
Stem	
Soil	

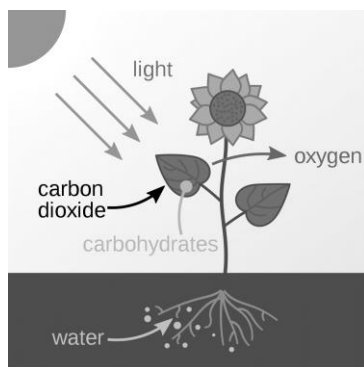
# Basic Needs of Plants

## What Do Plants Need To Survive?

What do you need to survive? Plants are very similar to us, as they need certain things to live and grow. We call the things you must have, survival needs. Plants need 5 basic things: light, water, air, space, and warmth.

### Light

Without light, plants will starve. Plants need light so they can make their own food through photosynthesis. Light provides the energy needed for water to combine with carbon dioxide, which produces glucose (food) in the leaves. Oxygen is then released as a by-product for us to breathe!



### Water

Plants need water to help spread nutrients around the plant. Water will move from the roots of the plant, up the stem, and into the leaves. The water carries nutrients from the soil and spreads the nutrients throughout the plant. This keeps it healthy and allows it to grow! We all need nutrients in our lives.

### Air

Plants need air to make food. Plants use air to create their own food through photosynthesis. They use the carbon dioxide in the air to make yummy sugars and starches for the plant to eat. They breathe the air in, and then convert the oxygen into carbon dioxide. Humans do the same thing!

### Space

All plants need space to grow in order to survive. The part of the plant that is above the ground needs space to grow so that the leaves can expand and do their job of creating food. The roots also need space to grow. If plants are too close together, their roots may not grow as big, which means the plant may not grow as much or it could die.

### Warmth

Plants grow well in certain temperatures, depending on the plant. Some plants can survive in colder temperatures, like cedar trees. Others can survive in warmer temperatures like the desert. Either way, both need some heat in order to survive because if it gets too cold, the plant begins to shut down. They stop being able to make food for themselves which causes them to wither away. We see this in our winter and fall months.



# Basic Needs of Plants

## Questions

Use information from the text to support your answer

1. What are the 5 basic survival needs for a plant?

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2. Why do plants need space in order to survive?

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## Making Connections

Text to Text - Make a connection to something else you've read  
Text to World - Make a connection to a current event  
Text to Self - Make a connection to something in your life

What does the reading remind you of? A book you've read, something happening in the world, or something that has happened to you? Explain.

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## True or False

Circle whether the statement is true or false

1. Light is needed for plants to create their own food	True	False
2. Plants can grow in any temperature	True	False
3. Plants convert the air into dioxide	True	False
4. Water stays in the soil of a plant	True	False
5. All plants need some heat	True	False

# Plants With Special Needs

## Plants with Special Needs

With so many different living conditions around the world, plants need to be different so they can survive. Read below about some cool plants that can survive in challenging living conditions because of their special needs.

### Dry Conditions - Desert

In the desert, a plant must have special needs that allow it to survive with not much water. These plants have very small leaves to reduce the surface area from which water can evaporate. For example, a cacti has spiky leaves that are covered by a waxy, waterproof material. No water will be evaporated off their leaves. They also have roots that spread out underground to collect water when it does rain. A cactus is able to store water in their thick stems for a long time!

### Carnivorous Plants

A carnivorous plant is one that gets its nutrients from trapping and eating



animals. Most carnivorous plants are called insectivorous plants, because they usually only trap insects. Carnivorous plants can survive in poor soils with little nitrogen because they will get their nitrogen and proteins by trapping insects. They trap insects and then break them down so the dead insects become nutrients for the plant. Examples of carnivorous plants are the Venus Fly Trap and the Butterwort.

They use different trapping methods to catch their prey.

- Pitfall Traps - A bucket shaped plant that has digestive fluid inside which the insects fall into.
- Sticky Flypaper - Some carnivorous plants have sticky leaf blades that trap prey to them.
- Snap Traps - The Venus Fly Trap uses a snap trap that closes when an insect touches a trigger hair inside the trap. Once the insect is inside, the trap closes tighter and tighter. The insect is digested by the plants digestive fluids (acids) that break down the insect. A couple days later, the trap will reopen, ready to catch more prey!

Name: \_\_\_\_\_

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# Questions - Plants with Special Needs

## Questions

Use information from the text to support your answer

1. What special needs do carnivorous plants have? Why do they need to eat insects?

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2. Why do some plants have special needs? What would happen if no plants could survive in the desert or in poor soil?

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## Making Connection

What does this reading remind you of in your life?

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## True or False

Circle whether the statement is true or false

1. A carnivorous plant needs to eat animals to survive	True	False
2. A carnivorous plant needs the nitrogen from animals to survive	True	False
3. Carnivorous plants grow in nutrient rich soil	True	False
4. Cactus plants have thin needles as leaves so they don't lose water	True	False
5. A Venus Fly Trap uses a sticky flypaper trap to catch insects	True	False

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Parts of a Plant

## Diagram

Label the parts of the plant below and then colour the picture

Plants have 5 main parts that allow it to meet its basic needs. Each part is needed to be working for the plant to grow and survive.

