



Primary Success Publications

# *Successful Science Lessons*

## **Kindergarten**



*By Jean Roberts*

**Practical Lessons to Teach  
Beginning Science**



**Primary Success Publications®** By Jean Roberts

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# Introduction

Science lessons in Kindergarten are sometimes difficult to plan and teach, so science often gets left out of the daily lessons. Now, with more schools having full day Kindergarten, there is more time for exploring this important subject.



Kindergarten Science is very important. The skills learned in this year form the foundation of Science through the grades and beyond. What may be difficult for teachers is that the **process** of Science learning in this year is more important than the facts or knowledge taught. In reading or math, in social studies, phonics and writing - the outcomes and the knowledge gained are the most important, but in kindergarten science we want our children to become aware of the wonders of the familiar world around them.

Many kindergarten children simply accept their immediate world without question or curiosity. Our job in this year is to open their eyes to the wonders of this world so they see the colours, shapes, sizes, textures of familiar things, and to be able to describe what they see using suitable vocabulary. We want them to become curious and to ask questions, to wonder about the how, what, why of the things around them. The facts that they learn about the immediate world are secondary to this.

Many lessons encourage looking closely at familiar things. We want to try for the 'Awesome!!' factor - looking at the centre of a flower, the stems like drinking straws, baby animals, looking at sand with a magnifying glass or mixing colours - the 'awesomeness' of these things will be our goal. When children are surprised and amazed by the things around them and want to know more, we have succeeded.

We want our children to be curious about the world around them. Try to answer all the questions that they ask in as simple a way as possible, and if you don't know the answer, say so - and take the child to the library or the computer to

find out the answer. We need to be seen as curious, too!

The lessons in this book are really suggestions. Take several days or more to do a lesson if your children are interested in a subject. The additional ideas may help you to expand on the basic lesson. Use your own ideas, any other information and interesting lessons that you have to teach a concept. The worksheets are optional, so use them at your discretion.

Some of the units and lessons are seasonally appropriate, and some depend on the weather as there are many outdoor activities. The units can be done in the order that you like - after the first two units have been taught: units 1 and 2 'Our World' and 'Living Things' should be taught first to give a background to future lessons.

Have fun with science! Laugh at things that amuse your five year olds, silly as these may be. Lying on your tummy in the grass watching an ant, standing in the snow or building towers with blocks can be lots of fun and good learning, too. Share your insights and enthusiasm.



# Living Things



Unit Two teaches that some things in our surroundings are alive and some are not. The students will learn that plants and animals are alive, and recognize that living things grow and change. They will learn that people are animals, too, as well as birds, fish and insects.

The children will explore their environment and discuss what things are alive, and how they change over time.

Living things need food for energy. The students will understand that we need good food to grow and be healthy, and all other living things do, too. They will learn about energy making things work, and that food gives the energy that makes children and other animals grow. We need energy to work and play.

They will look at items in the environment and discuss whether they were once alive. They will tell the difference between things that are alive now and things that once were alive.

This is the introduction to plants and animals in the immediate environment.

### **Vocabulary**

Living, alive, not living, plants, animals, grow, change, food, energy, real, not real, water, sun, air, soil,



## Lesson 8 - What is 'alive'? - Part 1

**Review:** Review the ways we can discover our world.

### **Lesson:**

Bring in a living plant and a silk plant. (See the next page for ideas on this...) Look closely at the two. Both are green, and both have leaves, stems, and perhaps flowers. Have a chart for each, and print the words with a small drawing. How do they feel? Do they smell? How are they the same?

Then ask what is different. They may be slightly different colours, one may be larger than the other, etc. These are good answers, of course. The next response you get will likely be that one is real and the other is not. Ask what the children mean by 'real'. Try to elicit that one is alive and the other isn't.

How can the children tell if the one plant is alive? Does the living plant need water? Does the silk plant need water? Can they tell by the way it looks and feels and smells? Why does one need water and the other doesn't? Does the living plant need other things, too? It needs light, too. Does the non-living plant need light? The living plant needs soil, too. Does the non-living plant? The living plant will grow and change over time. Will the other?

Examine both plants. Use a magnifying glass. Do they look alike when you look closely? Can you see other ways they are different?

Can the students think of other plants that are alive? How are most living plants alike? Most are green, most have a stem and leaves. Are trees plants? Are all plants the same? Some trees have leaves and some have needles. Do the plants always look the same? Why not?

### **Follow-up exercise:**

Draw a plant. The children can attempt to draw the living plant in the lesson. You may want to demonstrate.....

### **Desired lesson outcome:**

We want our students to realize that plants are living things.



