GOD IS PROVIDER

Plants and soil

Year 6

Term 1

Thinking Skills Provider Yr 6

Plants 1 Invent 5 unusual ways of using fallen leaves.	**Plants 2** What if humans had roots like trees? List 5 problems with this.
Plants 3 List 5 plants that should NEVER be planted in a school garden.	**Plants 4** Imagine what the world would be like without the colour green. Give 3 reasons why this would be a bad thing.
Plants 5 Work out 5 different things that this picture could represent. It has to be something to do with plants. 	**Plants 6** The answer is **God is the Creator.** Write 5 questions. Clue: start questions with who or how.

Jan and Antonina Zabinski

Biography

Jan Zabinski (8 April 1897 – 26 July 1974) and Antonina Zabinski (1908–1971) were a married Christian couple from Warsaw, Poland.

Jan was a zoologist, Antonina was an animal lover. They started the zoo in Warsaw, Poland in 1935. The zoo attracted many visitors. The animals were well cared for, and Antonina had a special gift with animals.

In 1939, the German army under Hitler occupied Poland. Hitler wanted the zoo for two reasons. Firstly, he wanted to take the best animals to Germany for breeding and genetics experiments. Secondly, he wanted to convert the zoo property into a factory to make weapons for the war.

German planes were sent to bomb Warsaw. The zoo was bombed. Many animals were killed, and many escaped. The ones that escaped were shot. Jan and Antonina set to work and made repairs to the broken animal cages to provide places for the remaining animals. But the German army soon came again and told them that the zoo was now the property of the Nazi Germany, and all the remaining animals had to be shot, except for a few that they would take to the German zoo for breeding. Now the zoo had no animals.

Meanwhile, Hitler was carrying out his evil master plan. He wanted to kill all Jews living in Europe. There were many at that time living in Germany and Poland. Hitler had ordered all Jews to leave their homes and move into settlements of poorly built housing called a ‘ghettos’. The living conditions were terrible, with overcrowding, poor sanitation, and little food or water. Many died of sickness or starvation.

The ghettos were only the first stage of Hitler’s evil plan. Soon there would be no ghettos at all. All the ghettos would be destroyed and the Jews would be taken to concentration camps. Concentration camps were work camps with even more terrible conditions. Most of the Jews in these camps died.

Jan and Antonina knew of Hitler’s plan. Their best friends were Jews and they lived in the Warsaw ghetto. Jan and Antonina wanted to help their friends by getting them to come and live with them. The problem was, any Polish person found with Jews living in their house would be shot. Jan and Antonina wanted to save as many Jews as they could. But how could they do this? They came up with their own plan.

They convinced the German officials to allow them to convert the zoo into a pig farm, instead of converting it into a factory to make weapons. The pig farm could provide meat for the German soldiers. Jan explained that he would need food for the pigs, and he could get food by collecting the food scraps from the ghetto. The German authorities agreed to the plan.

Antonina got busy and made hiding places for Jews in their basement and also converted animal shelters into hiding places.

Pigs were brought into the zoo to be cared for by Jan, who would make daily trips in his truck to the ghetto to collect the scraps. Each time, he would rescue two or three people, by getting them to lay down at the bottom of the truck. Then he would tip out the buckets of scraps on top of the people lying in the truck. They were covered with scraps, and when they passed through the checkpoint for inspection, all the German guards saw

was a pile of vegetable scraps. When they arrived back at the zoo, the rescued Jews quickly got out of the truck and ran through an underground tunnel to Antonina who found them a hiding place.

The Jews hiding in the basement and in the animal shelters were Antonina's guests. She fed them and clothed them, and looked after them. Every day, they had to be extremely quiet from early morning until midnight. At midnight, the German guards came off duty, so this is when the guests could come out of hiding and eat and drink... then back to their hiding place at dawn, when the guards were back on duty.

Antonina used her piano as a signal to alert the guests of danger. She would keep watch from her window, and If she saw German guards coming, she would play her piano, so that the guests would know to keep very quiet and still.

In 1944 there was a battle between the German troops and members of the Polish resistance. Jan was part of this group. In the battle, he was shot in the neck, although not killed. He was taken hostage, leaving Antonina to care for the house and the guests. For at least a year she had no word of Jan. She did not know whether he was dead or alive.

