Educational Insights®

- 10X AND 20X MAGNIFYING GLASS EYE PIECES
- ROTATING 3-LENS TURRET DESIGN WITH 50X, 100X, 150X, 300X, AND 600X MAGNIFICATIONS
- RACK AND PINION FOCUSING
- ROTATING MIRROR/VIEWING LIGHT
- DURABLE DIE-CAST METALFRAME AND WIDE, STABLE BASE
- INCLUDES PROFESSIONALLY PREPARED SLIDES AND MORE

⚠ WARNING:
SHARP EDGE HAZARD –This toy has sharp functional edges.Not for children under 3 years.To be used under the direct supervision of an adult.

⚠ WARNING:
CHOKING HAZARD—Small parts. Not for children under three (3) years.

EI-5301

8+

GEOSAFARI®

MICROPRO™

95-PIECE MICROSCOPE SET

WELCOME TO THE AMAZING MICROSCOPIC WORLD

Welcome to the hidden world of the microscope! Your new microscope is an instrument with lenses for making very small objects appear much larger so they can be studied. There are millions of tiny living plants and animals that you can scope out –in amazing detail – with this new tool.

In today's technological world, every field of science uses microscopes. Microscopes are used by biologists for studying microorganisms, by geologists for studying rocks and minerals, by archaeologists for studying ancient artifacts, and by astronomers for studying fallen meteorites. Far out!

Your microscope set contains the following parts:

1	10x eyepiece	1	Measuring graduate
1	20x eyepiece	1	Spare light bulb
1	Scalpel	1	Crystallized red dye
1	Spatula	1	Crystallized blue dye
1	Tweezers	4	Speciman vials
1	Test tube with cap	5	Prepared slides
1	Petri dish	18	Blank slides
1	Pipette	18	Slide labels
1	Stirring rod	36	Slide covers
1	Magnifying glass		Instruction and activity guide

WHAT IS ALL THIS STUFF?

1. **Microscope and eyepieces** – The microscope holds samples of very small things on clear slides. It shines a bright light through the small sample, and then lenses make the sample look very big. Your microscope includes two eyepieces – special magnifying lenses that work with your microscope's other lenses. These eyepieces can make things look 50 times, 100 times, 150 times, 300 times or even 600 times larger than the way you see them with your own eyes.

2. **Scalpel** – A scalpel is a sharp blade used to cut very thin pieces of material so you can look at them with your microscope.

3. **Spatula** – The spatula has a large flat blade, but it is not as sharp as the scalpel. The spatula is used for scraping off bits of material for testing and to mash and flatten soft samples.

4. **Tweezers** – The tweezers are used to pick up small specimens and to handle samples that you don't want to touch with your hands – like slimy mold!

5. **Test tube with cap** – This thin, clear tube is used to hold liquid samples and makes it easy to see if anything is happening, like specimens changing color.

6. **Petri dish** – This round, flat dish with a clear cover is used to grow and observe samples, such as molds.

7. **Pipette** – This is a plastic device that you can dip into a liquid to transfer drops to a slide for examination.

8. **Prepared slides** – These slides contain samples prepared by professionals for you to review.

9. **Blank slides** – These are the clear slides that you will place your prepared samples on for examination under your microscope.

10. **Slide labels** – These are little pieces of paper with sticky backs. You can write on them and stick them on your slides to record information such as when the sample was prepared.

11. **Slide covers** – These are little squares made of thin, clear plastic. They are used to cover very small samples on a slide.

12. **Specimen vials** – These are little plastic bottles with tight-fitting lids. You can use them to collect and store small amounts of liquid to examine later or to carry your samples from where you collected them to where you have your microscope set up.

13. **Stirring rod** – Use this rod to mix fluids, like salt and water, until they are well blended.

14. **Magnifying glass** – Use this tool to take a closer look at a sample before you examine it under your microscope's high-power magnification.

15. **Measuring graduate** – This plastic cup is marked with measuring lines so that you can accurately measure quantities of liquids in your experiments.

16. **Spare light bulb** – This bulb will replace the one in your microscope's illuminator lamp when it eventually wears out.