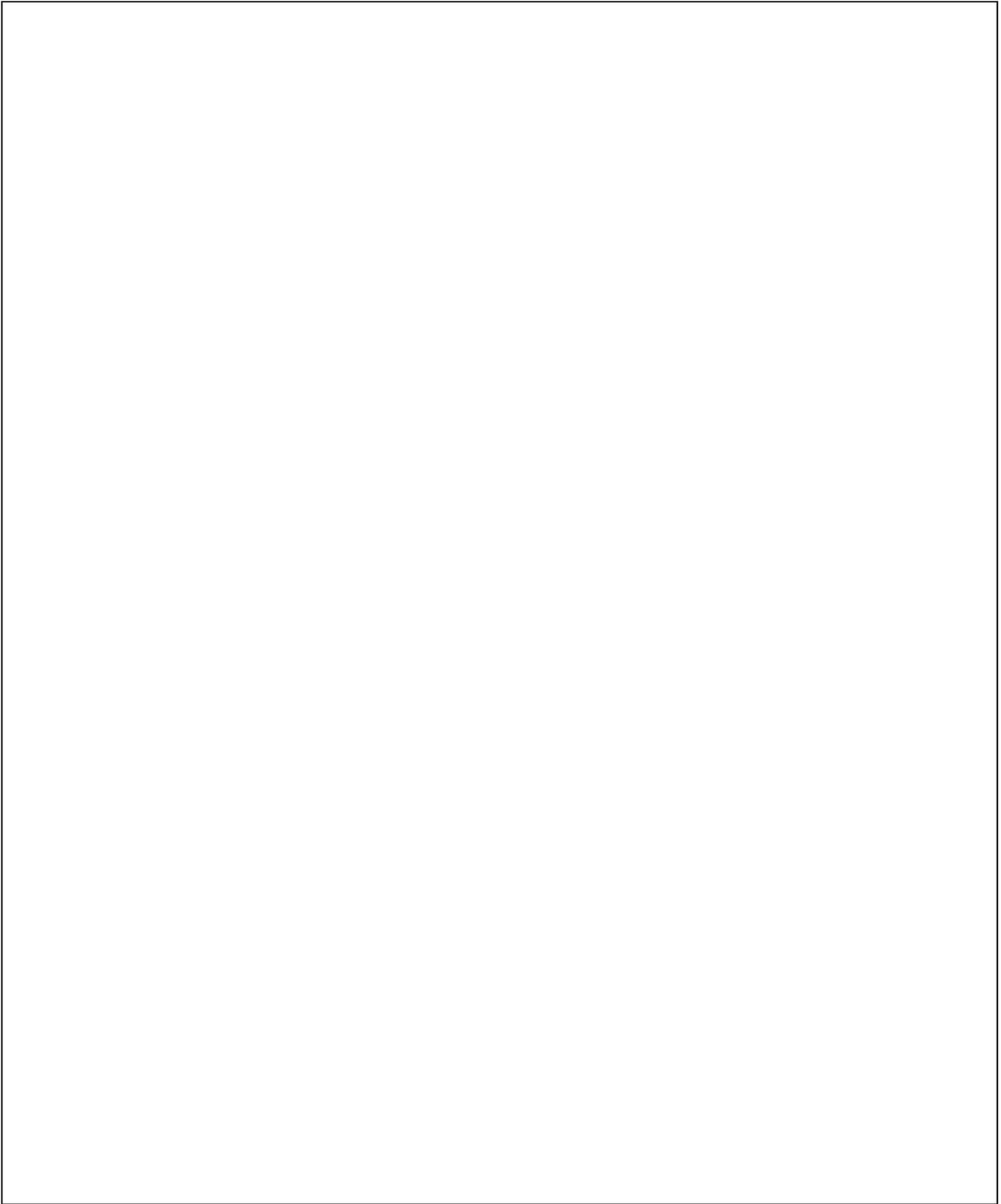
## Additional Ideas

One possibility when trying to find the plant and silk plant is to find matching African violets. If you are doing this in the fall when outdoor plants are losing their leaves, a house plant works well. Silk plants can be found in Michaels - other craft stores, or Walmart and even some dollar stores have these. Get a fake plant in a pot so it appears similar to the real plant you have.

Go for a nature walk and look at living plants - trees, grass, bushes, flowers, etc. How are they alike? Do they all have leaves? Stems? Roots? They need soil and water and the sun.

Bring in a real rose and a silk rose. (Of course, the rose is not really living - but you don't need to go there!) Let the students use their senses to see, feel and smell the difference. Why are they different? Did the silk rose grow? It was made by people, and it didn't grow. The real rose needs water. What will happen if it doesn't get enough water?





*A living plant*

Notes:

## Lesson 9 - What is alive? - Part 2

**Review:** Review the last lesson with the plants. What did the children learn?

### **Lesson:**

Today, have a living animal and a toy or model of this animal. One suggestion is to show a garden worm and a candy 'gummy' worm. You could bring in a pet - perhaps a rabbit or a turtle or goldfish, and have a stuffed toy to match.

Let the children examine both and discuss among themselves. Then ask what things are the same for both. They will both have similar features - shape, colour, legs, ears, fur, eyes, tails, etc. Put the answers in words on a chart with little drawings. Do they feel alike?

How are they different? This time, the children will tell you that one is alive and one isn't. How do you know? Put the answers on the chart, again. The animal can move, can eat, can dig, grows, etc. If you use rabbits, for example, both rabbits have eyes, but only one can see. Both have ears, but only the rabbit that is living can hear things. They both have mouths, but what can the living rabbit do with the mouth that the toy can't? What other things can the living rabbit do that the toy can't do?

You can also record the other ways the two are different - size, colour, shape, etc.

Look at the two animals carefully. Can you see more if you look through a magnifying glass? Talk about the living animal (where it might live, what it might eat, etc.)

(If you have gummy worms, give one to each child...)

### **Follow-up exercise:**

Match the animals with the toys (alive and not-alive). The children can cut out the boxes and put them into two groups. Discuss the page and make sure all the children understand.

Draw a matching living animal and a toy animal - or glue one of the pictures into the correct spot.