When the war came to an end in 1945, Jan returned from the Prisoner of War camp. He was reunited with Antonina and their two children. They worked hard to rebuild the zoo. The Jewish guests moved on to rebuild their lives as well. Over a period of three years, from 1942 to 1945, Jan and Antonina saved hundreds of Jews.
On October 30, 1968, a tree planting ceremony was held at Yad Vashem, a world Holocaust remembrance centre in Israel, honoring them as *Righteous Among the Nations* for their heroic rescue of Jews during World War 2.

The Warsaw zoo still exists today and receives many visitors.

Discussion
Throughout history, the Jews have been under attack. Satan knows that God has a special plan for the Jews in the future history of the world. Satan does all he can to stop God's plan, and he will do so until one day he will be thrown into the lake of fire and destroyed.

Throughout history Satan has worked through various people, to try to destroy the Jews. Hitler has so far been the most evil of these. He murdered around 6 million Jews in an event in history called the Holocaust.

Although the Jews have suffered much, they have not been destroyed, and after Word War 2 those who survived the Holocaust returned to the Middle East to reclaim their own land, Israel. God's plans cannot be destroyed by Satan, God, in His wisdom, has used the willing hearts of Christian people, such as Jan and Antonina, to fight for the Jews. God used Christians to save Jews during the Second World War.

Plants 1

Student activities

God gives life to plants

In the beginning God made the heavens and the earth. On the first day He separated the light from darkness. There was night and day. There was no sun yet, but God was the light. On the second day God divided the water and land. There was now soil for plants to grown in, and water to keep the plants alive. But the plants were not on the earth yet. On the third day God created plants. On the third day the earth had everything that plants needed:

- *Light and warmth (God was the light)*
- *Air*
- *Soil*
- *Water*

Parts of a plant
Draw a plant, show and label these parts:

Roots
Most plants have roots. Their roots go into the soil and hold them in the ground. Roots get food and water for the plant. The food and water come from the ground. Some roots are long and thick. Some roots are short and thin.
Why does a plant have roots?

Leaves
Most plants also have leaves. Leaves are nearly always green. Food is made in the green parts of the plant.
Where does the plant's food come from? (two answers)

Stems
Stems grow up from the roots. They take food and water to the leaves. They lift up the leaves into the sunlight.
Why do stems need to be strong?

Flowers, seeds and fruit
These allow a new plant to grow.

Plants 2
Food and water for life

Plants need food and water to keep them alive. Their food is sugar which they make in their leaves. People need food and water to stay alive too. But we don't just need food and water that goes into our stomachs. We need a type of food and water we cannot see. The Bible is *like* a food because it helps us get through life, just as food helps us get through the day. The Bible has the information we need for eternal life. 1 Peter 2:2 tells us that just as new born babies love milk, we should love God's word, the Bible, because by learning from it, we can *grow* into the people that God wants us to be.

Why is the Bible important for life?

Plants need water to stay alive

Plants need water. If a plant does not get water it will die. Jesus told us about a different kind of water. It is called the water of life. You cannot see it. It is something you have to pray for. It's a special something that Jesus gives you when you really love him. It is the Holy Spirit, which can live in us. Just as plants need water to stay alive, we need the Holy Spirit to help us through life. The Holy Spirit is God's spirit. He helps us do what Jesus would do. (John 4:7-29)

What is the water of life that Jesus gives?

Plants 3

Plants need air to stay alive

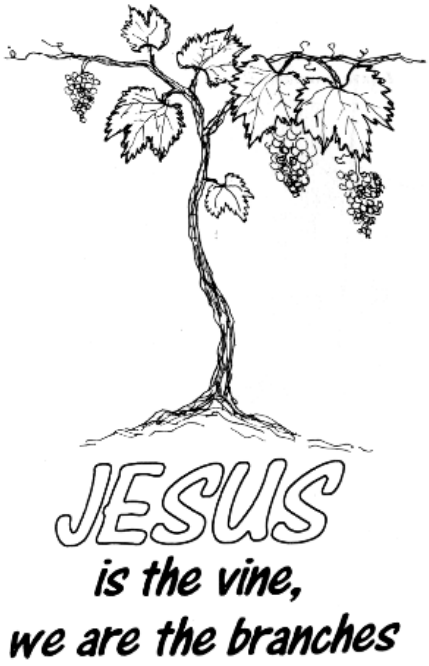
We know that the leaves of a plant make food for the plant. The plant uses sunlight to make the food. The leaves also help the plant get air. A plant breathes with its leaves and its stalk, a bit like we breathe with our lungs. Some plants have thick leaves. Some plants have thin leaves. A plant cannot live without air. People cannot live without air. But if a person wants to live forever in Heaven, then they must have Jesus. Jesus is just as important as air.

