EXPERIMENT MANUAL

POCKET MICROSCOPE

NATURE DISCOVERY KIT

THAMES & KOSMOS

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What's inside your experiment kit:

››› KIT CONTENTS

Checklist: Find – Inspect – Check off

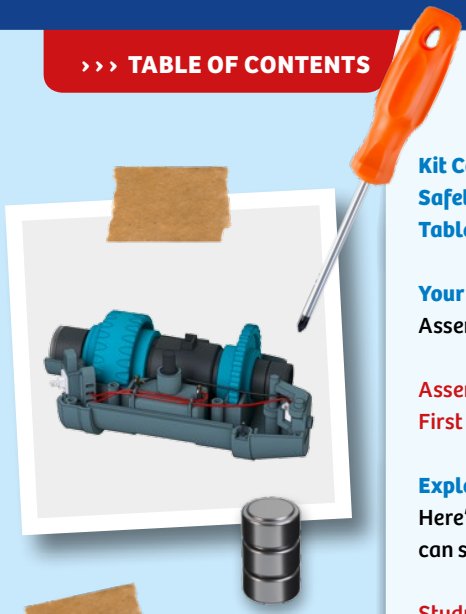
✔	No.	Description	Qty.	Item No.
❍	1	Left housing	1	718 024
❍	2	Right housing	1	718 026
❍	3	Housing cover portion	1	718 027
❍	4	Microscope stand	1	718 176
❍	5	Transparent bottom housing attachment	1	718 029
❍	6	Zoom adjustment wheel	1	718 030
❍	7	Focus adjustment wheel	1	718 031
❍	8	Eyepiece ring	1	718 033
❍	9	Battery compartment cover	1	718 038
❍	10	Eyecup	1	718 177
❍	11	Eyepiece sleeve ring	1	718 178
❍	12	Jacket sleeve	1	718 180
❍	13	Middle sleeve with relay lens	1	718 181
❍	14	Inner sleeve with objective lens	1	718 182
❍	15	Button cell battery 1.5-volt, type LR 44	3	718 183
❍	16	Prepared slide: · Fish scale · Snakeskin scale · Bird's feather	1	718 043
❍	17	Slide for your own specimens	1	718 044
❍	18	Illumination knob with large spring	1	718 032
❍	19	Battery compartment closure knob with small spring	1	718 184
❍	20	Eyepiece lens	1	718 185
❍	21	Carrying strap	1	718 186
❍	22	Electronic unit with switch, LED bracket, and wires	1	718 028
❍	23	Screws for housing pieces	2	718 188
❍	24	Screw for bottom housing attachment	1	718 187
❍	25	Holding pin for carrying strap	1	718 189

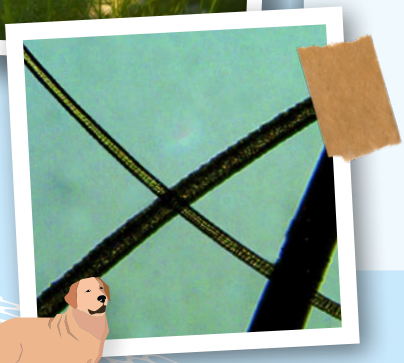
Parts that are not included in the kit are indicated in *italic script* under the "YOU WILL NEED" heading in the experiments.

You will also need:

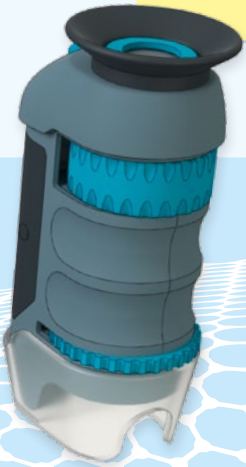
Small Phillips-head screwdriver, pen, tape, scissors (optional), interesting objects from around the house or from nature to study under the microscope

››› TABLE OF CONTENTS





TIP!
You will find additional information under "Check It Out" on pages 11, 18, 19, and 20.



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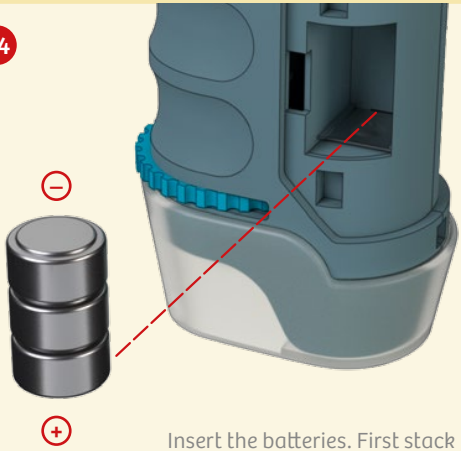
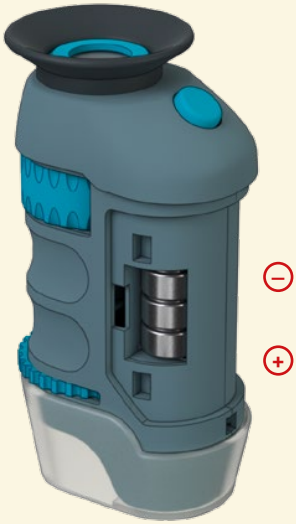


Insert the batteries. First stack the three button cells on top of one another, each with its positive end down. Then insert the stack into the battery compartment, again keeping the positive end down.



