A large, bright blue circle with a thick black outline is centered on the page. A horizontal black line passes through the center of the circle, extending to the left and right edges of the page. Inside the circle, the text "MAKE YOUR OWN MICROSCOPE" is written in a bold, black, sans-serif font, arranged in three lines.

MAKE YOUR OWN MICROSCOPE



THE MICROWORLD AND MICROSCOPES

Microorganisms, also called microbes, are tiny living creatures that are so small you can't see them with your naked eye. Micro means tiny, and organism means a living creature. Microorganisms are found everywhere, in the air, in your garden, even inside your body. This is because they are really important for life on earth and they help us with jobs like making food, break down rubbish, and creating medicines.

Since microorganisms are so small, they can only be seen with an important tool called a microscope. A microscope is used to make an object appear larger than it is.

Biologists use a special kind of microscope called a "light microscope" to study microorganisms. This has a bright white light to shine on the object and glass lenses to focus and make the object seem bigger and clearer. These lenses are the same type you find on glasses for people who can't see very well. Light microscopes are very expensive, but you can make your own microscope using water instead of glass lenses. You won't be able to see the tiny microorganisms around us with this water microscope because it isn't powerful enough, but you can start looking up close at some other exciting objects.

Are you ready? Make sure you have asked permission and have an adult on hand to help!

MAKE YOUR WATER MICROSCOPE

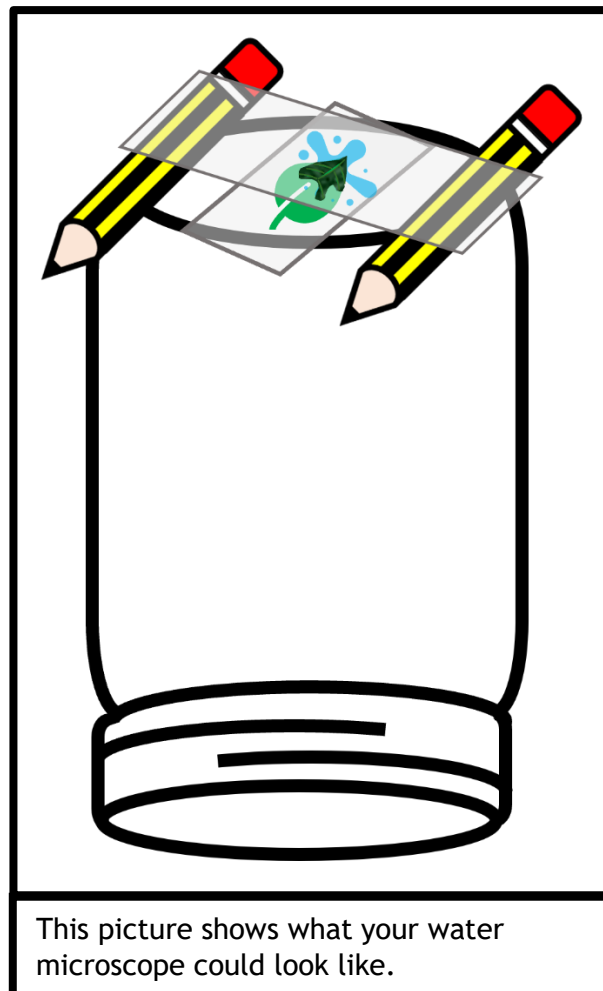
YOU WILL NEED:

- A clear plastic container (such as an empty strawberry box)
- A glass jar or transparent plastic cup
- Two pens or pencils
- Sellotape
- Scissors
- A paintbrush
- Water
- A lamp (This experiment is best in a bright room, use a lamp if the room isn't bright enough)
- Objects to look at with your microscope - these are called "specimens"

WHAT TO DO:

1. Cut the plastic container into strips that are big enough to fit your object on. These are called 'slides.'

2. Place the glass jar or transparent plastic cup, up-side-down to make a 'stage.'
- This is best in a bright room or with a lamp close to your experiment
3. Sellotape the pens or pencils to the bottom of the jar, one on each side.
4. Place your specimen onto one of the slides. Your specimen needs to be close to the slide, so if you have something large and round like a grape, you might need to get your grown-up to help you cut a slice.
5. Put your slide with the sample on the top of the stage in between the two pens or pencils
6. Put a second empty slide balanced on top of the two pens
7. Using a paintbrush, add a couple of drops of water to the top slide
8. Look through the water to your specimen
9. Tada! You have your microscope



WHY DOES IT WORK?

The water is “convex” which means it’s a bit curved. This means when you look at your specimen through the water drop it appears bigger!