### **Desired lesson outcome:**

Our children should understand the difference between living and non-living and that animals are living things.



## Additional Ideas

Read "The Velveteen Rabbit". This may be beyond some Kindergarten classes, so check it first. The rabbit wanted to be real.

Sometimes in books we pretend that toy animals are like real animals. There are many of these - the Pooh books, as an example. As you read books to your children, talk about whether the animal characters could be real or imaginary.

Have a collection of stuffed toy animals. Let the students pretend that these are real pets. How would these animals behave if they were alive?

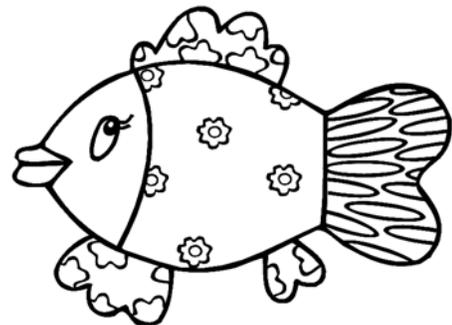
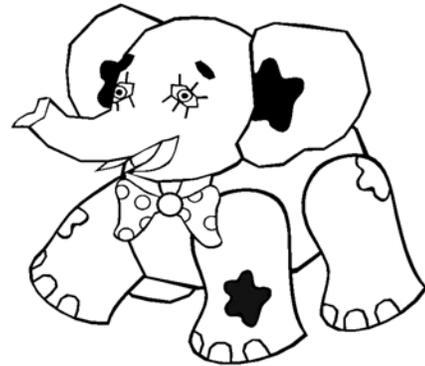
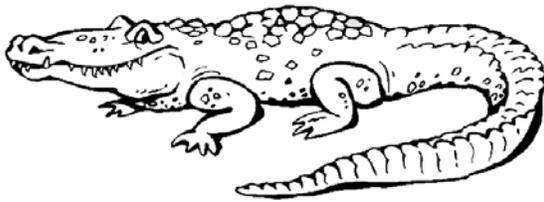
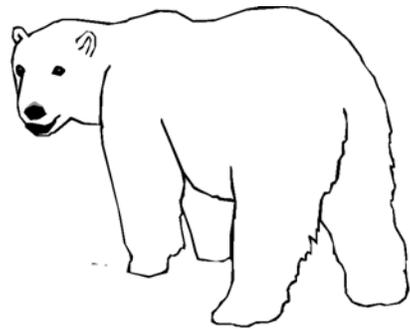
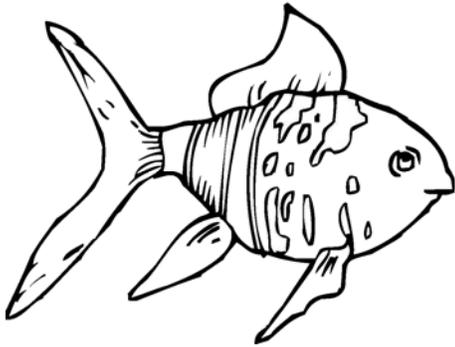
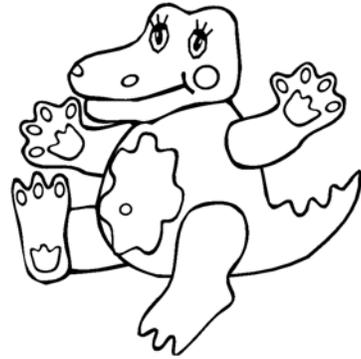
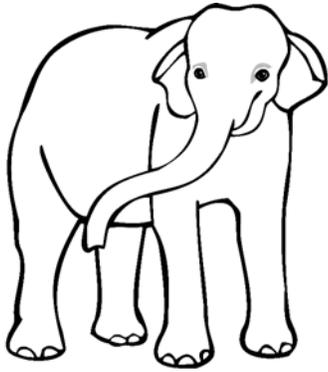
Do an experiment, if you have the items..... Have a habitat for your living animal. Give the animal food and water. Set up another similar habitat for the non-living animal and give it food and water, too. What happens? Why?

(A teacher told me the following, and I haven't tried it - and you may not want to!) She said you can put a real earthworm between two glass slides. Hold it up to the windows and you should be able to see the 'innards'. Do the same with a gummy worm and look at the difference.

On the website below you can make a plant grow by watering it.  
[http://www.bbc.co.uk/schools/scienceclips/ages/5\\_6/ourselves.shtml](http://www.bbc.co.uk/schools/scienceclips/ages/5_6/ourselves.shtml)



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



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

*A living animal*

*A toy animal*

## Lesson 10 - Living things are plants and animals

**Review:** Review the last two lessons - the living and non-living plants and animals.

### **Lesson:**

Discuss the fact that all living things are either plants or animals.

Go outdoors and sit in a circle. What living things do the children see around them? There is grass. Grass is living - is it a plant or an animal? How do you know it is living? A bird flies by. Is it a plant or an animal? Do this with trees, insects, bushes. Are they plants or animals? Hopefully a student will suggest people. Are we living things? How do you know? Are people plants or animals?

Now, why do they think that insects and birds and people are animals and not plants? Plants are alive, too. In what ways are plants different from animals? Animals can move around! (At this point, you can do some P.E. - move like different animals.) Use the word 'energy'. The children have a lot of energy today. Energy is the power you use when you move. Praise the different ways they can move, and the children with the most energy.

