

A Closer Look

A Story About Microscopes

During science class, Mrs. Patel placed a drop of pond water on a glass slide.

Maya leaned closer.
“I don’t see anything!”

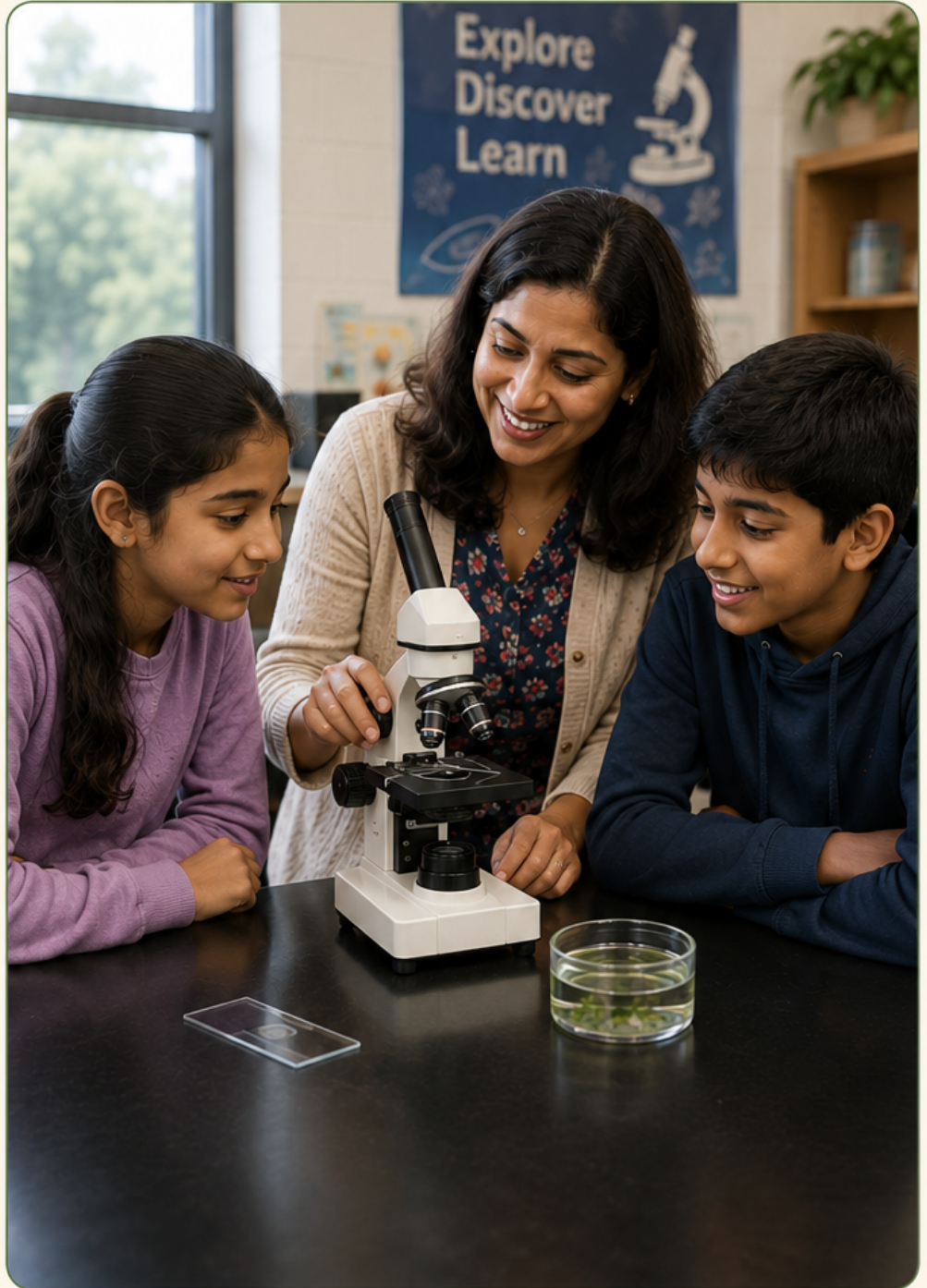
Arjun laughed.
“Maybe there’s nothing there.”