17. **Crystallized red and blue dye** – Add color to the objects that are hard to see on your slides.

GET TO KNOW YOUR MICROSCOPE:

1. Eyepiece
2. Body tube
3. Focusing knobs
4. Rotating turret
5. Objective lenses
6. Arm
7. Stage
8. Slide clips
9. Mirror
10. Electric illuminator lamp
11. Base

1. Eyepiece
You'll look into your microscope through the eyepiece, which is a small magnifying lens that collects the image projected up by the three objective lenses. Your microscope comes with two different eyepieces. The 10X eyepiece makes an image look 10 times larger. The 20X eyepiece makes an image look 20 times larger.

4. Rotating turret
The turret holds the three objective lenses. To change the lenses, rotate the turret slowly until each lens clicks into position.

5. Objective lenses
The objective lenses are the lenses closest to the objects you are examining. Your microscope has three objective lenses, each with a different magnifying power. The shortest lens has the lowest magnifying power (5X). The longest lens has the highest magnifying power (30X). The third lens has a magnifying power between the two (15X). The objective lenses work with the eyepieces to give your microscope a range of magnifications. With the 10X eyepiece in place, your microscope makes samples look 50 times (50X), 150 times (150X), and 300 times (300X) larger than they appear to your eyes. With the 20X eyepiece in place, your microscope makes samples look 100 times (100X), 300 times (300X), and 600 times (600X) larger than you can see them with your own eyes.

9. Mirror
The mirror aims light from a bright source, like a sunlit window or a table lamp, up through the slide you're studying so you can see the specimen more clearly.

10. Illuminator lamp
When there is not enough light available for the mirror to do its job, turn the mirror over and the bright electric illuminator will automatically light your sample.

2. Body tube
This is the main tube of the microscope. The image from the sample travels up this tube to the eyepiece.

3. Focusing knob
Turn these knobs very slowly to bring the image of your sample into focus so you can see it clearly.

6. Arm
This curved piece is the "backbone" of the microscope and holds everything together. Tilt the arm backward for a more comfortable viewing position.

7. Stage
The stage is the flat platform that holds your slides for studying.

8. Slide clips
The two clips on the stage hold your slide in position so that it doesn't move around while you're looking at it.

11. Base (battery compartment)
The bottom of the base has a rubber cover to keep your microscope from slipping on a smooth tabletop.

SETTING UP YOUR MICROSCOPE

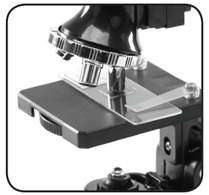
1. Insert two AA alkaline batteries into the base of the microscope, following the instructions on page 6.
2. Place the microscope on a flat surface near a bright light or window (if you're using it in the daytime). Remove the lens cap and make sure that one of the lenses in the turret is snapped into place, pointing directly at the stage. Locate the mirror and adjust the angle so you see a bright circle of light when you look in the eyepiece. Do not point the mirror towards the sun as eye damage may result. If there is no bright light available, or if the room lighting is poor, flip the mirror over so that the light on the illuminator is aimed upward. The light will turn on by itself. Now, look through the eyepiece and adjust the angle of the light until you see a bright circle. When you see a bright circle of light in the eyepiece, you're ready to go!

3. Choose one of the prepared sample slides from your set. Place it under the two spring clips on top of the stage.

Continued on page 6

4. Next, choose the magnifying power you want to use. Your microscope can provide magnifying powers of 50X, 100X, 150X, 300X, and 600X. Remember that the longer objective lenses used with the higher magnification 20X eyepiece provide the higher powers. For optimal viewing, start at the lowest power and work your way upward. Most observing is done at low power.

5. To change the magnifying strength, turn the rotating lens turret until you hear a click.
6. Turn the focusing knob until the objective lens is almost touching the slide. Don't let the lens touch the slide as you may break the slide and damage the lens. Now look through the eyepiece and slowly turn the focusing knob back until you see the sample clearly.