Stop the students, and sit in the circle again. Ask for ways that animals move - they can walk, jump, fly, swim, crawl, etc. Can plants move like that? Plants cannot move on their own. Why not? Wind can move a plant's leaves and branches, but the plant isn't moving to another place. Why do plants stay in one place? What keeps them there? Talk about the roots holding the plants in one place.

Back indoors, talk about the different kinds of plants. Plants can be trees, grass, weeds, flowers, vegetables, bushes, etc. How are they all alike? They all grow, they are green and they need water and soil and light. Now, talk about the different kinds of animals. There are many kinds of insects, animals in the sea, pets, animals on the farm, jungle animals, birds, reptiles, etc. How are animals all alike? They can move, they grow, they need food and water.

### **Follow-up exercise:**

Look at and discuss the pictures. Which are plants and which are animals? Cut out the pictures and glue them in the right box.

### **Desired lesson outcome:**

Our children should understand that all living things are either plants or animals.



## Additional Ideas

In the gym in P.E. time, move like plants in the wind - stand in one place and sway. Then move like different animals.

Collect pictures of different animals from magazines. Make a collage of pictures of different kinds of animals.

Have a collection of stuffed animals, and show pictures of the same living animals. Tell how they are the same and different.

As part of sharing time, talk about the living animals the children see every day - pets, farm animals, wild animals, insects (flies, ants, spiders, etc.), birds, fish, and others. You could have a day where they each bring in a favourite animal stuffy. Research on-line sites that have photographs of living animals and show the pictures. Compare the living to the non-living animals.

Google: 'Living and Non Living Things Worksheets'. There are a number of interesting practice sheets for Kindergarten.

When looking outdoors, the children will likely suggest dried branches or twigs or dried leaves. Are these alive? Have they ever been alive?

[http://www.bbc.co.uk/schools/scienceclips/ages/6\\_7/plants\\_animals\\_env.shtml](http://www.bbc.co.uk/schools/scienceclips/ages/6_7/plants_animals_env.shtml)

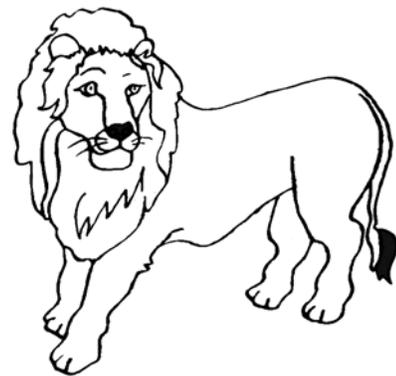
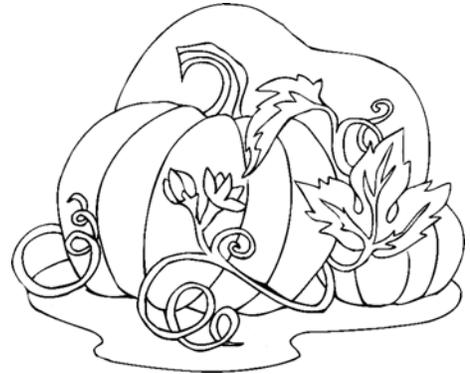
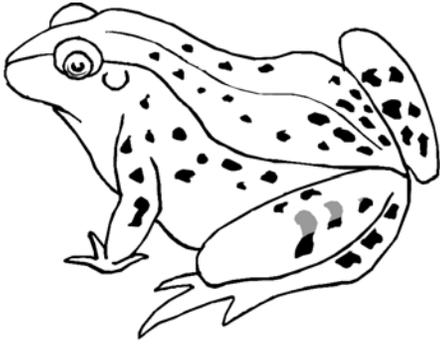
Do this drag and drop exercise - scroll down to 'sorting' and then 'Living and Non-Living'.

<http://www.teachers.cr.k12.de.us/~galgano/klinkstemp.htm>



Plants and animals

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



plants

animals


## Lesson 11 - Living things grow

**Review:** Review living and non-living things. Look around the classroom for both.

### **Lesson:**

Have the children bring in a picture of themselves as babies or toddlers. Have a child go to the front of the group and hold up the picture. What is different? It is the same person, but there have been lots of changes. First, the person has grown a lot! Show all the pictures that have been brought in, and discuss the differences.

How do the children know that they are growing? They need new clothes and shoes because the old ones are too small! Discuss this with the students and give a few minutes for their stories. How much will they grow? Do people keep growing all their lives?

People are animals, of course. All animals grow and change. Talk about family pets, perhaps kittens and puppies when the family got them and how they changed. If the children see deer or other wild animals, discuss these and how small they are when they are first born.

Plants are living things, too. Do plants grow? How do you know? How small are plants when they begin to grow? How big do some plants become? What is the biggest plant you have seen? Will all plants become as large as this?

Plants and animals (living things) grow until they are adults, or 'grown-up'. How big is a grown-up mouse? A horse? A person? A hummingbird?

Do plants and animals keep growing forever? There is always a point where living things no longer grow. How big will your students be when they finish growing? How long do people grow? They will grow until they are older teen-agers. Do you think you will be as big as your father or mother?

Do non-living things grow? Talk about the objects in the classroom.

### **Follow-up exercise:**

Cut out the pictures. Match the baby animal and the adult. Talk about the sizes and how much the animal grows. Do the children know the names of the babies? Sort the pictures another way.