Mrs. Patel smiled and pointed to a microscope.

“Some things are too small for our eyes to see. A microscope makes them look much bigger.”

“So we can see tiny living things?”
Maya asked.

“Exactly. Let’s take a closer look.”



Fun Fact!

Pond water may look clear, but it is full of tiny living things called microorganisms!



Two Types of Microscopes

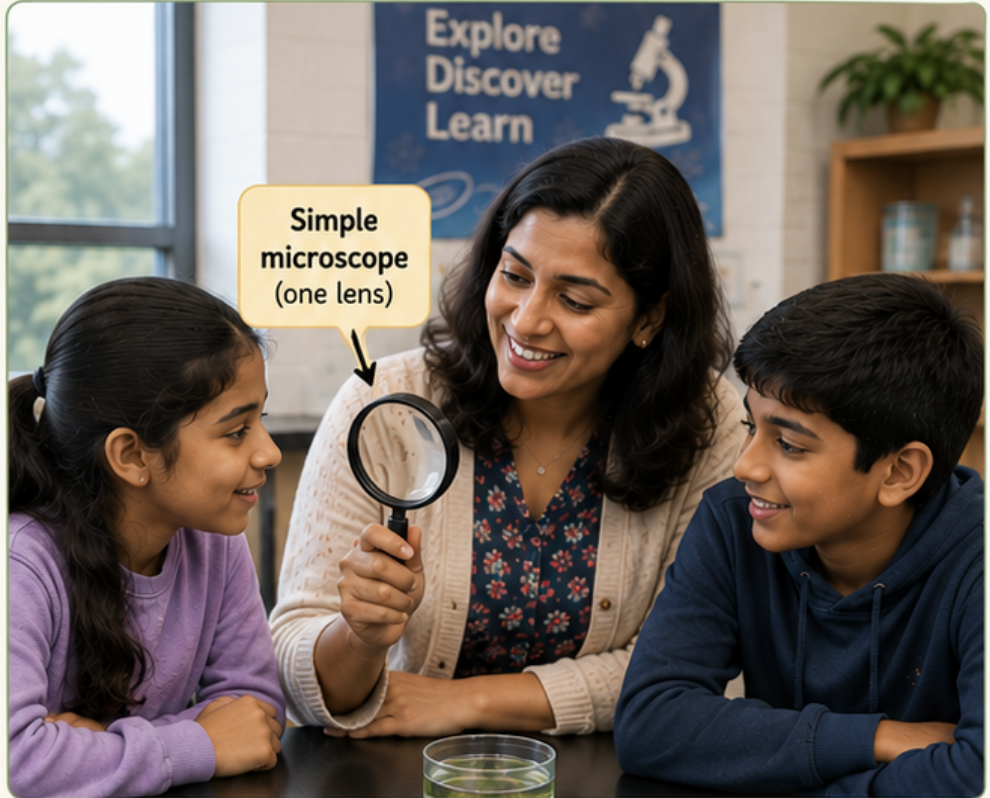
Mrs. Patel showed the class two microscopes.

1. Simple Microscope

This is a simple microscope. It uses one lens to make things look bigger.

“Like a magnifying glass?” Arjun asked.

“Exactly,” said Mrs. Patel. “A magnifying glass is a type of simple microscope.”