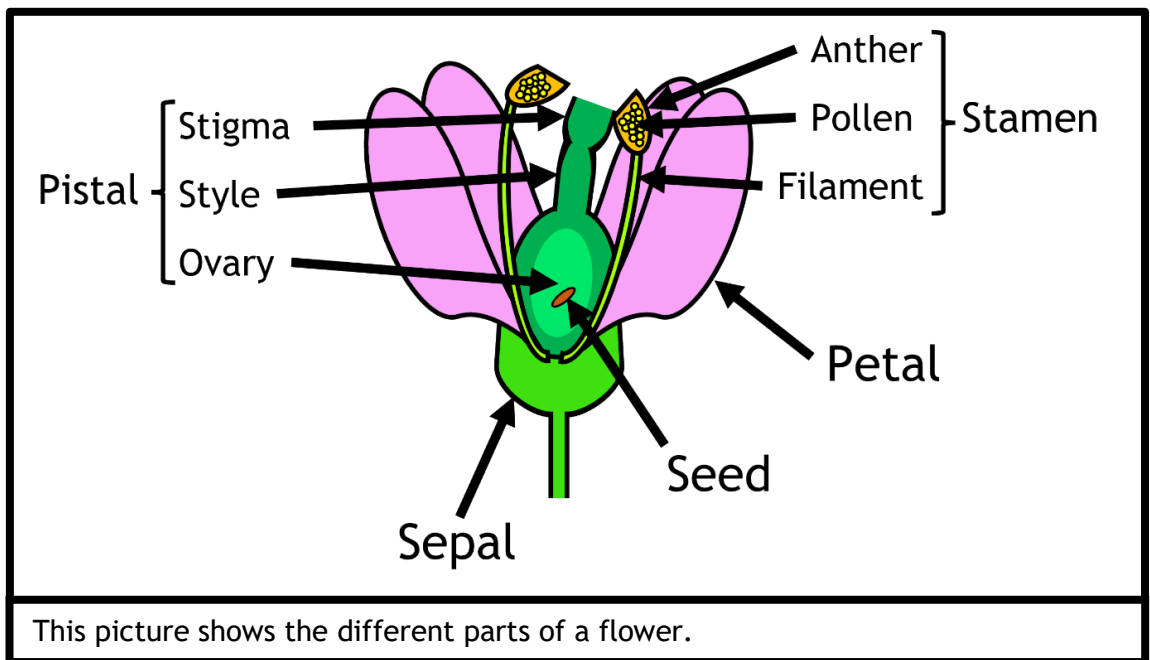
How much bigger your specimen looks depends on how close or far away the water is. Try using different sized pens to balance the water slide on to find out which distance works best for you.

WHAT TO LOOK AT UNDER YOUR WATER MICROSCOPE

You can look at anything under your microscope as long as it fits on the slide. Have a look in your house, your garden or go out for a walk in the park to find some fun things to look at. If you are stuck for an idea of what to choose, you might like to find:

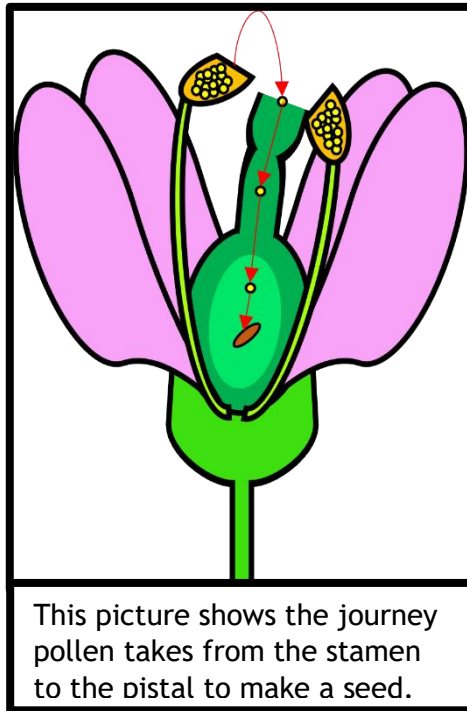
A FLOWER

Flowers are the reproductive part of a plant. This means that flowers are responsible for making the seeds that produce new baby plants.



To make the seeds, flowers have a special part called the pistal and another part called the stamen. Some flowers will have both the pistal and the stamen, other flowers will only have one or the other.

To make a seed, the pollen needs to travel from the stamen, down into the flower's ovary. There it matures into a seed. Since flowers can't move, they rely on different pollinators like wind, bees and birds to move the pollen from the stamen to the pistal. Brightly coloured petals attract pollinators like bees to the flower so they can move the pollen to the pistal. If a flower only has a pistal, the pollen will need to come from a different flower to make the seed.



This picture shows the journey pollen takes from the stamen to the distal to make a seed.

WHAT CAN YOU SEE?

Take a look at your flower with the water microscope. Can you answer the following questions?

What colour are the petals? Do they have a patterns or more than one colour on them?

Can you see a stamen, a pistal or both parts? Can you see all the different parts of the flower you have just learnt about?

Can you see any pollen? What does it look like?



DRAW A PICTURE OF WHAT YOU SEE

Look at your flower. Draw a picture of what you can see when you look at it with your naked eyes.

A large, empty rectangular box with a black border, intended for drawing the flower as seen with the naked eye.

Now Draw a picture of what you can see when you look at the flower with your water microscope.

A large, empty rectangular box with a black border, intended for drawing the flower as seen through a water microscope.