### **Desired lesson outcome:**

Our children should understand that living things grow and change.



## Additional Ideas

Ask the parents to put good photographs in a clear plastic sleeve or in a baggie, so it can be handled without damage. Now, of course, most pictures are digital, so a photo can be printed and not be valuable. If you want to keep the good photos, take a digital close-up of it and send the precious photograph home. These digital pictures are good for making a bulletin board. The children will enjoy looking at the pictures of their classmates.

You could also ask parents to send in pet pictures - for example, a dog as a small puppy and as a full grown dog. You can find pictures of baby animals on the internet, too.

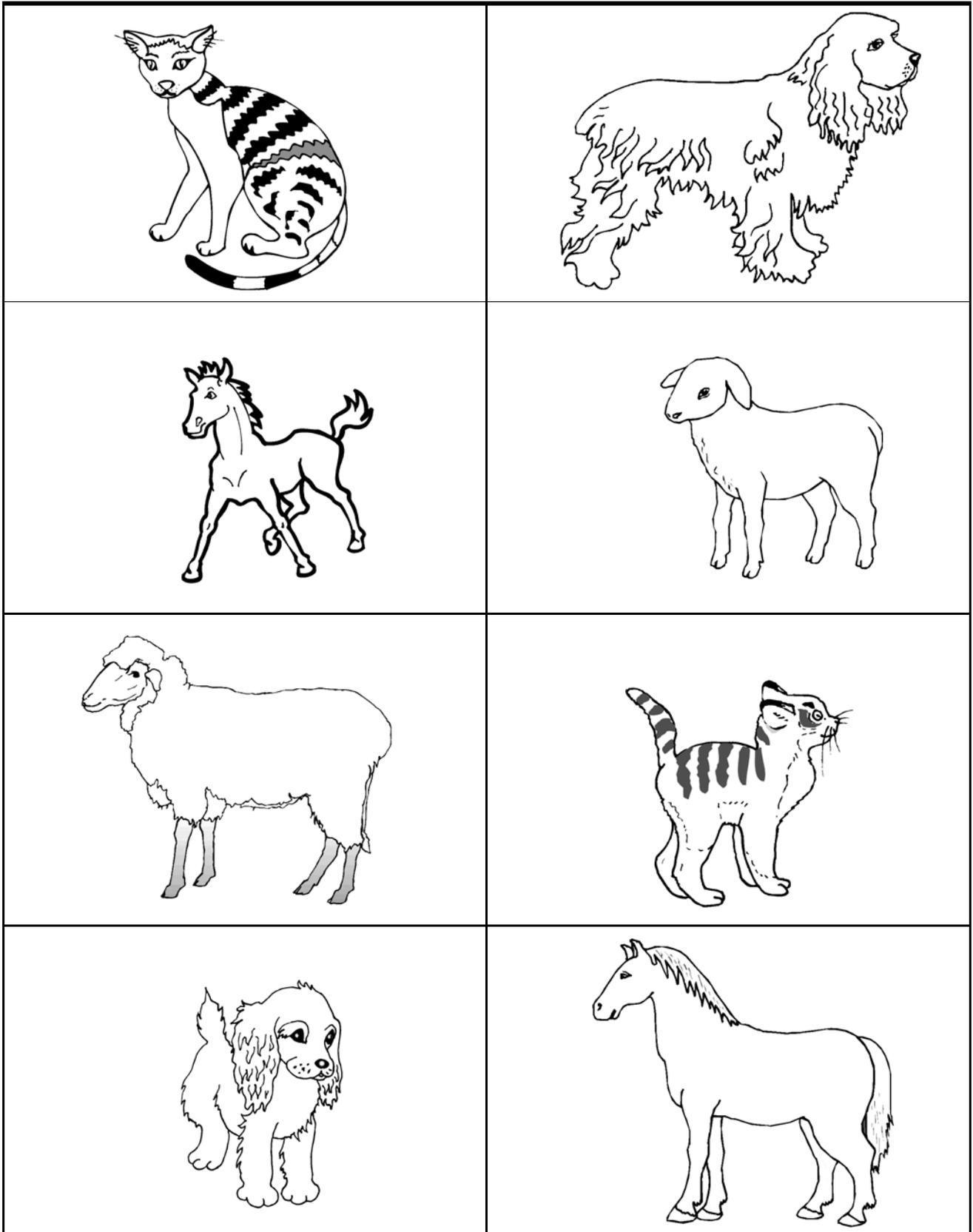
What can you do now that you couldn't do when you were younger? What did you learn to do in every year?

Measure your children and re-measure later in the year. How much have they grown?



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

Match the pictures.



Notes:

## Lesson 12 - Living things need food

**Review:** Review - living things are plants and animals. Living things grow.

### **Lesson:**

What is energy? Can you show me your energy? Kindergarten children have lots of energy! Energy makes things go. We put gas into the car so the engine can give the car the energy to move. What gives you your energy? Food is necessary to give your body energy. All living things need food in order to grow.

Talk about animals that are familiar to the children. Pets must be fed. Does all food look the same? You wouldn't want to eat dog food! What does a cat eat? What do horses and cows eat for food? What does a squirrel eat? A goldfish? Most whales eat fish. How many fish would a large whale need to eat each day to have lots of energy? The bigger the animal the more it needs to eat. The same with people - small children do not need as much food as adults.