How does a plant breathe?

Plants need stems to stay alive

Some plants are big and some are small. A plant is held up by its stalk or stem. But if it is a very big plant, like a tree, the stalk is called a trunk. Grapes grow on grape vines. The branches of the vine grow out from one main thick stem. Jesus said that he is the true vine. He is like the main stem of the vine, and we are the branches. He holds us up and helps us through life when we stay connected to him. We can read about this in John 15 verses 5-10.

What is the job of the stem?
Why do the leaves need to be held up?
What is the stem of a tree called?
What is the stem of the grape plant called?



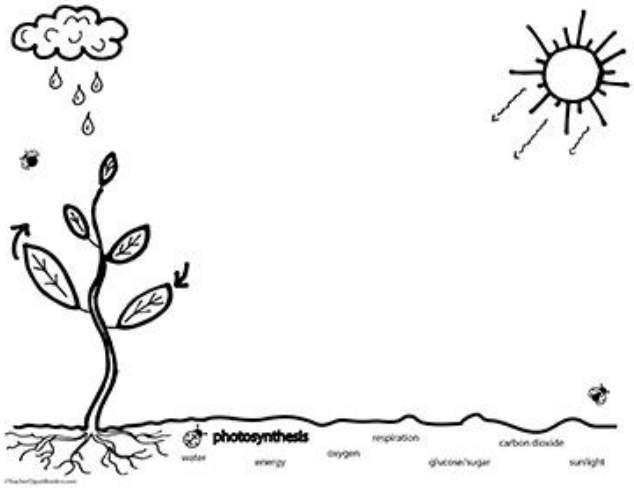
Plants 4
How plants make food

All living things need energy to live, and energy comes from food. But, have you ever seen plants munching on food? No. Plants get their energy in a different way. They use *photosynthesis*. Here's how it works:

Plants take water from the soil through their roots. The water goes to the leaves. The leaves take carbon dioxide (a gas) from the air into the plant. The carbon dioxide mixes with the water. The green part of the plant, called chlorophyll, traps the energy from the sun. Energy from the sun helps the plant make food in the leaves. The food is a sugar called glucose. The glucose is plant food. It gives the plants energy to grow.

When plants take carbon dioxide from the air, they release oxygen (the main gas in the air). Animals and humans use this oxygen to breathe and grow. We breathe out carbon dioxide, which the plants use. Too much carbon dioxide in the air would not be good for us, but that's OK because the plants need it and use it. That keeps the air fresh.

1. What are four things a plant needs to make its food?
2. How do plants help us to breathe and grow?
3. How do plants help to keep the air fresh?



Plants 5

Seeds are different shapes and sizes

Nearly all the plants around us started as seeds. Seeds are different shapes and sizes, but they are alike in two ways.

- A seed always contains the young plant, called the *embryo.* It is inside the seed.
- The seed contains food for the young plant to live on, before it can make its own food.

Draw some seeds you know to show their different shapes. Try to draw them the right size too. Here are some examples: pea, apple, pumpkin, tomato, bean, orange, watermelon, lettuce.

Copy:
Seeds are alike on two ways:

a) The seed contains the _____ _____ .
   This is called the em _ _ _ _.
b) The seed contains a supply of _____.

Why does the embryo need food from the seed?
Draw this seed and label the embryo.

Plants 6

Seeds have a hard coat

If you look at a seed closely and feel it, you will notice that it is hard and dry. The hard coat protects the young plant inside from hard. On the outside of the seed you will see a little scar. This is where it was attached to the stalk while it was growing on the parent plant. On the hard coat you will also find a little hole. It is here that the water gets into the send when it is planted.

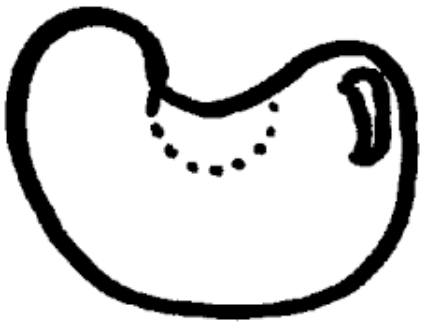
Why did God give seeds a hard coat?