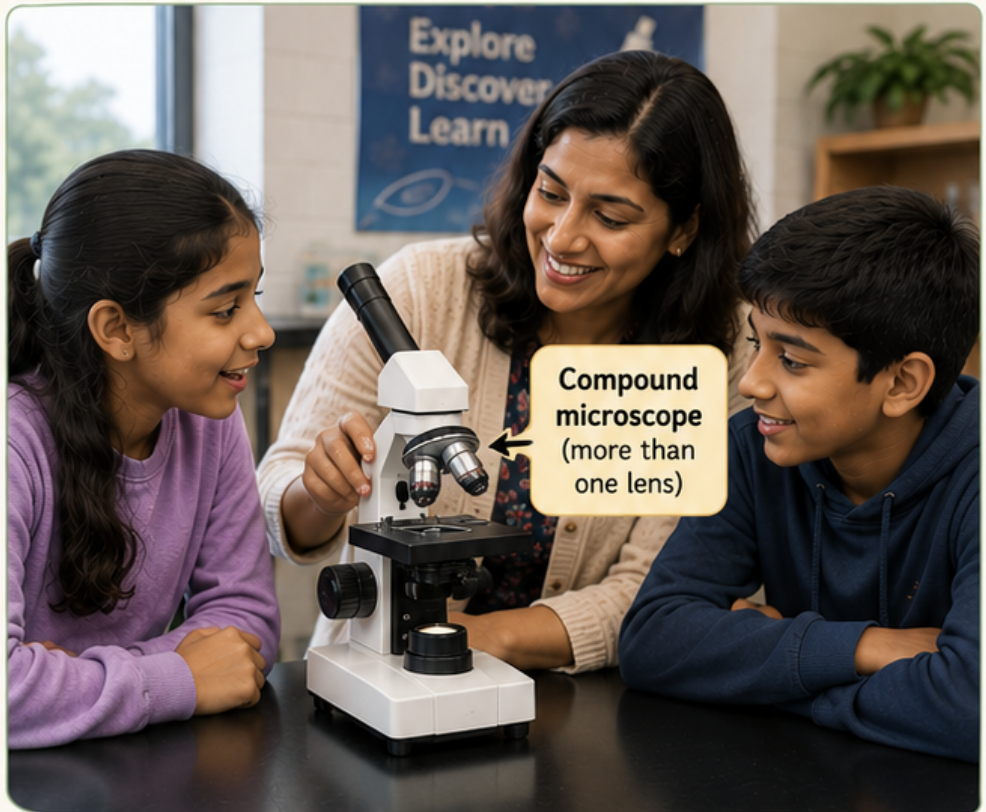


2. Compound Microscope

This is a compound microscope. It uses more than one lens to give us greater magnification.

“So this one lets us see much smaller things!” Maya said.

“That’s right,” said Mrs. Patel. “Compound microscopes are used in schools, labs, and by scientists to study tiny organisms, cells, and more.”



Did You Know?

Microscopes let us see a whole new world that is invisible to our eyes!



Meet the Compound Microscope

Mrs. Patel pointed to the parts of the compound microscope.

“You look through the eyepiece,” she said.

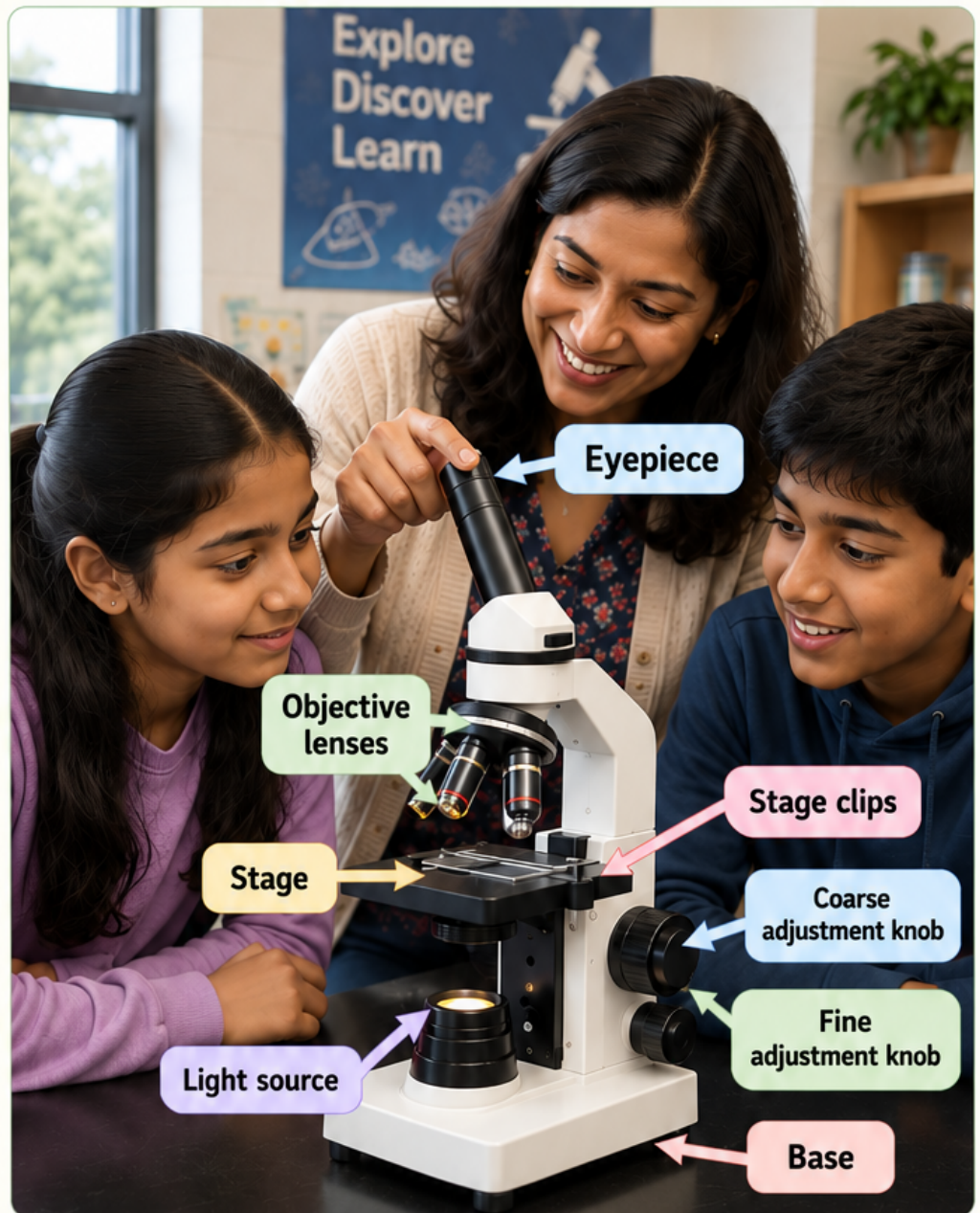
“These are the objective lenses. They provide different levels of magnification.”

“What holds the slide?” Maya asked.

“The stage. And the stage clips keep the slide in place,” said Mrs. Patel.

Arjun looked underneath. “And we need light!”

“Exactly. The light source shines through the specimen so you can see it.”



Key Parts and What They Do

Eyepiece

The part you look through.

Objective lenses

Lenses that provide different levels of magnification.

Stage

The flat platform that holds the slide.

Stage clips

Keep the slide in place.

Light source

Shines light through the specimen.

Coarse adjustment knob

Makes larger focusing changes.

Fine adjustment knob

Makes small changes to sharpen the image.

Base

Supports the microscope.



Remember!

A compound microscope uses more than one lens to make tiny objects look much bigger than they appear with the naked eye.



Looking at a Slide

Maya was excited to try the compound microscope herself.

First, she placed a prepared slide on the stage and carefully clipped it in place.

Then she looked through the eyepiece. The image looked blurry.

"It's fuzzy!" she said.

"That's okay," said Mrs. Patel. "We need to focus the image."



1 Place the Slide



Put the slide on the stage and use the stage clips to keep it in place.

2 Focus the Image



Start with the coarse adjustment knob to make the image larger and clearer.

3 Make It Sharp



Then use the fine adjustment knob to get a sharp image.