7. To change the eyepiece and increase or decrease the range of magnification, simply unscrew it from the body tube and replace it with the other eyepiece.

Battery installation and instructions

1. Loosen the screws in the bottom cover of the microscope and remove the cover.
2. Install 2 AA batteries following the diagram inside the compartment
   - Always use fresh batteries.
   - Non-rechargeable batteries are not to be recharged.
   - Do not mix old and new batteries.
   - Do not mix different types of batteries: alkaline, standard (carbon zinc), or rechargeable batteries.
   - Only batteries of the same or equivalent type are to be used.
   - Remove exhausted batteries from the unit.
   - Do not take batteries apart.
   - The supply terminals are not to be short-circuited.
   - Do not dispose of batteries in a fire. They may explode.
   - To prevent corrosion and possible damage to the product, it is recommended to remove the batteries from the microscope if it will not be used for more than two weeks.
   - Batteries must be installed with correct polarity
   - Remove rechargeable batteries from the toy before charging
   - Only charge rechargeable batteries under adult supervision
3. Replace the cover and tighten the screws. Do not over-tighten.

MAKING SLIDES

Your samples should be very thin so that light can pass through them. If the sample is too thick, it will appear dark in the microscope. If a sample is too thin or clear, a drop of red or blue dye can make details easier to see. You can find these dyes at a science supplies shop or try making a natural dye by putting a slice of beet root in a blender and using its juice as a dye (just get an adult's permission first!). Then use the pipette to transfer a drop of the dye to your slide.

Be careful with dyes as they can stain clothing, furniture or carpets!

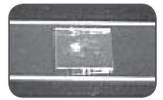
There are thousands of common items around the house and in the yard that make interesting samples to view through your microscope. Scope out cloth fibers, hair, plant or vegetable leaves, grass, paper, onion skin, pollen, dust, salt crystals, and even water!

Making a Temporary Slide:

1. Wipe the slide clean with a soft cloth.
2. Prepare a thin sample of your specimen. You may have to slice it with a scalpel or a razor blade. Be very careful. Check with an adult before using any sharp tools for slicing specimens.
3. Pick up your sample with the tweezers and put it on the center section of the slide. Add one drop of water. If you need it, now's the time to add a drop of dye.
4. Gently place a temporary slide cover over the sample, being careful not to allow any air bubbles in.
5. Gently press a paper towel to your slide cover to remove any excess water or dye.
6. Observe your slide!

Making a Permanent Slide:

1. Start with a clean slide and cover.
2. Follow Steps 2 and 3 on the left of this page.
3. Before placing the cover over your sample, add several drops of Gum Media, Canada Balsam, or other commercially–available mounting adhesive or use a piece of transparent tape to permanently hold your specimen down.
4. Place the cover gently over the sample and carefully squeeze out any air bubbles.



5. Place your new slide in a safe place and let it dry for a day.

IMPORTANT NOTICE:

Wash your hands before and after preparing slides and after every project. Use warm water and soap. Also wash any of your microscope kit equipment that you may have used. Make sure that an adult knows what you are doing and is available to help you.

Reduce, reuse, recycle! You can reuse your slides – just wipe them clean once you've viewed your specimen!

KEEPING **YOU** SAFE

- Read all instructions before use. Follow them and keep them for future reference.
- Keep small children and animals away from any experiments or projects.
- When working with samples, keep your hands away from your mouth and eyes. Eye protection is not included.
- Always wash your hands carefully after handling any samples and always dispose of any samples in a safe manner.
- Handle the prepared slides carefully. They are made of glass.
- Store your microscope set out of reach of small children.

KEEPING YOUR MICROSCOPE SAFE

- Always handle the microscope with two hands–one hand around the arm and another around the base.
- Always remove and clean the slides from the microscope stage after each use.
- Place the microscope in a case or cover it with a plastic bag after each use.
- Clean your microscope with a damp or dry cloth–do not immerse or spray liquid or water on the microscope.