Ephesians 6 says “Put on the whole armour of God so that you may stand against the arrows that the devil fires at you.”
What is a hard coat that we can put on to protect us from fiery darts of evil?

Copy:
The little scar on the outside of the seed is where it was _____ to the stalk when it was growing on the _____ plant.

Draw some peas growing in a pod. Show the little stalks attaching the peas to the pod.

Copy:
The little hole on the hard coat of the seed is where the _____ gets into the seed.



Plants 7

Germination

When a seed starts to grow into a plant, we say that it has germinated. Before it can do this it must have three things: water, warmth and oxygen. Yes a seed needs oxygen just as we need it. The oxygen comes from the air in between the soil particles. The water comes from the moisture in the soil, and of course the warmth comes from the sun.

1. We say that a seed has germinated when …….

2. Add “ion” and “ing” to make words:

germinat _ _ _

germinat _ _ _

3. Before a seed can _____ it needs three things:
a)

b)

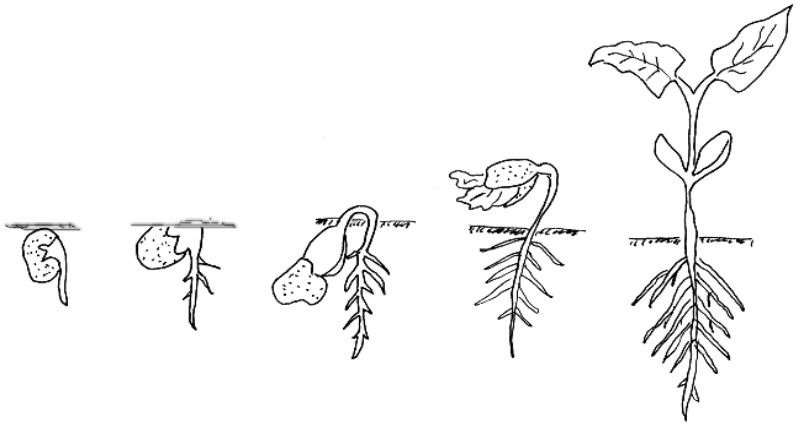
c)

4. A seed gets oxygen from the _____. Draw the soil showing small particles with air between them.

5. How does a seed get the moisture it needs for germinating?

6. How does a seed get the warmth it needs for germinating?

Plants 8
Plant a bean seed



1. Draw the diagram and label it using the words in bold words below.
Stage 1: the skin splits and soaks up moisture. Then a little white **root** appears. The root points down and pushes down through the soil.

Stage 2: a white **shoot** pushes upwards into the air.

Stage 3: tiny **hairs** grow out from the root and these suck in water and food from the soil.

Stage 4: two thick leaves from the seed. These are called the **seed-leaves**. They give food to the plant.

Stage 5: The plant grows **true leaves** and can make its own food.

2. Copy and choose the correct word:
The root grows (up / down)

3. How does a seed take in moisture at first?
4. How does the seed take up moisture later on?
5. What do the see-leaves do?
6. What can the plant do once it grows true leaves?

Plants 9

God is a Provider

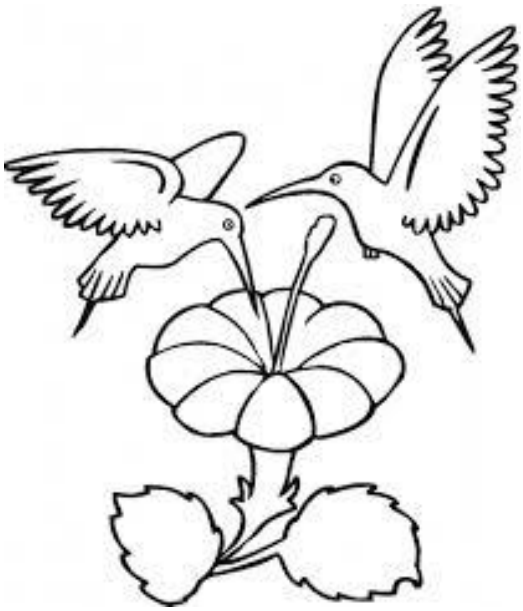
We can see how God has planned for new plants to grow from seeds. God provides everything the seed needs, even before it can make food for itself. God provides for new born babies too, by giving them milk to drink from Mum. Babies cannot get food for themselves, so God provides.

How does God use the following to provide for you? (Write one sentence for each.)

a) parents
b) plants
c) animals
d) the sun
e) the earth
f) the sky

God looks after his creation. He says, “Look at the flowers. Aren’t they dressed in beautiful colours? I look after them. Look at the birds. They don’t make their own food but I look after them. And I look after you, so don’t worry about anything!” (Matthew 6:25 – 31)

How do you know that God will look after you?



Plants 10

How seeds travel

Think about what would happen if seeds didn't travel. What do you think would happen if seeds dropped to the ground only directly below the plant?

Seeds have special devices for making them travel faster through the air. Here are some:

a) wings
b) bits of fluff
c) parachutes

Find out which seeds have these devices, then draw and name them. Make a collection if you can.

Seeds have another way of traveling. They can get a ride on people of animals. These seeds can have:

a) bristles
b) hooks
c) gluey coats

Find out which plants have these, draw and name them.

Some seeds travel by floating on the sea or down a river. It may be the fruit that floats, and the seeds get a ride inside the fruit. Coconuts do this.
Find out which fruits or seeds float. Draw and name them.

Some seeds can act like rockets. As soon as they are ripe, the cases enclosing them become dry and brittle and snap open. The seeds shoot out in all directions.

Find out which seeds act like a rocket. Draw and name them.

Plants 11

Plants we eat: Roots, stems and seeds

Carrots are roots. Because root vegetables grow underground, they absorb a great amount of nutrients from the soil.

Some vegetables that grow underground are swollen parts of underground stems called tubers. Examples of these are potato, taro, yams and taro.

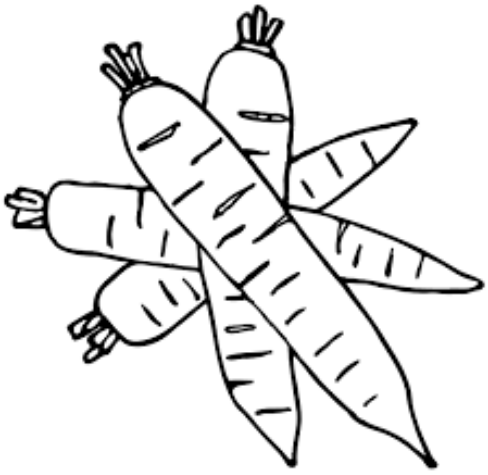
Onions and garlic grow underground too but are actually bulbs.

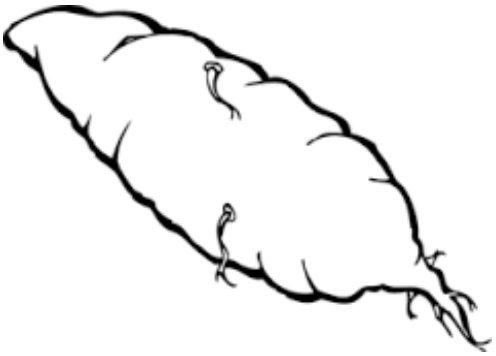
Sugar cane is an example of a stem foods growing above the ground.

Draw and label some roots and stems that we eat. Draw them growing underground or above ground.

There are many seeds that we eat. Seeds are found inside the fruit. For example, wheat, rice, corn, beans, peas and even coconuts are seeds. Nuts are also seeds from fruits.

Draw and label some seeds that we eat.





Plants 12

Plants we eat: leaves, flowers and fruits

Some of the leafy vegetables are cabbage, spinach, lettuce, coriander. The green leaves have many nutrients.

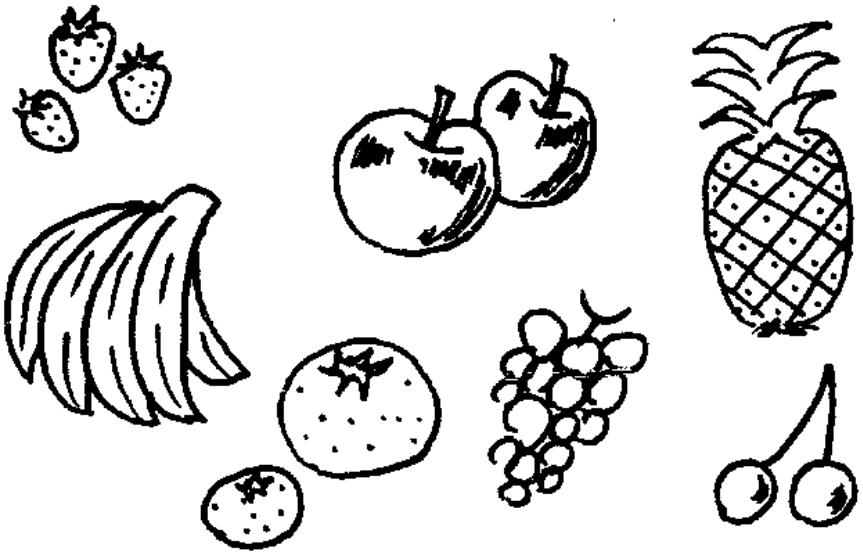
Broccoli and cauliflower are examples of the flower of the plant.

Draw and label some vegetables that are actually leaves or flowers.

There are many fruits that God has provided for us to eat. Did you know that tomatoes and pumpkin are technically fruits? We call them vegetables because they are not sweet like mangoes and pineapples.

There are many sweet fruits: pineapple, mango, papaya, bananas, guava, bread fruit, apples, pears, oranges, lemons, berries and many more.

Draw and label some fruits that we eat.



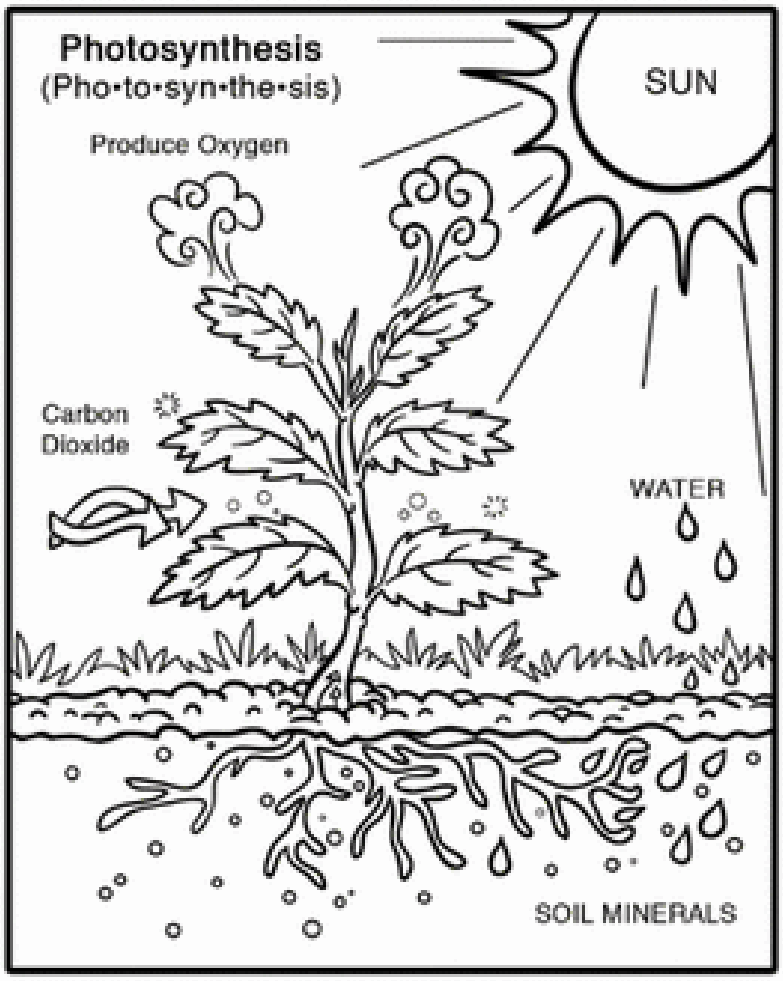
Photosynthesis

“Photo” means “light” and “synthesis” means “to make”; so, photosynthesis is the way plants make food for themselves using light.

The food is made in the green parts of the plant, like the leaves. The green part of the plant contains a green substance called “chlorophyll “which makes food for the plant when the sun shines on it.

The leaves have little pores (openings) which take in a gas called carbon dioxide from the air. The roots take up water from the ground. The chlorophyll changes the water and carbon dioxide into food the plant needs. This food is a kind of sugar called glucose. The whole process of making food is called photosynthesis. While this is happening, the leaves give off a gas called oxygen.

Isn’t God amazing! The oxygen part of the air we breathe is what we need to stay alive. When we breathe in, our bodies use oxygen in the air, and then we breathe out the waste gas called carbon dioxide. Carbon dioxide is not good for us, but perfect for plants. Plants use it to make fresh air for us!



Photosynthesis

Rewrite the following, filling in the missing words. Choose from the words at the bottom of the page.

Leaves help to make _____ for the plant.

They contain a green substance called chlorophyll.

The leaves take in a gas called _____ _____.

The roots take in _____ and other substances from the ground.

The _____ changes the water and carbon dioxide into the food that the plant needs. The food is a kind of sugar called _____.

This whole process of making food is called _____.

While this is happening the leaves give off a gas called _____.

Missing words: (jumbled order)

Oxygen, carbon dioxide, photosynthesis, water, food, chlorophyll, glucose

Make an equation for photosynthesis:

_____ + _____ with sunlight → _____ + _____

The Plant World

Scientists divide plants into two groups.

1. The plants that produce seeds to make new plants
2. The plants that do not produce seeds.

Plants that make seeds are plants with flowers and cones.

Plants that do not make seeds have other ways of making new plants. Ferns for example, make fronds, which drop on the ground to make new ferns. Potatoes have underground stems. Parts of the stem develop tubers, which are food stores for the plant. The potato we eat is a tuber. It has 'eyes' which grow shoots and make new plants. Moss and mushrooms do not make seeds. Find out how they produce new plants.

Make a chart of the two kinds of plants.

Put "plants that produce seeds" on one side and "plants that do not produce seeds on the other side. Draw pictures and write a sentence about each plant you choose.

Dandelion My yellow flower opens in the morning and closes in the evening. 	Fern My leaves are called fronds. I do not have cones or flowers. 	Fir Tree My leaves are needles. My seeds form in cones. 
Pine Tree My seeds fall out from between the scales of my cones. 	Tomato My small flowers develop into tomatoes that carry my seeds. 	Moss I grow on rocks or logs. I do not produce seeds. 

How earthworms help the soil

In the beginning, God created the heavens and the **earth,** (Genesis 1:1). God made a very special little creature to look after the soil.

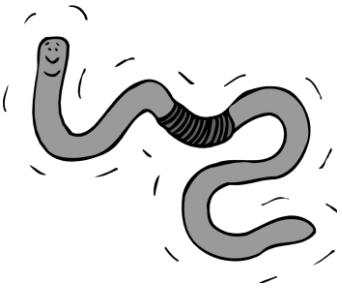
- The earthworm turns useless material into good soil that can be used by plants. God creates plant food through the earthworm.

- When God created the world, He said that it was **good**. (Genesis 1:31)
- God has created everything for a purpose, even the earthworm.

- An earthworm is only a small creature but is it very important. All of God's creatures play a vital role in the balance of nature.

- God has made sure that there will always be plenty of earthworms. God also made each earthworm to be both male and female. More baby worms are born that way. Their job is so important that we need them all!

1. How do earthworms help plants?
2. What are some plant foods that an earthworm might eat?
3. How does God ensure that many baby earthworms are born?



Worms that live in the ground are some of our most useful helpers. You know how important it is to loosen-up the soil before planting? Earthworms help us by loosening up the soil for us.

First the earthworm burrows down into the soil, and then he eats large quantities of it. He eats pieces of decaying leaves and plant material that are useful to him as food. The soil and decaying matter pass through the earthworm and comes out as fine crumbly material called 'castings'.

When an earthworm burrows into the earth making little tunnels, the earth walls don't cave in. This is because the earthworm has special glands that give off a special cement. As he chews his way through the soil the cement sticks to the walls of his tunnel. An earthworm can dig and gobble two and a half metres in four days! The tunnels important to plants because air can get into the roots, gases can escape from the soil and rainwater can drain away.

4. What very important job does the earthworm do for us?
5. How does an earthworm loosen up the soil?
6. Draw and name some of the decaying (dying) matter in the soil that would be good food for an earthworm. Think of a compost heap.
7. How does the soil look when it comes out of the earthworm?