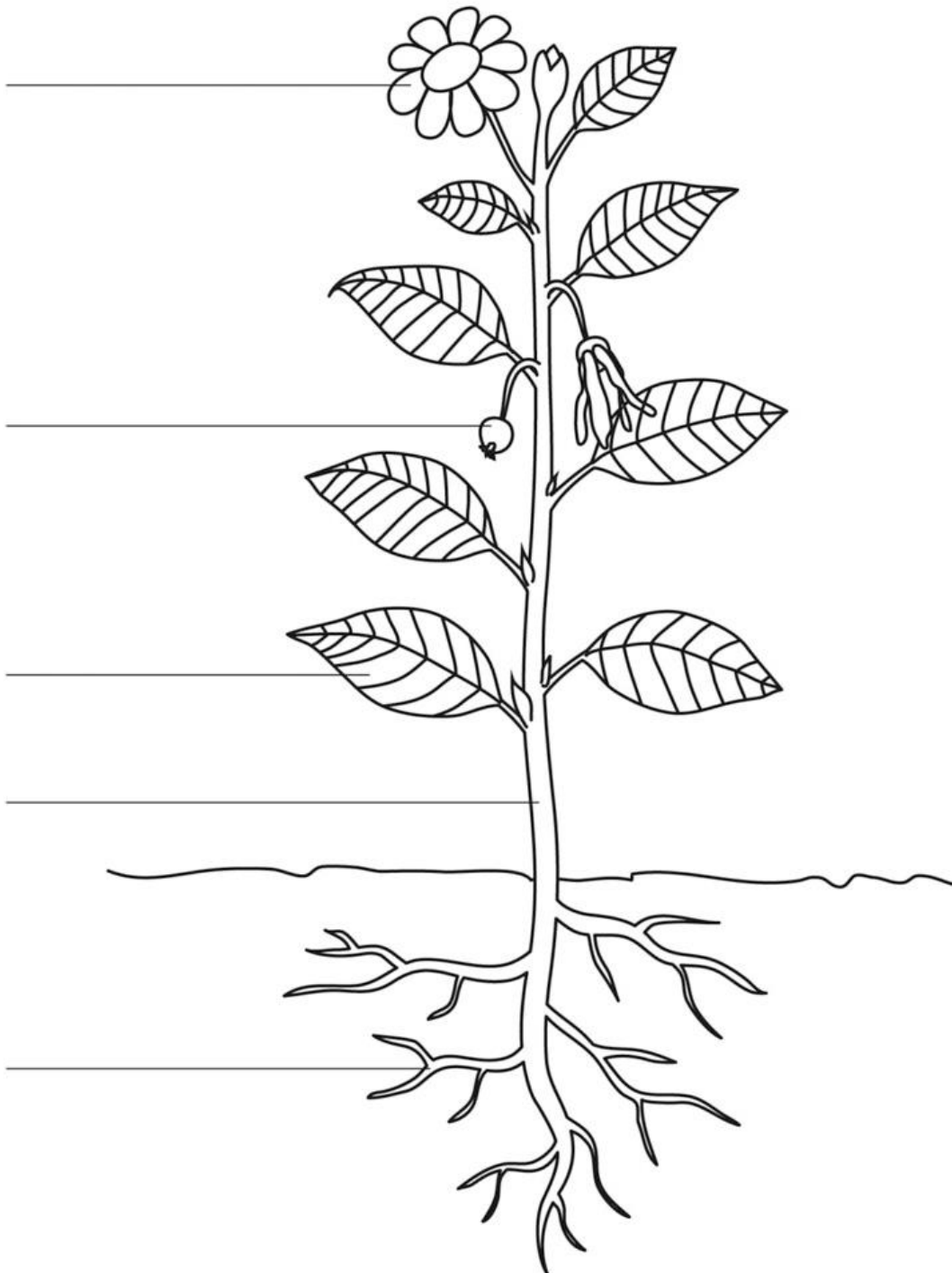
Stem

Roots

Word Bank  
Flower

Leaf

Seeds





# Parts of a Plant

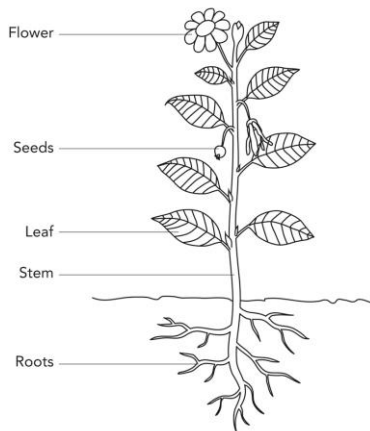
Plants have 5 parts that are each very important to their survival. The flowers, leaves, stem, seeds, and roots all need to be working or the plant will not survive.

## Flowers

The flowers attract pollinators who have the important job of moving pollen from one part of the plant to another part. Pollinators are animals like bees, bats, butterflies, and birds. The pollen that they move helps fertilize the plant, which allows them to make fruit and/or seeds. Without flowers, we would have no seeds, which means plants would not be here!