A SPECIAL REMINDER ABOUT LENSES

The most important parts of your microscope are the lenses. Handle them with care. If the lenses are dirty or dusty, you can clean them with a soft cotton cloth or a special lens cleaning tissue. Do not wipe them with a finger or a regular facial tissue. Avoid any direct contact between the viewing lenses and the stage. When changing eyepieces, work carefully, but quickly, to avoid introducing dust into your microscope. Always return the lens cap to the eyepiece when finished.

We constantly improve and update our products. Sometimes, as a result of these improvements, what is seen on the package or in the instructions may differ somewhat in color or content from the product in the package.

FAQS – FREQUENTLY ASKED QUESTIONS

1. What can I see with my microscope?
You can see thousands of things that are difficult or impossible to see with your eyes, including tiny plants and animals, plant and animal cells, the differences between different plants, different papers, different fibers, and hairs from different people. You can study crystals, rocks, and minerals. The uses for your microscope are practically endless!

2. What is meant by power?
Power is short for "magnifying power," which is a measure of the seeing ability of your microscope. This microscope has five powers. They are 50X (pronounced "50 times"), 100X, 150X, 300X, and 600X. This means that your microscope can magnify the view of a sample so that it appears 50 times, 100 times, 150 times, 300 times, or 600 times larger than the way you see it with your own eyes.

3. I look through my microscope and all I see is darkness. Why?
Your mirror may not positioned properly to aim light up into your microscope or the sample you are looking at could be too thick for the light to shine through it. Try adjusting the mirror or flipping it over to shine the electric light on your specimen. If you still see darkness, try trimming your specimen to be a little bit thinner.

4. All I can see is a partial circle of light. Why?
To see your sample properly, you need to have even light shining up through the slide. If you are using the mirror for light, try gently moving it about while looking through the microscope until you see an evenly lit full circle.

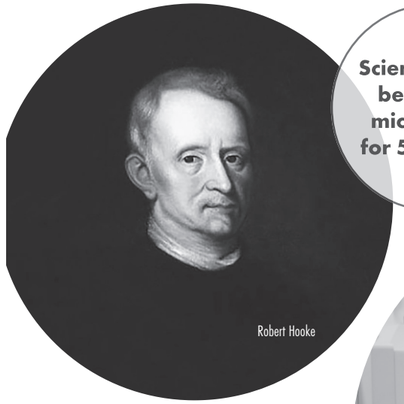
5. I have a very thin sample on my slide, but I can't see any detail.
First, make sure that the image is in sharp focus by adjusting the focusing knobs. If the problem still exists, add a drop of red or blue dye to the sample. Dyes make hard-to-see objects like plant cells stand right out.

LET'S HAVE SOME FUN!

Now that you understand how your microscope works and how to use the tools included with this set, it's time to have some fun! The following pages feature some interesting info and fun facts including the history of the microscope, the scoop on plant and animal cells, and eight super-fun experiments you can try today, using your new microscope.

THE HISTORY OF THE MICROSCOPE

During the late Middle Ages (around A.D. 1200 to 1450), the growing demand for eyeglasses led to experimentation with lenses and making small things appear larger. As a result, the first microscope was created, probably in Holland in the late 16th century. The Dutch were master magnifiers.

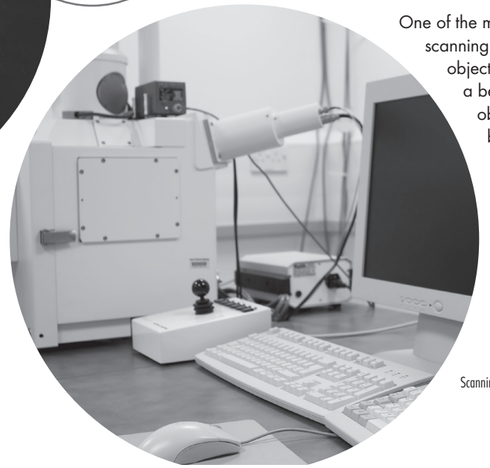


Robert Hooke

Scientists have been using microscopes for 500 years!