You need food for energy. Why do you think your parents want you to eat things that are good for you? Can you name some foods that are good for you? Good foods help you to grow and have energy. Some foods do not help you to grow and be healthy.

Go outdoors or into the gym and show how much energy you have!

Plants need energy to grow. Yes, even plants need food! Where do you think a plant gets food? There are good things that a plant needs in the soil (make sure your children understand this word). These good things come into the roots with water and feed the plant. (If you can, go outdoors and dig up a weed. Shake the soil off the roots and let the children have a good look at the roots with a magnifying glass.) Put the plants into a glass of water.

### **Follow-up exercise:**

Draw a good food that you like. Draw yourself with energy!

### **Desired lesson outcome:**

Our children should understand that all living things need food for energy.



## Additional Ideas

You can do a simple experiment to discuss how plants get food. Have some Kool-Aid or Crystal-Light or even simply sugar and a pitcher of water. Talk about water in the soil. Stir in the sugar or crystals until it disappears. The good things in the soil go into the water, just as the sugar did. Then the water goes into the roots and the plant gets the food. (The children can drink a bit of the water...) If you take in this food you will get energy. So do plants!

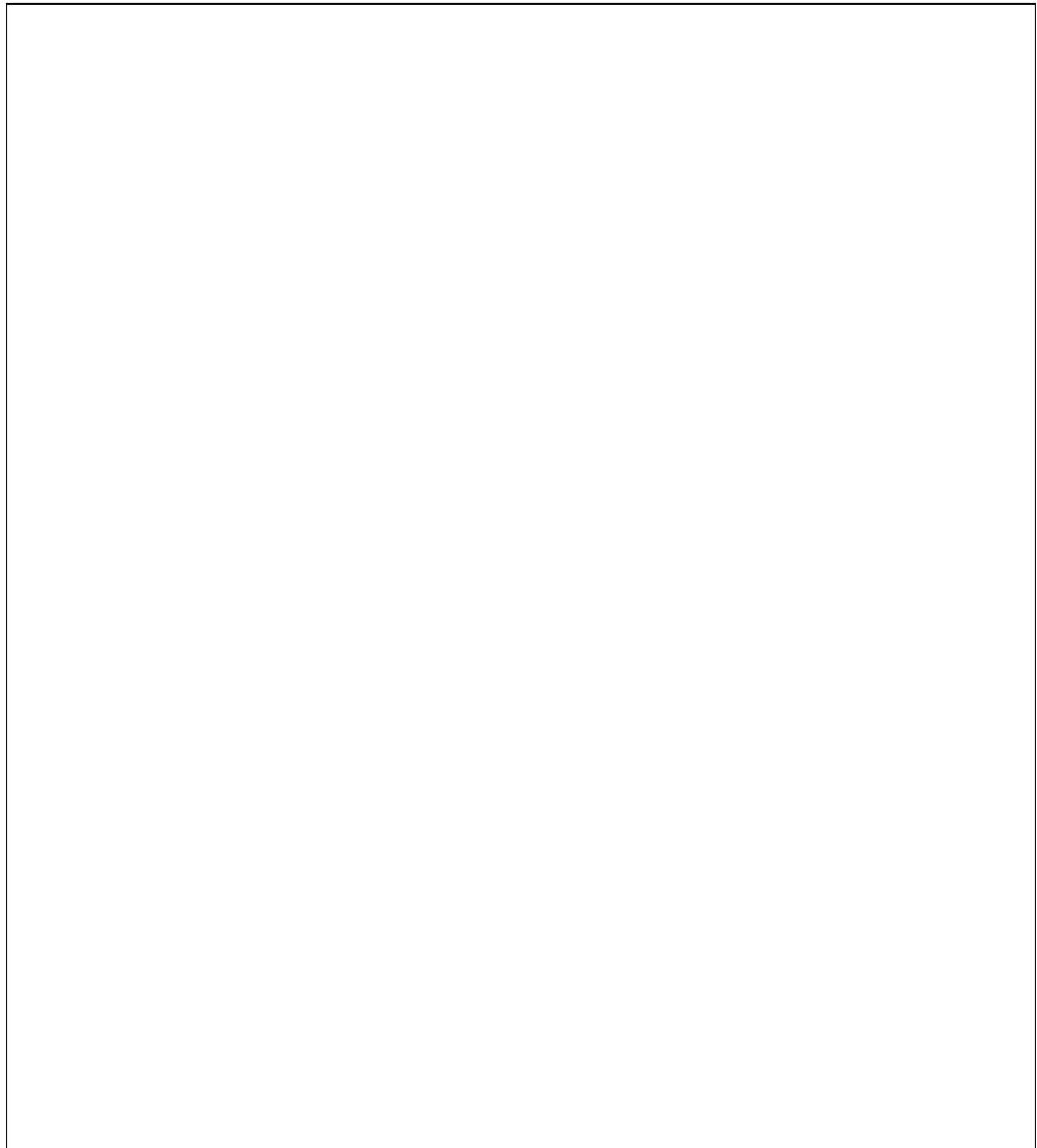
Put food colouring in a vase with white flowers - mums or carnations. The plant stem 'drinks' the water in very tiny bits. What happens? How can we tell that the water is moving up the plant? The stem is just like a drinking straw. Give each child a glass of water with a straw.