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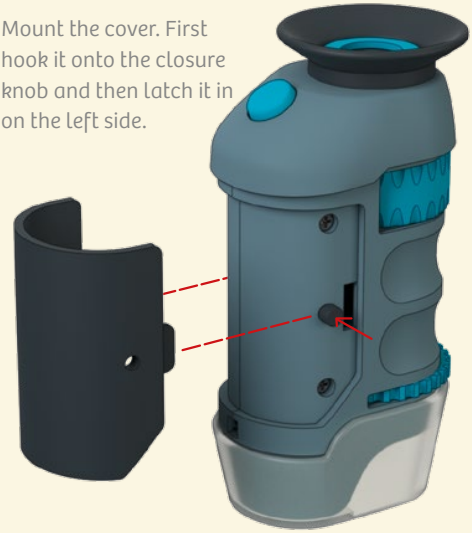
Mount the cover. First hook it onto the closure knob and then latch it in on the left side.



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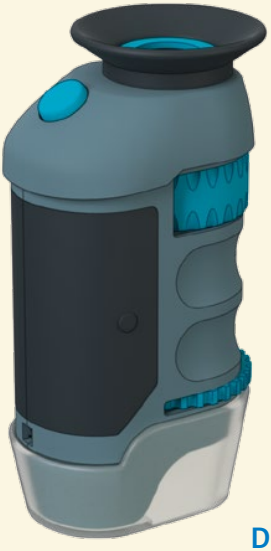


Done!

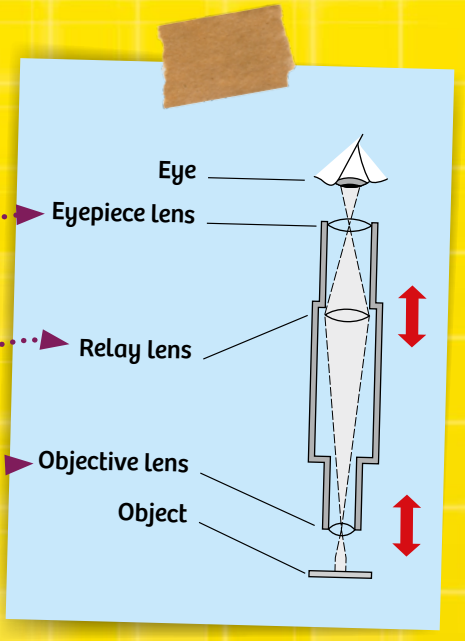
CHECK IT OUT

Light path

In putting together your microscope, you assembled the various lenses and their sleeves into a so-called "optical path." The eyepiece lens sits fixed at the upper end. This is what your eye looks through.

The relay lens can be moved up and down with the zoom adjustment ring. It lets you switch between a low level of magnification (20 times) and high magnification (40 times).

The focus adjustment ring moves the objective lens. That adjusts the distance from the object in a way that lets you focus the image.

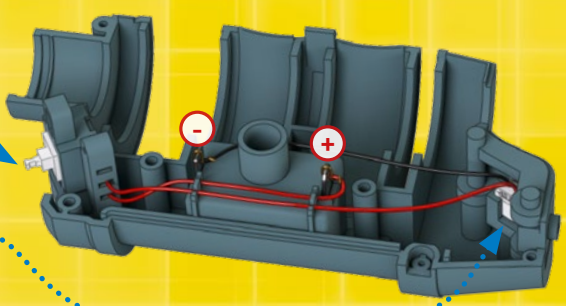


DID YOU KNOW?

An instrument that has at least a 40-fold magnification is called a microscope. Lower levels of magnification are often called "macroscopic." Both words are based on Greek roots. "Mikros" means small, and "makros" means large. In either case, what it means is that small things can be seen as if they were noticeably larger.

Circuit

When you installed the wires and electronic components, you built a circuit. From the positive terminal of the battery compartment, the red wire goes to the switch and then to the illumination unit, where the LED bulb is installed. From the bulb, the black wire leads to the negative terminal of the battery compartment. When batteries are inserted and the switch is turned on, the circuit is closed. The current flows from the batteries through the light, and the LED lights up. If the switch is pushed again, the circuit is interrupted. Then the light goes out.



YOU WILL NEED

› Pocket microscope

› Dead insect (from a window sill, for example)

HERE'S HOW

Use your microscope without its stand. Place a dead insect on the table or another smooth surface and then position the microscope over it.

TIP!

There are lots of places where you can find "bugs" such as insects, spiders, or roly-polies. Take a look in the corners of the basement, under boards or rocks in the garden, or in a lampshade inside a room. Be sure to have your parents help you.

There are plenty of dead bugs that you will be able to find. Do not kill any bugs for your experiments!

BUGS UP CLOSE!

Insects and other bugs possess an **exoskeleton** made of chitin. On the surface, you will often find hairs, scales, or other structures. The eyes of insects consist of many individual eyes and are called **compound eyes**. On their feet, you can often see claws or suction disks, and the wings will have lots of fine veins running through them.