The first microscopes were operated with only one lens–then the compound microscope was invented in the 1590's, which used two or more lenses to magnify objects even more. Robert Hooke was one of the most famous people to use a compound microscope. During the 1600's, Hooke observed and recorded the miniscule parts of nature previously unexplored, such as the intricacies of feathers, insects, and even mold. Hooke also introduced the concept of cells–the smallest independently functioning part of an organism. Today, scientists use microscopes to aid in the world of medicine, help build better and stronger materials for everyday use, and even discover hidden mysteries about ancient cultures and environments.

One of the most powerful scientific instruments is called the scanning electron microscope, or SEM. Instead of magnifying objects using lenses, like this microscope, the SEM focuses a beam of invisible particles called electrons on the object, and collects the electrons as they bounce back. These electrons are then turned into a black-and-white image on a screen. SEM's can magnify some small objects as many as 100,000 times–that's about 50 times more powerful than the strongest ordinary compound microscope.

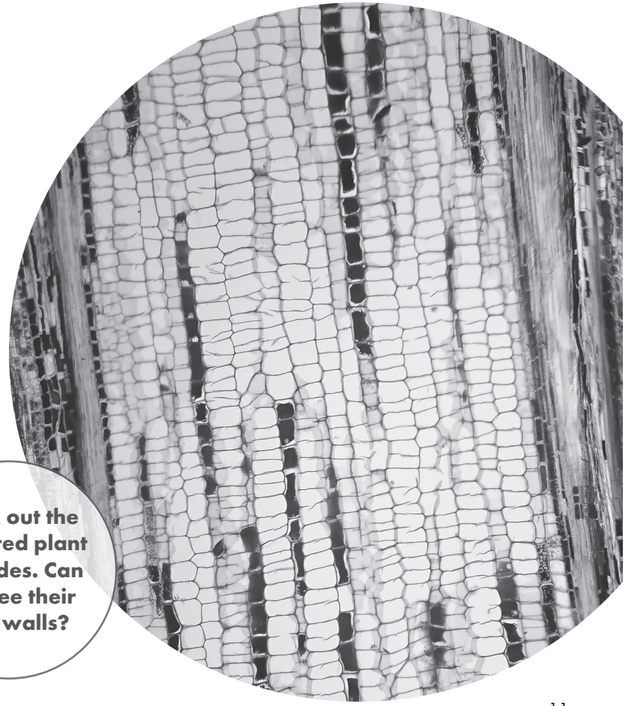


Scanning electron microscope

THE CELL

One subject that's easy to observe with your microscope is a cell. Both plants and animals have cells. Plant cells have structured walls and basically serve as mini-food factories. Photosynthesis, or the conversion of solar sun energy into chemical energy, takes place inside the plant cell.

Unlike plant cells, animal cells have a permeable membrane instead of rigid, structured walls. This permeable membrane, through which certain things can pass, encases a number of even smaller, specialized components called organelles. An animal's body (including yours!), is made up entirely of these cells. They range in size and shape, depending on their function and location. Even the cell's life span varies from type to type–heart muscles, cartilage cells (the soft tissue connecting your bones at the joints), and most neurons (brain cells) can never divide, regenerate, or be replaced. On the other hand, liver cells are replaced about every 500 days, cells in your stomach lining about every 2 days, and skin cells about every 1 to 34 days.



Check out the prepared plant cell slides. Can you see their rigid walls?

PROJECT #1: Cloth Fibers

You will need: ❑ microscope
❑ clean, blank slides
❑ scissors to cut small samples
❑ scrap pieces of cloth of different types

All types of cloth are made from long, thin strands called fibers. Some, like wool, come from animals. Others, like cotton, come from plants. Still others are made from chemical actions. Nylon and polyester are samples of man-made fibers.

Take small samples of various fibers, such as cotton, wool, and polyester. Put one sample at a time between two clean, blank slides like a sandwich. Put the slide sandwich under your microscope. Can you see the difference between natural and man-made fibers?

Look at how tightly the strands are wound. Some are very tight and smooth. Others are loose and spiky. The loose fibers can trap air. This trapped air can help to keep you warm.

Compare a wool fiber with a polyester one. Which one will keep you warmer?