Talk about good foods. If your children bring snacks or lunches, have a look at what they bring and talk about the good foods - fruit and vegetables, bread, cheese, milk, meats, etc.

This can also lead into a discussion of foods that do not help the bodies grow. What is 'junk food'? It doesn't have the good things that our bodies need.



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



I like good food.  
It gives me energy!

Notes:

## Lesson 13 - Living Things Need Water

**Review:** Review the idea that we need food for energy.

### **Lesson:**

Did you know that there is water in all living things? There is water in you! How do you know there is water in your body? There is water in your mouth, there are drops of water on your skin on a hot day when you sweat or after you work or play very hard - in P.E. for example. There see water in your pee, of course! (Perhaps you may think of a nicer way to put that....) There is water in blood. These are ways that water leaves your body, so we must replace it by drinking water. Talk about the water that the children drink each day.

Give each child a paper cup of water, or a bottle of water. Let them drink it as you talk.

All animals have water in their bodies, just as you do. How do pets get water to drink? How do wild animals get water?

Plants are living things, too. Do you think they have water in them? How do you know? Go outdoors and find green plants - weeds are good for this. Break the stems and see if you can find water. Some plant stems will just have a tiny amount, and some will drip water when the stem is broken.

What happens if a plant does not get any water? Talk about plants in hot weather, and how they turn yellow and dry when they don't get enough water. How can we keep plants in our homes or gardens healthy? We need to water them. Go back to yesterday's lesson about food for plants - if plants have no water, they will not get food either, as the food come in because it is mixed in the water taken up by the roots.

Have a drink of water through the day. This helps to keep you healthy. It is possible that our brains function better if you drink lots of water, too!

### **Follow-up exercise:**

Does this need water? Colour the things that need water.

### **Desired lesson outcome:**

Learn the different ways we use water, and that all living things need water to live.



## Additional Ideas

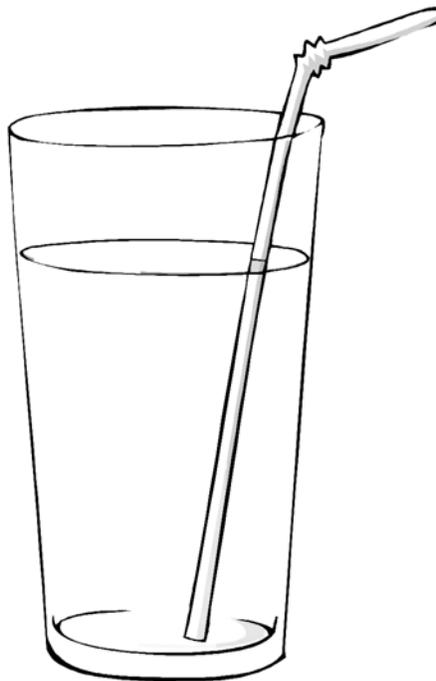
Talk about other ways we use water..... to brush teeth, to bath, to swim in the summer or at the pool, etc. Fish and other creatures live in the water. We put water on plants. Make a chart of the ways we use water.

Where does water come from? We get water from the tap, but where does it come from before that?

Expand on the qualities of water. Put a few droplets on the table top for each student. Get the eyes down to table top level, and see how the water looks. Then, very gently and carefully, touch the top of a drop with the finger. Then lift the finger up a tiny bit. The water stretches up.