## Leaves

The leaves on a plant are like food factories. They have little openings in them that let air and water come and go. The leaves are like our lungs because they breathe for the plant. Leaves also catch energy from the sunlight and use it to turn air and water into food.



## Stem

The stem is important because it supports the plant and carries water and nutrients up and down to all parts of the plant. If a stem is weak, the plant might not survive as it could break. This would mean that none of the nutrients from the soil could travel up the stem. Some stems like dandelions are bendable, while others, like trees, are not.

## Seeds

Seeds are little cases with a baby plant inside. In flowering plants, the flower produces the seeds that are later spread on the soil surrounding it. The parent plant puts a lot of nutrients inside the seed so that it can survive. Seeds are important because plants grow from seeds. Without seeds, we wouldn't have plants in the first place!

## Roots

The root of a plant is very important because they suck the water and nutrients up out of the soil and into the plant. The roots also hold the plant in the ground and keep it upright. Larger plants need stronger roots to help them stay upright. Another important job for the roots of a plant is to store food for the plant.

# Parts of a Plant

## Questions

Use information from the text to support your answer

1. What are the 5 parts of a plant?

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2. How do the stem and roots work together?

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## Visualizing

Draw a picture of what you were thinking when you were reading below

## Matching

Match the part of the plant to what it does

Plant Part	What It Does
Stem	Breathes in air and collect water for the plant
Leaves	Attracts pollinators and make seeds
Flowers	Sucks up water in the soil and keep the plant upright
Seeds	Supports the plant and carries water and nutrients to the leaves
Roots	Plants grow from these small cases with baby plants inside

# Plant Life Cycles

## Seeds vs Bulbs

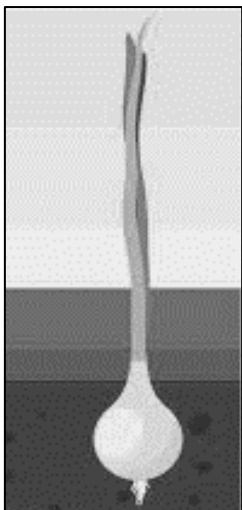
All plants begin their life as seeds, however, some plants will live underground in the form of a bulb. A bulb is a plant that lives underground and has its leaves grow up through the surface. Garlic is an example of a bulb. All other forms of plants are seed plants. Most seed plants live one or two seasons and most bulb plants are perennials, which mean they live more than 2 seasons. This is because they have different life cycles.

## Life Cycle of a Seed Plant

1. **Seed** - The seed plant will begin its life as a seed. The seed has a hard shell that protects the embryo inside.
2. **Germination** - The seed falls to the ground and absorbs the water and warmth from the air and the soil. This starts the process of germination, which is when a plant grows from a seed to a sprout. The seed will swell and split in the soil and a sprout will form.
3. **Growth** - The plant will keep growing through the process of photosynthesis. The plant provides its own food and will grow if it receives its basic needs.
4. **Reproduction** - The flowers on a plant will produce seeds when they have been pollinated. In fruit producing plants, fruit will grow on the flowers at this stage.
5. **Spreading Seeds** - The seeds from the fruit or from the flowers will spread as animals eat them or as the wind blows them away. This begins the life cycle of a plant all over again!

## Life Cycle of a Bulb Plant

A bulb plant lives through the winter inside the ground. A bulb will continue to grow year after year until it is harvested.



1. The bulb prepares for winter by forming roots in the ground. It gathers energy from the soil around it.
2. As the temperature warms up in the spring, the bulb begins to grow through the soil.
3. The bulb blooms after spending the winter and spring months gathering energy. It has rested and has gotten enough light, water, and warmth to bloom. This means it will turn into a plant that we can see above the ground.
4. The bulb plant will fade into the ground as the temperatures get colder. The bulb is not dying! It is saving and gathering energy so it can grow again next year.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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# Plant Life Cycles

## Questions

Use information from the text to support your answer

1. What is the difference between a bulb plant and a seed plant?

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2. What does germination of a seed mean?

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## Questioning

What questions do you have about what you read? I wonder...

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## True or False

Circle whether the statement is true or false

1. A bulb plant will stop growing only after it has been picked (harvested)	True	False
2. A seed plant will continue to grow year after year	True	False
3. A perennial plant is a plant that grows for more than 2 seasons	True	False
4. Garlic is an example of a bulb that can be eaten	True	False
5. Only the wind spreads seeds on the soil	True	False

Name: \_\_\_\_\_

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# Research - Propagating Plants

## Propagating Plants

Did you know that you can grow plants in many different ways other than just planting a seed? Propagating plants means we grow new plants from the plants we already have. There are several ways to do this. The most basic way is by using seeds that your plants have created. More exciting ways of creating new plants include using plant clippings, bulbs, or runners. Research these different ways of propagating plants below. Try searching: "propagating plants" along with the method you are researching. For example: propagating plants runners.



### Research

Learn more about the propagating plant methods below

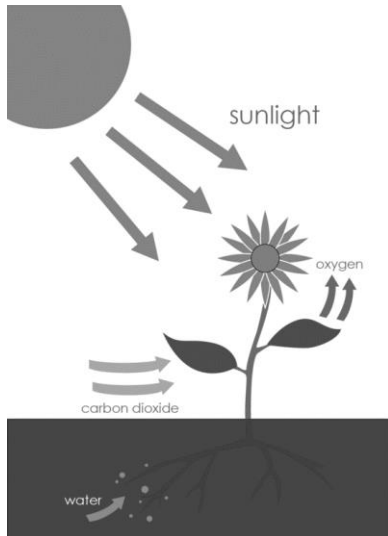
Propagating Plant Method	How it Works
Seeds	
Clippings	
Runners	
Bulbs	



# Plants, Animals, and the Sun

## Plants Need the Sun

Without the sun, plants are not able to get the food they need to grow, reproduce, and survive. Unlike animals, plants are autotrophs, which means they create their own food. They use energy from light, water, and air to create sugary food called glucose.



## Photosynthesis

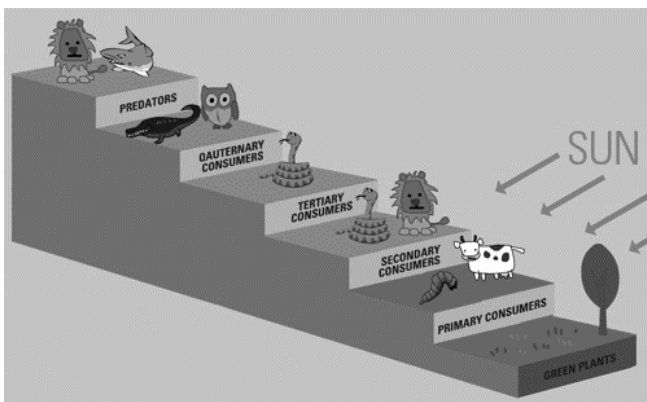
Plants use a process called **photosynthesis** to turn light, water, and carbon dioxide into food for them to live. "Photo" means light and "synthesis" means putting together. Plants collect carbon dioxide in the air that passes through the small holes in their leaves. Water is absorbed by the roots and passes through the stem on the way through to the leaves. Sunlight is absorbed by a green chemical in the leaves. The plant releases oxygen after it has used the carbon dioxide in the air. This means our environment gets oxygen from plants.

You may have noticed that the air is fresher near plants! We need plants so we can have fresh air!

## Humans Need Plants

All living things need energy. Plants are living things that need the sun's energy to survive. We need food energy to keep moving and to grow.

If we stopped eating, we would have no energy in our bodies and we wouldn't survive. We can't "eat" the sun's light like plants can so we get energy from the sun in other ways. Animals eat plants and get energy from the plants in order to survive.



Animals also eat other animals who have eaten plants to get energy. All of the energy starts with the sun! If the sun had never supplied plants with energy, none of us would have energy! Even if you were a carnivore who just ate other animals, you are getting energy from the sun because those animals you ate have eaten plants.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Plants, Animals, and the Sun

## Questions

Use information from the text to support your answer

1. Why do plants need energy from the sun?

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2. Why is the sun so important to humans and other animals?

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## Making Connections

Text to Text - Make a connection to something else you've read  
Text to World - Make a connection to a current event  
Text to Self - Make a connection to something in your life

What does the reading remind you of? A book you've read, something happening in the world, or something that has happened to you? Explain.

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## True or False

Circle whether the statement is true or false

1. Plants produce food through photosynthesis	True	False
2. Humans can't eat sunshine so they eat plants and animals instead	True	False
3. All living things need energy to survive	True	False
4. Carbon is released into the environment after photosynthesis	True	False
5. We can live without the sun's light	True	False

# How We Use Plants

## Plants Are Important

Humans use plants in many different ways. All of us use it for food, medicine, shelter, and clothing, but different cultures use plants in different ways.

## Food

We all use plants everyday for food. Think about what you had for breakfast or lunch. Cereals are made from wheat and other grains that are plants. Bread and waffles are also made from wheat. Even if you only ate meat, you'd still be relying on plants because the animal you are eating, most likely ate plants! The Aboriginal people of Canada also ate plants. They ate the plants that were available to them in their environment - beans, corn, squash, and berries.

## Medicine

Most of the medicines we use are made from plants. Aloe vera is a plant that is used in medicines to heal sunburns. Aspirin is one of the most used medicines that is used to treat pain, fever, and headaches. The medical ingredient in Aspirin is found in a handful of plants including "White Willow", "Wintergreen", and "Birch" trees. The indigenous people of Canada have been using plants to cure illness for thousands of years. They use plants to make herbal teas that fight illness from the vitamins in the plants. An example of this is when the Iroquois made tea out of pine trees to treat scurvy. Pine needles have a lot of vitamin C which cures scurvy quickly.



## Shelter

We all use plants to make shelters. Wood comes from trees, which are plants. Humans use wood to build homes, furniture, and many other things. The indigenous people of Canada used plants in different ways than we do today. They build shelters called Wigwams and Tepees out of bark, wood poles, straw, and vines.

## Clothing

Humans have been making clothing out of plants for many years. The shirt you are wearing likely has cotton in it, which is a plant. Cotton plants were first planted over 7,000 years ago. Cotton balls grow on cotton plants which can be picked and made into a soft material. The Aboriginals used stems, roots, bark, and leaves to make clothing.

# How We Use Plants

## Questions

Use information from the text to support your answer

1. In what ways do humans use plants?

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2. How do aboriginals use plants differently than we do?

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## Questioning

What questions do you have about what you read? I wonder...

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## True or False

Circle whether the statement is true or false

1. Aspirin comes from plants like Birch trees	True	False
2. Aboriginals use plants the same way non-aboriginals do	True	False
3. We need plants for food, shelter, clothing, and medicine	True	False
4. Cotton is a plant that is used to make houses	True	False
5. Pine needles can be used to make tea that is rich in vitamin C	True	False

# Plants and Animals Need Each Other

## Plants and Animals Need Each Other

Plants would not be able to survive without animals and animals would not be able to survive without plants. We need each other! Plants do not eat animals, which means we need each other in different ways.



### Plants Need Animals

Some animals help plants make new plants. They carry pollen from flower to flower. Without pollen, these plants could not create seeds. Seeds are needed for new plants to grow. Animals that carry pollen are called pollinators. Pollinators are very important animals that help plants a lot. Bees and other insects are pollinators, but bees are the best at pollinating. Without bees, we wouldn't have plants, and we wouldn't have animals!

Animals are also good at spreading seeds around. This happens when you eat a fruit with seeds in it and compost it. Animals in the wild that eat fruit also spread seeds. They take the seeds to new places where the seeds grow into new plants. Horses roll around on the ground, collecting seeds on their backs. When they gallop away, seeds blow in all directions. This is another example of how animals move seeds.

Animals also help plants by providing manure that fertilizes the soil. Manure is a fancy word for poop. Animal poop has a lot of nutrients in it and it is used to make soil even better. Soil with manure in it allows plants to grow healthier and stronger.

### Animals Need Plants

The most obvious reason we need plants is for food. We eat plants! They are yummy, especially fruit! Don't forget, even breads, cereals, and pastas are made from plants.

We also need plants because they release oxygen into our air. Animals need oxygen to breathe! Plants and animals work together with the air in our atmosphere. Plants need the carbon dioxide that animals breathe out in order to make their own food and we need the oxygen that plants release. Plants and animals are a great team!

Plants are a source of shelter for animals as well. Some animals burrow into trees and live inside of them. They use trees to hide inside from predators. Trees also provide shade from the sun so they can cool down. Birds use plants to make their nests. They use twigs, grass clippings, and soil to make their nests where they can protect their eggs.





Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Plants and Animals Need Each Other

## Questions

Use information from the text to support your answer!

1. How do plants need animals?

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2. How do animals need plants?

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## Visualizing

Draw what you were picturing in your head while you were reading

## True or False

Circle whether the statement is true or false

1. Animals need plants to eat for energy	True	False
2. Plants need animals to make rich soil from manure	True	False
3. Plants need animals for oxygen	True	False
4. Animals need plants for carbon dioxide	True	False
5. Plants need animals to spread their seeds	True	False

# Describing Common Plants

## Plant Characteristics

We can describe plants based on five characteristics:

1. **Leaves** - Seed plants all have leaves. Leaves come in different shapes and sizes. They can be narrow, or wide. They can also be long or short.
2. **Stems** - All seed plants have stems as well. Stems can be thick or thin, depending on how heavy the flower or leaves are.
3. **Roots** - Seed plants all have roots. A plant can have thick or thin roots. Their roots can be deep or shallow underground.
4. **Seeds** - All seed plants have their own seeds that allow them to reproduce. Seeds can look very different depending on the plant. Sunflower seeds are small, while pumpkin seeds are large.



## Research

Find some common plants to investigate. Look closely at their leaves, stems, roots, and seeds and fill in the table below.

You can go outside and find your own plants to investigate, or research pictures of plants online.

Common plant suggestions: Rose, Grass, Moss, Corn, Fern, Cactus, Bamboo, Tree, Dandelion, Wildflowers.

	Flower name: _____	Flower name: _____
Leaves		
Stems		
Roots		
Seeds		

# Local Plant Communities

## Plant Communities Near Me

If you look outside, you will likely see different habitats for plants and animals to live in. We know that frogs like to live in wetlands and birds prefer to live on dry land, but did you know that plants also need to live in certain habitats? Read about a few examples of plants that live in different habitats below.

Wetlands (swamps, marshes) and Aquatic (rivers, lakes, oceans) - Plants that live in wetlands need to be able to survive a wet environment. Examples of plants that live in wetlands are: water-lily, cattails, bulrush, algae, and mosses. The algae and mosses in the water do not need as much sunlight as other plants, which is why they can grow underwater.



Forests - Forests are home to many different types of trees, including Douglas fir, pine, spruce, maple, and oak. Smaller plants like mosses, ferns, wildflowers, and shrubs also live in forests. These plants can survive a shaded environment, where sunlight cannot get to all plants all of the time.

Grasslands - Not surprisingly, grasses dominate the grassland habitats. Grass can survive in many different conditions, including direct sunlight and high temperatures as well as colder temperatures. Wildflowers, clovers, sunflowers, and dandelions also grow on grasslands and can handle the heat and sunlight.

## Making Connections

What plants do you see in your local habitats?

Habitat	Type of Plant	Draw the Plant(s)
Wetlands		
Forests		
Grasslands		



# How Food is Grown

## Different Ways of Growing Food

Food is grown in many different ways around the world. We get much of our food from farms. Farms are areas of land that are used for growing plants. Farms produce a lot of plant foods for many people living all over the world. Farms plant crops that will grow in the weather conditions they have. When the weather is too cold, a greenhouse is used.

Greenhouses are glass buildings in which plants are grown that need protection from cold weather.

Home gardens are smaller areas where people plant seeds and crops outside of their houses. Home gardens are like smaller farms and usually only provide food for one family.

## Locally Grown Food

Food that is grown locally means the food has been grown nearby. Local food could have been grown down the street from where you live.

Sometimes, our growing season does not allow us to grow certain foods all year round. This means we need to bring in food from other countries that have a warmer climate. Examples of these foods are pineapples, avocado's and oranges.

If you buy locally grown food, the money you are spending on the food stays in your community. This extra money in your community can help to pay for community buildings like parks and hockey rinks.

When you buy locally, the food does not have to travel as far. This is better for the environment because it means less transports or airplanes travelling to send food other places. Airplanes and transports release gases into our environment that make it sick.

## Organic Food

Organic food is food that has grown that does not use man-made fertilizers, pesticides, or other additives. Many people believe organic food is better for you because it grows naturally. Sometimes farmers use pesticides to stop bugs from eating their plants. This is great for the farmer, but not good for the people eating the plants as pesticides are not good for us.





# How Food is Grown

## Questions

Use information from the text to support your answer

1. How is a farm different from a greenhouse?

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2. What is organic food?

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## Making Connections

Text to Text - Make a connection to something else you've read  
 Text to World - Make a connection to a current event  
 Text to Self - Make a connection to something in your life

What does the reading remind you of? A book you've read, something happening in the world, or something that has happened to you? Explain.

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## True or False

Circle whether the statement is true or false

1. Organic food is grown using pesticides	True	False
2. Locally grown food is food that is grown near you	True	False
3. Locally grown food is bad for the environment	True	False
4. Home gardens are used to feed entire cities and towns	True	False
5. Farms can grow any type of plant	True	False

# Environmental Challenges to Plants and Animals

## What are Environmental Challenges

The environment is the world around us. A challenge in our environment is when something happens in the world around us that makes living harder for plants and animals. Think about when your environment has changed and how it has affected your life. Maybe it was a flood, drought, extreme heat or cold, construction of buildings near your house, or a blizzard. These challenges are managed by humans pretty easily. Plants on the other hand, have much more difficulty surviving these challenges.



## Plant Challenges

**Drought** is when an area does not get any rain for a long period of time. Since plants need water to survive, drought kills plants because they cannot produce the food they need to live. We can water our small gardens, but farmers can't rely on watering their huge farms all of the time. We need regular rainfall to keep plants growing.

**Extreme heat** is when the temperatures in an environment get very hot. In Canada, we define extreme heat of temperatures over 32 degrees Celsius for more than three days straight. When it is really hot for a long time, the water in the soil will evaporate faster. This means the soil will dry up and most plants will not survive if they are not watered.

**Extreme cold** happens when the temperature gets very cold for a long period of time. In Canada, extreme cold is when the temperatures go below -30. Plants struggle to survive in extreme cold. When the ground freezes, most plants will begin to die. Most plants need moist soil to survive, and frozen soil does not allow the movement of water from the roots up the stem.

**Construction** happens when humans build stores, roads, and more. When we build, humans often do not consider the plants on the building site. Trees and flowers are often cut down to make room for buildings.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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# Environmental Challenges to Plants and Animals

## Questions

Use information from the text to support your answer

1. What environmental challenges do plants and animals face?

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2. How do construction sites kill plants and animals?

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## Visualizing

Draw what you were picturing while you were reading

## True or False

Circle whether the statement is true or false

1. Extreme cold causes the topsoil to freeze and plants to die	True	False
2. Drought happens when an area doesn't get rain for a long time	True	False
3. Extreme heat is when it is really hot one day	True	False
4. Extreme heat causes the water in the ground to evaporate faster	True	False
5. Humans can't deal with environmental challenges as well as plants	True	False

# Differences Between Plants



## Bulbs vs Roots

Not all plants look the same. Some plants have stringy roots that grow underground. Other plants have bulbs that act as roots in the ground.

## Leaves vs Needles

You have probably noticed that not all plants have leaves. Some plants have needles, like a cactus or a pine tree.

## Growing Plants

As plants grow, some things change and other things stay the same. For example, plants will often grow more leaves or needles and the leaves and needles will grow larger. But, the shape of the leaves do not usually change. Also, the colour of the flower usually stays the same.

### Draw

Draw a picture of a plant with needles and flowers

Plants with Needles

Plants with Leaves

### Draw

Draw a picture of a plant with roots and one with a bulb

Plants with Roots

Plants with a bulb

### Question

Use information from the text to support your answer

- How are some plants different than other plants?

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# Lab - Germinate Seeds on a Window

## Research Question

How does water travel through a plant?

Will a seed germinate (sprout) without soil if it is given sunlight and water?

## Hypothesis

What do you think will happen?

## Materials

What do we need for this experiment?

- Small plastic zipper bag
- Dried, uncooked beans, peas or seeds
- Paper towels
- Water

## Procedure

What do you need to do?

1. Cut the paper towel in half and fold it a few times so that it can fit into the zipper storage bag
2. Soak the paper towel in water and slide it into the bag. Smooth it out so it is flat
3. Put two beans or seeds about three centimeters from the bottom of each bag, on one side of the paper towel. Make sure they don't fall to the bottom of the bag or else they will sit in the water. You can roll up a piece of paper towel and put it on the bottom of the bag if the beans/seeds keep falling to the bottom.
4. Seal the bag part way, leaving an opening near the top so the growing plants can get some air
5. Tape the bag to the window so that the beans are facing indoors, so you can watch them grow.
6. Optional - do the same experiment but put the plastic bag in a dark closet. See if this grows better or worse.

## Observations

What is happening to the seed?

Day	What is happening to the seed?	Day	What is happening to the seed?
1		6	
2		7	
3		8	
4		9	
5		10	



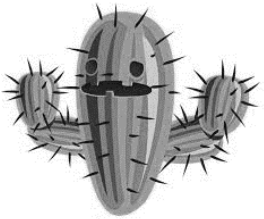
# Adapting Plants

## Adapting Plants

When plants adapt, it means they change in order to be able to survive in their environment. Some environments have extreme weather and are difficult to live in. The desert is very dry, with little rain. Plants that live there need to be able to survive with little water. In the northern parts of the world, the weather is very cold. Plants in these areas must be able to withstand cold temperatures.

## The Cactus - An Adapting Plant

Cacti live in a desert environment where there isn't much rain. Many years ago, more plants likely grew in the desert, but they could not survive because most plants need water regularly. The first cacti plant likely didn't survive, but over time, the cactus adapted or changed in the following ways:



- They have a widespread root system that allows them to collect water from a large area
- Cacti have spines instead of leaves. These spines hold water better than leaves
- The Cactus stem is thick and fleshy, which allows them to store a lot of water.

## Questioning

What questions do you have after reading the information above?

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## Questions

Use information from the text to support your answer

1. How has the cactus plant adapted to survive in the desert?

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2. Why do plants need to adapt?

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# Dangerous Plant Adaptations

## Adaptions for Defense

Plants will adapt in order to be able to survive in their environment. This means that plants will sometimes change so they can hold and find more water. It also means that plants will change so they can defend themselves from enemies. But, if a plant can't move, how does it adapt for defense? Check out these examples:



- A Rose bush has spiking thorns that can puncture our skin
- Rhubarb has poison in its leaves that can cause sickness and even death
- Poison Ivy and Poison Oak have toxins that give predators a painful itchy rash

These adaptations keep humans and other animals away from these plants so that they can survive.

## Questions

Use information from the text to support your answer

1. How have roses adapted to keep humans and other animals away?

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2. How can plants keep predators away?

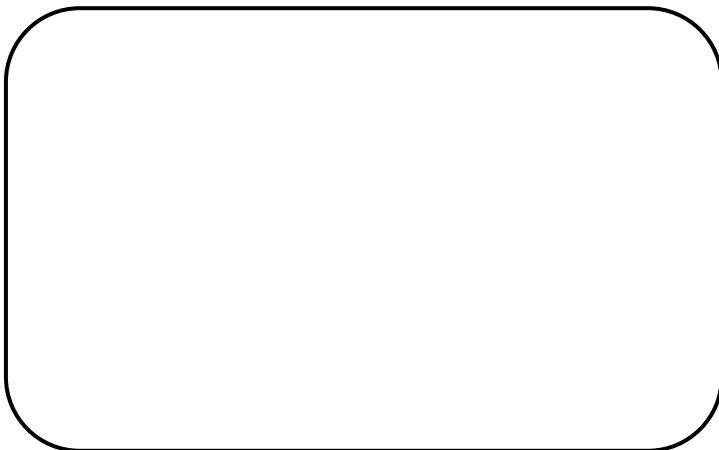
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## Draw

Draw a made-up plant that keeps predators away



1. Name of the plant:

2. How does it keep predators away?

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# Hobbies and Jobs Involving Plants

## Jobs Involving Plants

Many people work with plants everyday as their job. How does that sound to you? Check out these jobs below:

1. **Horticulture** - A horticulturalist is someone who studies plants as their job. They study the growth of different plants and learn how they grow the best.
2. **Arborist** - An arborist is someone who takes care of trees. Arborists need to be able to plant, prune, and remove trees.
3. **Plant Geneticist** - A plant geneticists studies the genes of plants so that can create different strains of crops that can survive in different weather conditions.
4. **Forestry** - forestry professionals work to deliver wood products to stores for us to buy. They plant and cut trees so we can have wood to build with.
5. **Agricultural** - Agricultural professionals are farmers who plant fruits and vegetables for us to eat.



## Plant Hobbies

Other people love plants so much that they study and grow plants as a hobby. Gardeners are constantly growing different plants in different conditions to learn more about plants. Some keep photo journals of their plants and show off their success to others!

### Summarize

What is the main idea of the reading? Add in 3 supporting details.

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### Questions

Use information from the text to support your answer

1. Would you want to work with plants? Why or why not?

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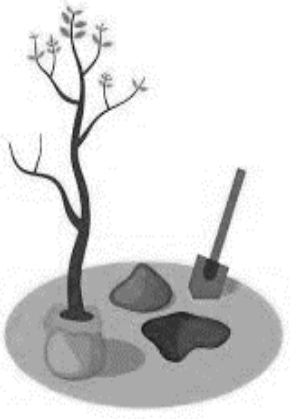


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# Replenishing Plants

## What Does Replenishing Plants Mean?

Humans need wood in order to build many of the things we use everyday. Trees provide us with the wood we need, which means trees need to be cut down in order to manufacture wood. **Loggers** are workers who cut down trees. **Developers** clear-cut fields full of plants so they can build houses and stores. **Replenishing Plants** means we plant new trees or plants that have been cut down or removed.



## Why Replenish Plants

We need to replenish plants for many reasons.

1. Plants are needed for animals to survive. We eat plants in the form of fruits and vegetables and most of the animals we eat, also eat plants.
2. If we cut down trees and forests without replanting, we will run out of wood.
3. Plants are needed to absorb carbon dioxide and release oxygen for us to breathe.
4. Plants prevent soil erosion. **Soil erosion** happens when soil is blown or washed away by wind or water. When plants firmly grow into the soil, they hold the soil in place.

## Making Connections

What does this reading remind you of? Have you ever planted a tree? Have you ever seen a tree cut down?

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## Questions

Use information from the text to support your answer

1. Why are trees cut down?

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2. Why is it important to replenish plants?

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# How are Seeds Distributed?

## How are Seeds Distributed?

When a plant grows into an adult plant, it is ready to reproduce. The plant produces seeds that are distributed naturally throughout the environment. The wind and animals both spread seeds around so that plants can grow all over our environment.



## How the Wind Spreads Seeds

Seeds from plants like dandelions, cottonwood trees, and swan plants are light and have feathery bristles. They can be carried long distances by the wind. Other plants have "winged" seeds that are shaped like helicopters. These seeds fall from tall trees and fly to new places as they fall. A samara is the word we use for a winged seed.

## How Animals Spread Seeds

Animals spread seeds in a few different ways. The most common way is when animals eat fruits that have seeds in them. When the animal travels to a new area, they poop out these seeds. Many of these seeds will germinate in the new area and grow there.

Animals can also spread seeds by collecting them and bringing them to new locations. This can happen accidentally when seeds have hooks on them that attach to animals. An animal might brush up against a plant and the seeds can attach to the animal who then brings it to a new place, where they fall off.

Squirrels have a special relationship with oak trees. Squirrels eat acorns, which contain the seed of an oak tree. They take acorns and bury them in different places all over. They do this so they can eat these acorns later. Quite often, they forget where they buried the acorns and they end up growing into oak trees. This is important because when acorns just fall under an oak tree, they can't grow because they don't get enough sunlight. Oak trees need squirrels to move their acorns and squirrels need acorns to eat!



Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Questions - How are Seeds Distributed?

## Questions

Use information from the text to support your answer

1. How are seeds spread throughout our environment?

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2. Why do oak trees and squirrels need each other?

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## Visualizing

Draw what you were picturing in your head while you were reading

## True or False

Circle whether the statement is true or false

1. The acorns squirrels bury sometimes turn into oak trees	True	False
2. A samara is a winged seed that spins like a helicopter	True	False
3. Acorns under an oak tree often grow right beside the tree	True	False
4. Dandelions seeds are light and blow easily with the wind	True	False
5. Animals eat seeds and destroy them	True	False

# Lab - Water Travels Through a Plant

## Results

What happened to the leaf throughout the 5 days?

1. What happened with the red water and the leaf?

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2. Was your hypothesis correct? Explain.

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3. Why do you think the water went up the stem? Does this happen to plants in our environment?

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## Diagram

Draw a diagram of your leaf in the water. Label the stem and leaf



# Activities - Plant Growth and Changes

## Word Search

Find the word bank words in the puzzle!

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

### Word Bank

- Plants
- Air
- Water
- Light
- Warmth
- Space
- Flower
- Stem
- Leaf
- Soil
- Bulb
- Sun
- Photosynthesis
- Animals
- Trees
- Grow
- Environment
- Survival

## Word Scramble

Read the clue and then unscramble the word

HGLTI

\_\_\_\_\_

TVRINMNNEEO

\_\_\_\_\_

TRWEA

\_\_\_\_\_

SPNLAT

\_\_\_\_\_

RHWMAT

\_\_\_\_\_

APCSE

\_\_\_\_\_

ESMT

\_\_\_\_\_

OSYSOHTTNPEHS

\_\_\_\_\_

NAASILM

\_\_\_\_\_

ERETS

\_\_\_\_\_