NOTES:

Type of cloth fiber	Is it man-made or natural?	Are the fibers tightly wound?	Are the fibers loose and spiky?	Will it keep you warm?

PROJECT #2: Animal Fur

You will need: ❑ microscope
❑ 2 or more clean, blank slides
❑ samples of different types of fur and hair

An animal's fur is similar to the hair on your head. Like your hair, it protects the skin underneath from cold, heat, and sunburn. Animals have different kinds of fur. Some animals have fine, smooth fur. Others have stiff, bristly fur. Some fur is short, and some fur is long. Long-haired animals can stay warm even when it is very cold. Their fur traps and holds a layer of warm air next to their skin. This is called insulation.

Study samples of fur from cats, dogs, and even your pet hamster. Put several strands of animal hair or fur in between a slide sandwich like you did with the cloth fibers and look at them under your microscope. If you look closely at 600X magnification, you might see small rough lines going around each hair. These are growth lines. If there is a large space between these lines, the hair is fast-growing. A lot of small spaces between lines indicate a slow-growing hair.

Pull out a single hair from your head. (Ouch!) Does it look like any of the animal hairs?

Check your paintbrush! Some have squirrel hair or even pig bristles!

NOTES:

Sample #	Where is it from?	Is the hair smooth?	Would it keep the animal warm?	Can you see growth rings?
#1				
#2				
#3				
#4				
#5				
#6				

PROJECT #3: Leaves

You will need: ❑ microscope
❑ 2 or more clean, blank slides
❑ different types of leaves

Plants breathe through their leaves! Most leaves have small holes in their underneath side called stomata. Plants breathe in carbon dioxide from the air and release oxygen back out. People do the opposite. We breathe in oxygen and breathe out carbon dioxide. In this way people and animals help plants and they help us. The scientific name for a relationship like this is a symbiotic relationship.

Collect leaves from different tree and plant types. The needles of pine, fir, and spruce trees are also leaves, but they look a little different.

If you gather your leaves in the spring and summer, they will be mainly green. In the fall and winter they may be red or brown or orange– all except the small fir, pine, and spruce needles. They stay green all year round. The trees from which these leaves come are called evergreens.

Look closely at your leaf samples at 300X magnification. Look for patterns of lines running through the leaf. These are the veins of the leaf, and they carry nutrients, or energy food, back and forth between the leaf and the main plant. A plant's leaves are like tiny food factories. Chlorophyll, a green chemical in leaves, traps energy from sunlight. The plant uses this energy, water, and carbon dioxide to make food in a process called *photosynthesis*.

Leaves are actually the organs of a plant!

NOTES:

Sample #	What plant is it from?	What color is it?	Can you see the veins?	Can you see the stomata?
#1				
#2				
#3				
#4				
#5				
#6				

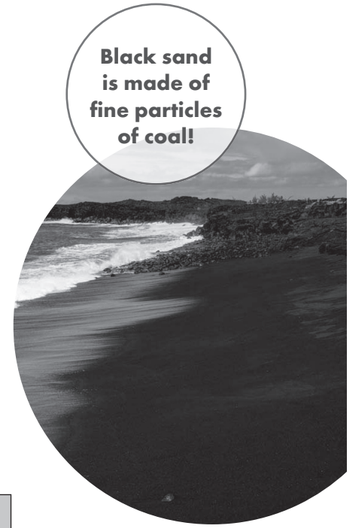
PROJECT #4: Dirt and Sand

You will need: ❑ microscope
❑ several clean, blank slides
❑ several slide covers
❑ specimin vials to hold the samples
❑ samples of dirt and sand from different places
❑ pipette
❑ water

Dirt can have small pieces from rocks in it. It can also have lots of organic material. This is made up of decomposed plant and animal material. Dead leaves and grass get broken down and eaten up by friendly bacteria and small animals like earthworms. Dirt that has lots of organic material in it is called loam, and it is very good for growing flowers and vegetables.