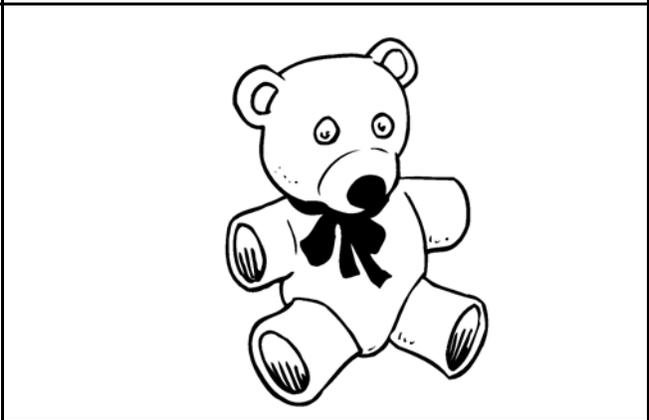
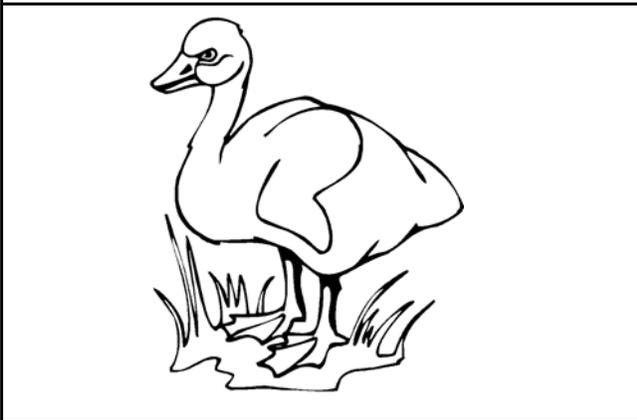
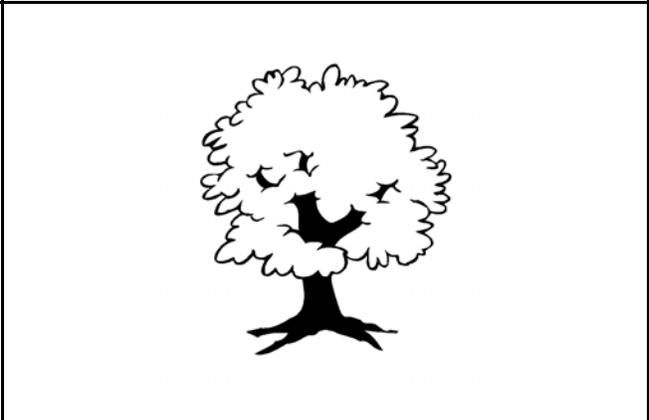
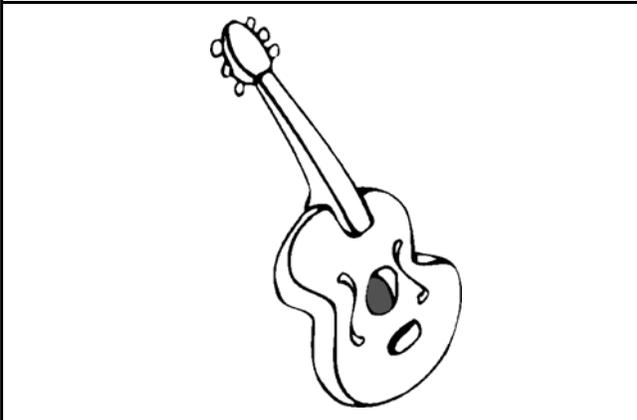
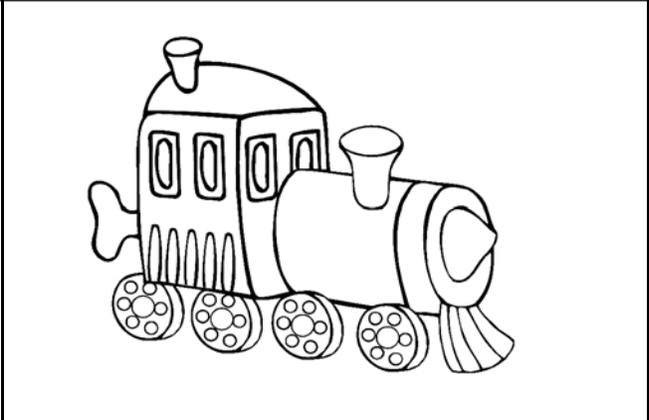
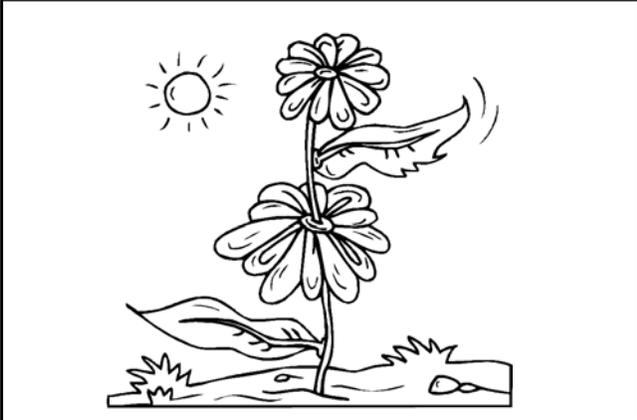
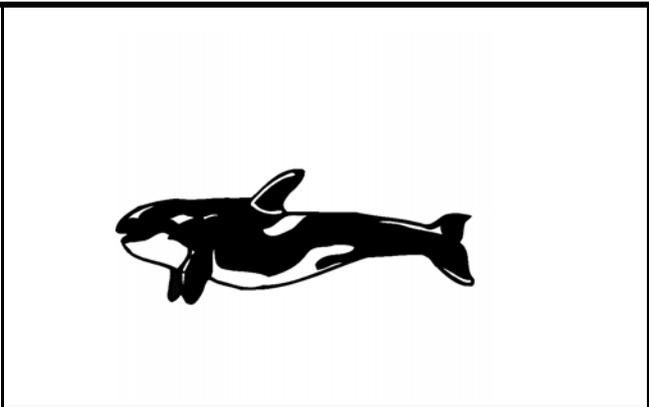
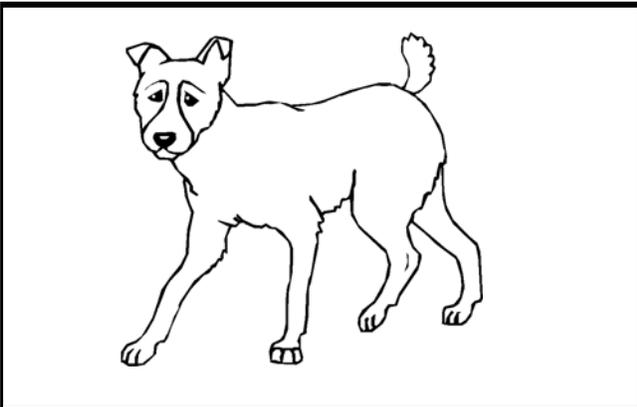
How full can you fill a glass of water? Slowly fill a glass until it won't hold another drop. (Pour water from a jug into a glass.) Now bring the eyes level with the top of the glass. The water will be higher than the top of the glass! You can talk about water having a 'skin' on the surface.

Have two similar plants. Water one of them and do not water the other. What happens?



What needs water?

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



Notes: