

Scientific Instruments, Part 4

What tools help you observe things?

Use a **hand lens** to look at details of small objects such as insects, leaves, or rocks. A hand lens usually **magnifies**, or enlarges, an object 2 to 10 times.

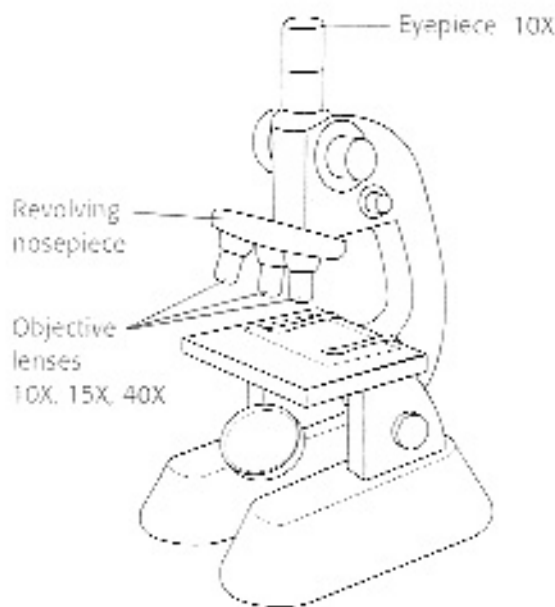
Use a **compound microscope** to view objects that are too small to be seen with a hand lens. A compound microscope magnifies objects using two lenses. The lens you look through is the eyepiece lens. Most eyepiece lenses magnify objects 10 times. The second lens is the objective lens. Objective lenses are located on the nosepiece of the microscope. The low-power objective lens usually magnifies objects about 10 times. The high-power objective lens often magnifies objects 40 times.

The total magnification of a compound microscope equals the eyepiece magnification times the objective lens magnification. For the microscope shown, total magnification using the low-power objective is $10X \times 10X$, or $100X$.

Telescopes are used to view distant objects, like stars and planets. A **refracting telescope** uses only lenses to magnify

distant objects. A **reflecting telescope** uses mirrors and lenses.

A **camera** is used to collect moving or still images of objects. **Sound recorders** are used to record sounds, like the songs of a bird. Images and sounds recorded with either tool can be kept for later study.



Compound microscope

Show What You Know

Identify the tool you would use to make each observation.

- _____ 1. a bird feeding its young
- _____ 2. the minerals in a rock
- _____ 3. budding yeast cells
- _____ 4. the song of a whale
- _____ 5. a comet