Sand can be made up of small grains of different rock types that have been broken down from bigger pieces. There can also be tiny fragments of shells from long-gone sea creatures. In some places the beach sand is black because the fine particles have been worn down from pieces of coal!

Collect dirt and sand from around your house and from different beaches. Bring small samples home from a vacation. Use the specimen vials in your microscope kit to hold the samples. Place a very thin layer of each sample on a slide. You will see many small types of particles. Then add one drop of water and place a slide cover over the sample.



Black sand is made of fine particles of coal!

NOTES:
What do you see in your samples of dirt and sand? Which samples would make good garden soil? Be sure to wash your hands when you are finished.

Material	Sample 1	Sample 2	Sample 3	Sample 4
Rock Samples				
Shell Particles				
Small Pieces from Plants				
Coal Particles				
Insect Parts				

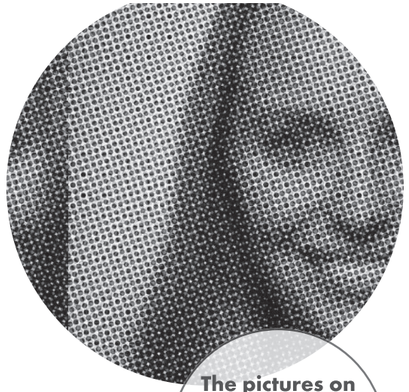
PROJECT #5: Paper

You will need: ❑ microscope
❑ 2 clean, blank slides
❑ writing paper, tissue paper, newspaper
❑ paper towel
❑ pen
❑ water

Paper can be made from many things. Most paper is made from trees. Sometimes the paper maker adds finely chopped cotton rags. Other types of paper are made from paper that has been used before.

Paper can be thick or thin. It can be smooth or rough. It can be very strong or very weak. Paper is used to write on, to make packages with, to clean up spills, to blow your nose on, and even to make clothes with. Paper to write on is smooth, while paper tissues are soft. Paper towels are thick, while newspaper paper (called newsprint) is thin.

Get different types of paper and compare them. Try to write on them. Try to clean up a few drops of spilled water with each type. Then place small pieces of the different paper samples between two slides and look at them through your microscope.



The pictures on newsprint are actually made of tiny dots of colored ink!

NOTES:

	Writing Paper	Newsprint	Paper Towel	Facial Tissues
Can you write on it with a pencil?	Y / N	Y / N	Y / N	Y / N
Can you write on it with a pen?	Y / N	Y / N	Y / N	Y / N
How well does it pick up spilled water?				
How strong is it?				
How smooth is it?				

Through your microscope you should have noticed that tissues and paper towels have soft, fuzzy fibers that have big air spaces between them. These air spaces can also hold water, which is why these two samples did well picking up the water spill. The writing paper did not have these air spaces and did not pick up water very well. The newsprint did not work well either because its fibers are also closely packed.

PROJECT #6: Pond Water

You will need: ❑ microscope
❑ a pail or bucket
❑ an empty jar
❑ pipette
❑ clean, blank slides
❑ slide covers

Get a sample of water from a pond in a wooded area. It is best to get a sample in the late spring or summer. Dip your pail or bucket in the pond to fill it. Let it stand still for about a half-hour. Then dip your jar to the bottom of the pail and try to get some of the sludge that has settled to the bottom. Use your pipette to place a drop on a blank slide and place a slide cover over it. To do this, stand the slide cover on end next to the drop. Gently let it fall onto the drop. Push it lightly with a toothpick, but not hard enough to squash any little animals. If water has squeezed out around the edges, you can touch a tissue to it to clean it up. Look through your microscope. Start at 100X and work upward.

What are all of the small things you see? Are some of them alive? You will see small bits of dirt and vegetation. If you are lucky, you may see small creatures moving around. Some of these are tiny baby insect larvae. Others are very tiny animals that live in the water and feed on the vegetation and on the insect eggs and larvae. Make careful notes and drawings of what you see.

Cut a bristle off of an old toothbrush and a new one. Can you see why you need to replace them every so often?