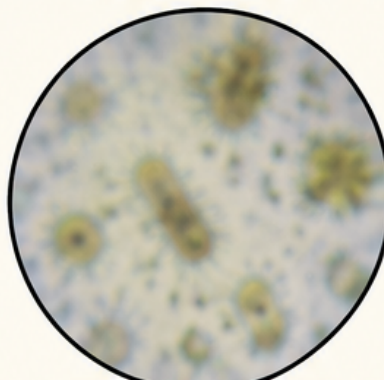
What We See

As Maya adjusted the knobs, the image became clearer and clearer.

"Wow!" she said. "Now I can see the tiny organisms in the pond water!"

Arjun looked too. "They look like little moving shapes!"

Mrs. Patel smiled. "These are microorganisms. They are living things, and they are much too small to see without a microscope."



Blurry image
(before focusing)



Clear image
(after focusing)



Tip!

If the image looks blurry, try adjusting the focus knobs slowly until it becomes clear.



How Much Bigger?

Mrs. Patel pointed to the numbers on the lenses.

“The eyepiece and objective lens work together to magnify the specimen.”

She wrote:

**Eyepiece magnification ×
Objective magnification =
Total magnification**

“If the eyepiece is 10× and the objective is 4×, what is the total magnification?”

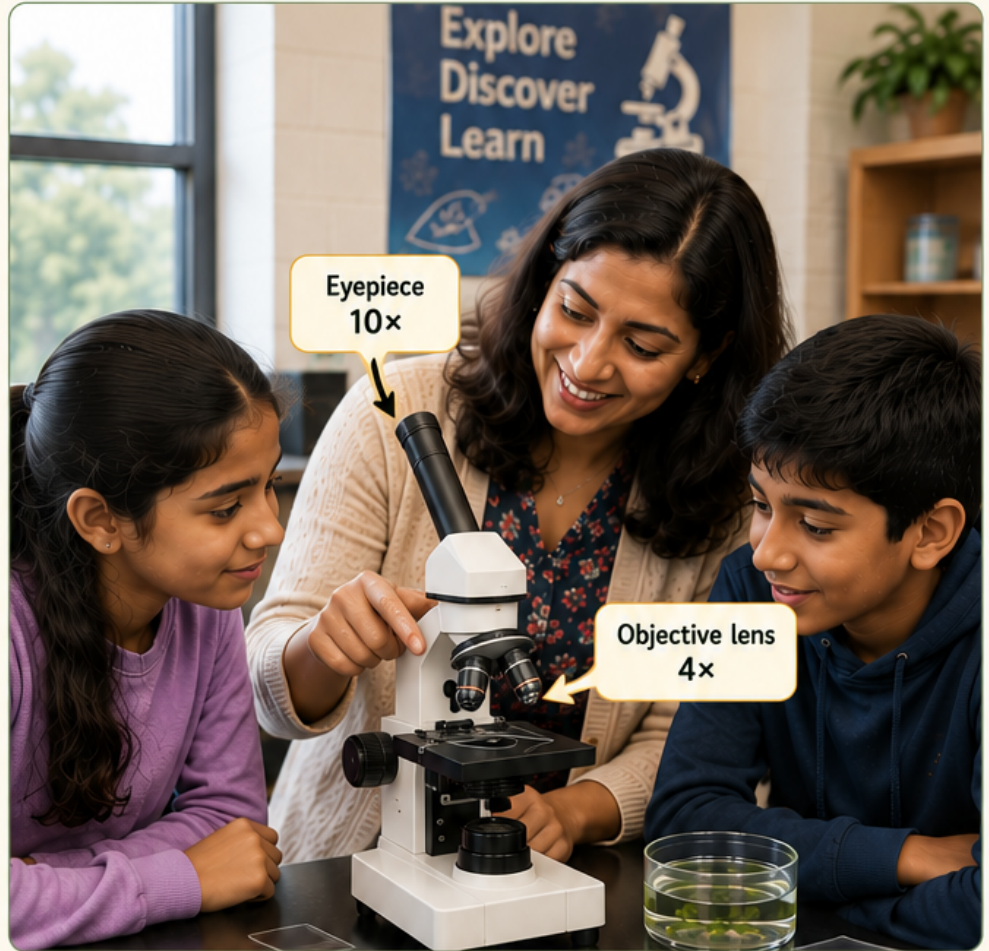
Maya thought for a moment.

“40×!”

“Correct!”

“So the object looks forty times bigger?” Arjun asked.

“Exactly.”



**Eyepiece magnification ×
Objective magnification =
Total magnification**

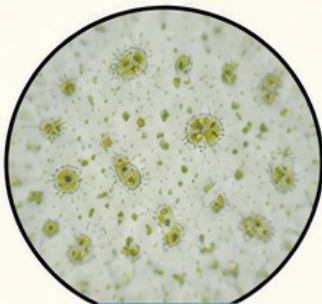
Example:

Eyepiece: 10×
Objective: 4×

$10 \times 4 = 40$

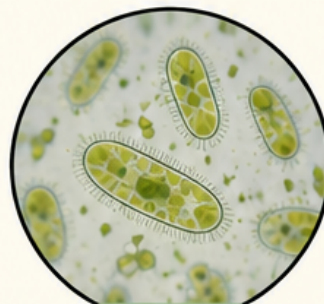
Total magnification = 40×

What Does 40× Look Like?



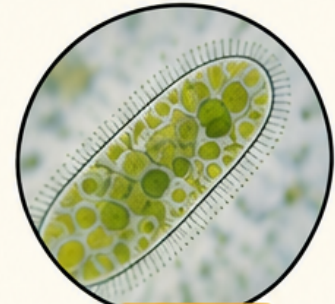
10×

You can see the whole field with tiny organisms.



40×

The organisms look bigger and more detailed.



100×

You can see even more details!

A Tiny World

Maya looked through the microscope again.

“I can see tiny things moving in the pond water!” Maya said.

Arjun quickly took his turn.

“Wow! We never would have seen these with just our eyes.”

Mrs. Patel smiled.

“That’s why microscopes are so useful. They help scientists study cells, microorganisms, and other tiny structures.”

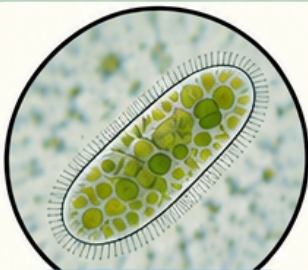
Maya looked back through the eyepiece.

“A whole world was there all along. We just needed the right tool to see it.”



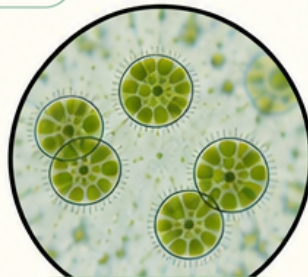
Amazing Things We Can See

Here are some real examples of tiny things that can be seen in pond water.



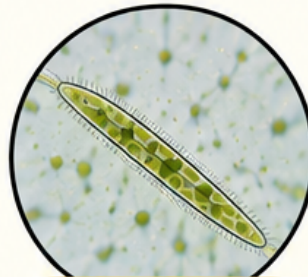
Paramecium

Moves using tiny hairs called cilia.



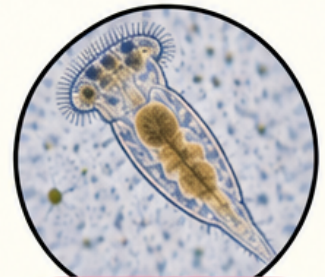
Algae

Tiny plant-like organisms that live in water.



Euglena

Moves using a whip-like tail called a flagellum.



Rotifer

A tiny animal that moves and eats other organisms.

Why It Matters



Helps scientists study cells



Helps us learn about microorganisms



Used in medicine, environmental science, food science, and more



A Whole World Was There All Along

“A whole world was there all along. We just needed the right tool to see it.”

– Maya

