

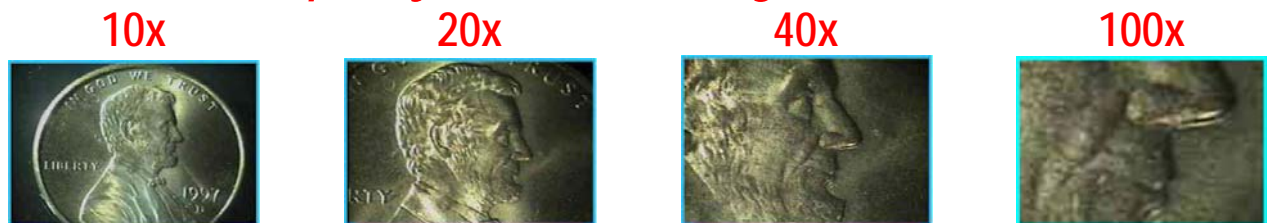
How Big Are Things?

0.62 miles	1 kilometer (km)	1000 m
Human height	2 meters (m)	2 m
Yardstick	1 meter (m) (39.4 in)	1 m
Finger length	1 decimeter (dm)	0.1 m
Finger width	1 centimeter (cm)	0.01 m
Dime thickness	1 millimeter (mm)	0.001 m
Hair thickness	.1 millimeter (mm) 100 micrometers (μm)	.0001 m (100 μm)
Blood Cell	.02 millimeter (mm) 20 micrometers (μm)	0.00002 m (20 μm)
Bacteria	2 micrometers (μm)	0.000002 m (2 μm)
Visible Light	0.4 – 0.7 micrometers (μm) 400 – 700 nanometers (nm)	0.0000004 m (0.4 – 0.7 μm)
Ebola virus	0.2 micrometers (μm) 200 nanometers (nm)	0.0000002 m (200 nm)
Rhinovirus	.02 micrometers (μm) 20 nanometers (nm)	0.00000002 m (20 nm)
DNA molecule width	2 nanometers (nm)	0.000000002 m
Chemical bond	0.2 nanometers (nm) 200 picometers (pm)	0.0000000002 m (0.2 nm, 200 pm)
Atom	0.1 nanometers (nm)	0.0000000001 m
Atomic Nucleus	10 -14m	0.00000000000001 m
Proton	10-15 m	0.000000000000001 m
Electron	Itty bitty	?

(Optical and electron microscopes work in the shaded region. Electron microscopes continue to work through the hatched region)

Type of Microscope	Magnification	Field of View
Field Trip Microscope	20x	10 mm
Stereo Microscope	10x 30x	20 mm 6.7 mm
Compound Microscope	40x 100x 400x 1000x	5 mm 1.8 mm 0.45 mm 0.18 mm
Electron Microscope	20x – 10000x	10 mm - .02 mm

A penny at different magnifications:

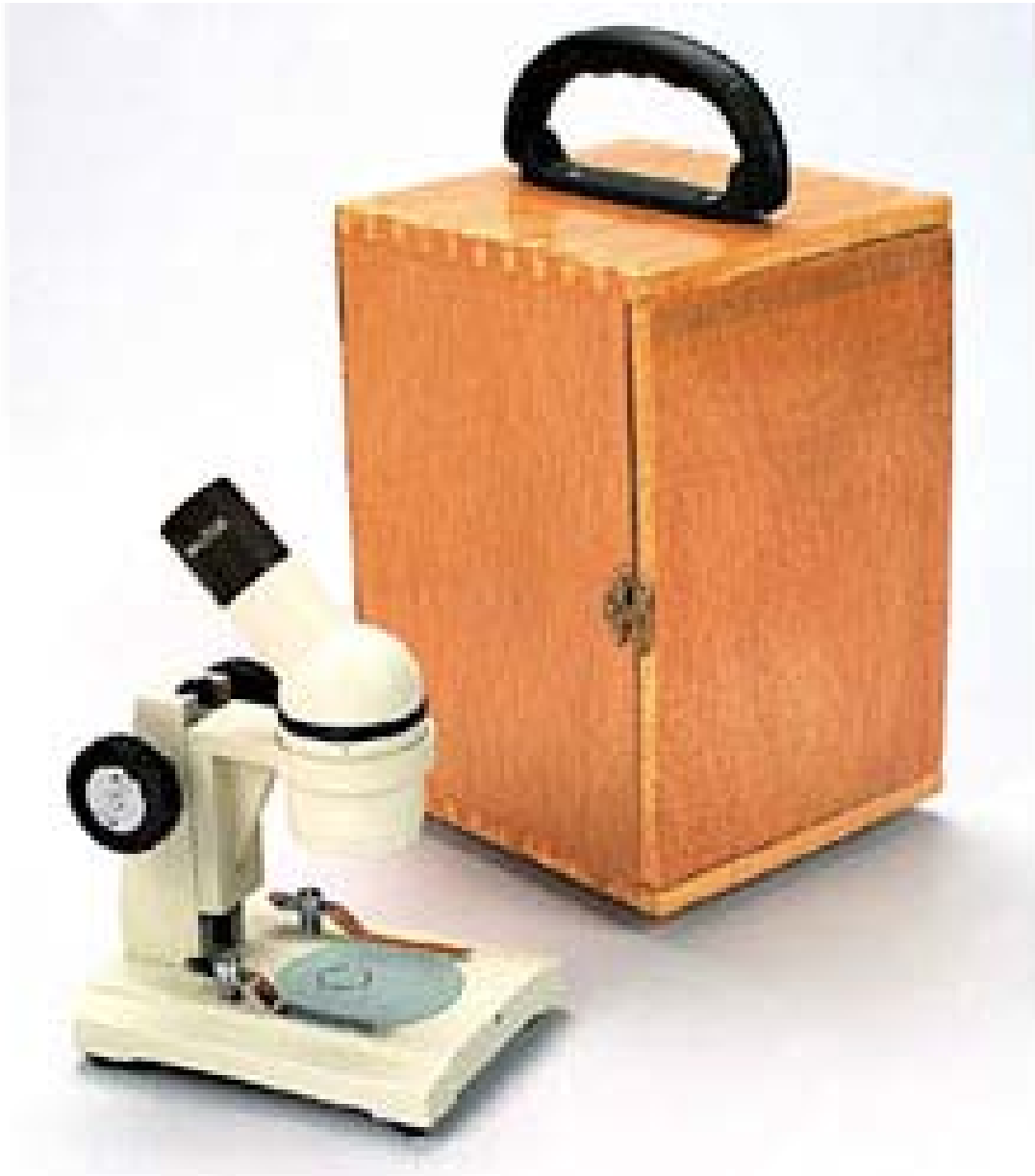


Rules of thumb:

- You need at least 100x to see bacteria and cells
- At 400x you can look closely at a bacteria and cells
- At 1000x you can closely examine the nucleus of a cell

Field Trip Microscope (20x)

Handy for looking at stuff up close



Stereo Microscope

(binocular 10x to 30x)

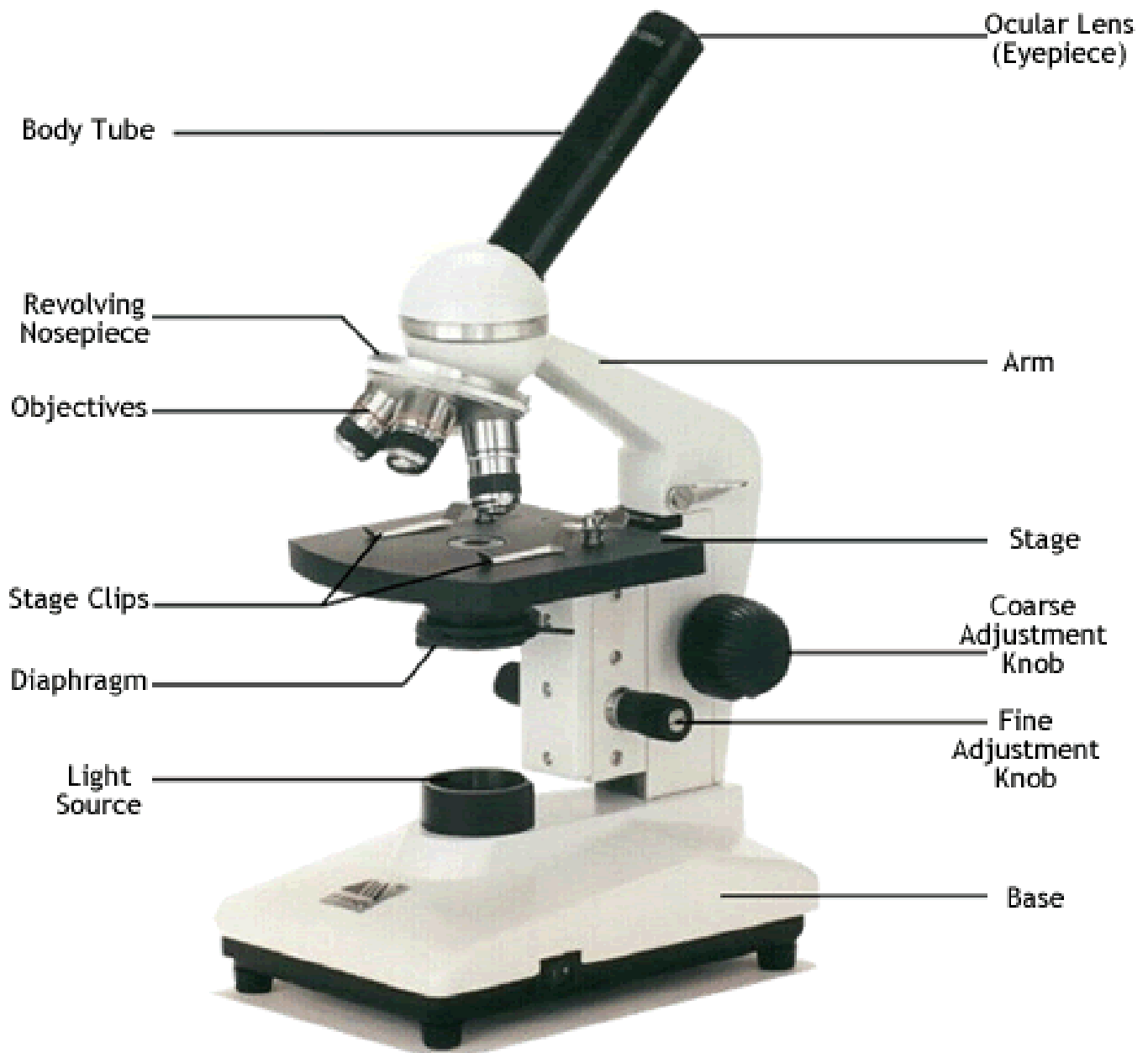
Gives a close-up, three dimensional view



Compound Microscope

(monocular, 40 to 400x)

Gives a close-up views of bacteria and cells



Compound Microscope

(binocular, 40 to 1000x)

Gives a close-up views of bacteria and cells



Electron Microscope

(50 to 6000x)

Close up views of objects as small as viruses