THINGS I SAW IN POND WATER:

PROJECT #7: Friendly Bacteria

You will need:
- ❑ microscope
- ❑ slide covers
- ❑ pipette
- ❑ water
- ❑ clean, blank slides
- ❑ paper towel
- ❑ yogurt (must say "active cultures" on the label)
- ❑ petri dish

Did you know? Friendly bacteria are living in your yogurt!

Bacteria are very small life forms that you can only see through a microscope. Some bacteria make us feel sick. Some bacteria are friendly.

Put a drop of natural yogurt on a slide. Mix it with a drop of water and put a slide cover over it. The sample should be spread very thinly. Look through your microscope. Scan the area carefully at 300X and 600X. Try to look at the thinnest areas. You should see small round objects. These are the friendly bacteria.

Place several drops of yogurt in a petri dish or sample vial. Mix it with several drops of warm water. Do not cover your sample. Place it somewhere relatively warm and out of reach. Wait for one day.

Using your pipette, place a drop or two of your sample on a slide and cover it with a slide cover. Look for more bacteria.

You will probably see more bacteria. They were in the air and landed on the yogurt. There may be different shapes than you saw the day before. Draw pictures of what you saw in the boxes provided below.

Wash your hands thoroughly. Place the slide cover in the garbage. Wash the slide in hot, soapy water with several spoonfuls of liquid bleach added. Ask your parents to help you because bleach can hurt you, and the bottle is heavy. Wash your hands again.

NOTES:

Friendly Bacteria

Other Bacteria

PROJECT #8: Crystals

You will need:
- ❑ microscope
- ❑ string
- ❑ table salt
- ❑ very warm water (enough to almost fill a glass)
- ❑ 2 clean, blank slides
- ❑ a drinking glass
- ❑ sugar
- ❑ a spoon (to measure and stir with)

Did you know? There are 12 different kinds of salt!

Take a piece of string about 3 inches (7.6 cm) long and tie it around the center of an old pencil. Now take a small drinking glass and almost fill it with hot water from the tap. Be careful not to burn yourself. Stir in a spoonful of salt until it is well mixed and has all dissolved. Now add another spoonful and stir it well. If all of the salt dissolves in the water, try to mix in a third spoonful.

Now place the pencil across the top of the glass so that the string is hanging in the salt water. Place the glass somewhere safe where small children cannot reach it. Do not move the glass around. Let it sit undisturbed for a day and then examine the string.

Leave it another day and examine the string again.

You will see small white cubes growing on the string. These are salt crystals. This crystal structure is salt's basic shape.

Try the same experiment with a strong solution of sugar. Sugar also has a crystal shape. Is it the same as a salt crystal? Can you tell them apart?

Look at some of the crystals you have grown under your microscope. Sometimes the little cubes will join together in strange or beautiful shapes.

NOTES:

Salt Crystals

Sugar Crystals

Notes:

WARNING: SHARP EDGE HAZARD -This toy has sharp functional edges. Not for children under 3 years. To be used under the direct supervision of an adult.

ATTENTION: DANGER BORD COUPANT - Ce jouet présente des bords coupants fonctionnels. Ne convient pas aux enfants de moins de trois ans. À utiliser sous la surveillance rapprochée d'un adulte.

ADVERTENCIA: PELIGRO, BORDES AFILADOS - Este juguete tiene bordes cortantes funcionales. No conviene para niños menores de tres años. Utilícese bajo la vigilancia directa de un adulto.

ACHTUNG: VORSICHT VOR SCHARFEN KANTEN - Dieses Spielzeug hat funktionsbedingte scharfe Kanten. Nicht für Kinder unter drei Jahren geeignet. Benutzung unter unmittelbarer Aufsicht von Erwachsenen.

ADVERTENCIA: PELIGRO DE ATRAGANTAMIENTO.
Partes pequeñas. No conviene para niños menores de tres años.
ATTENTION: DANGER D'ÉTOUFFEMENT.
Petites éléments. Ne convient pas aux enfants de moins de trois ans.
ACHTUNG: ERSTICKUNGSGEFAHR.
Kleine Teile. Nicht für Kinder unter drei Jahren geeignet.

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