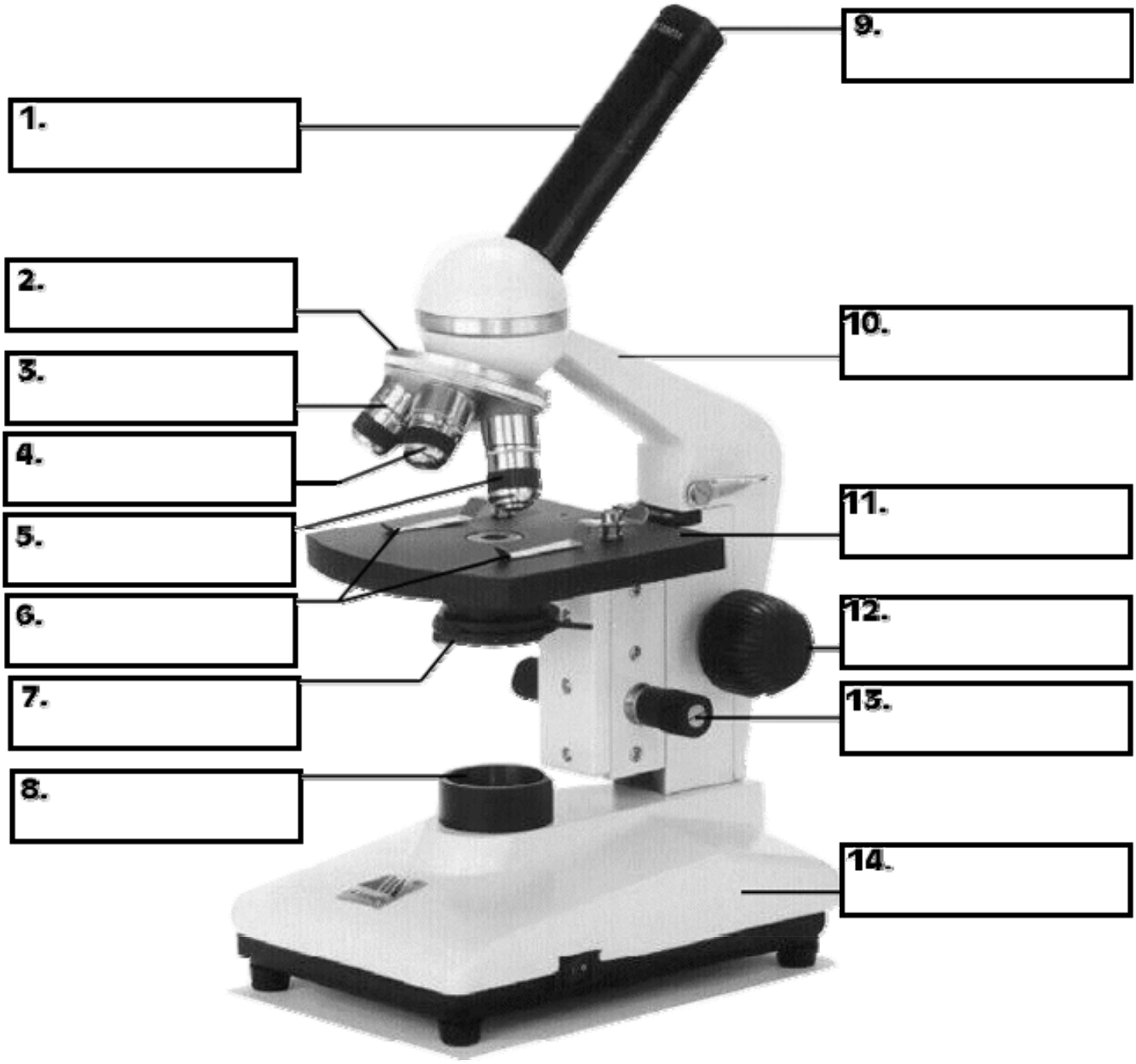
STRUCTURE OF THE MICROSCOPE

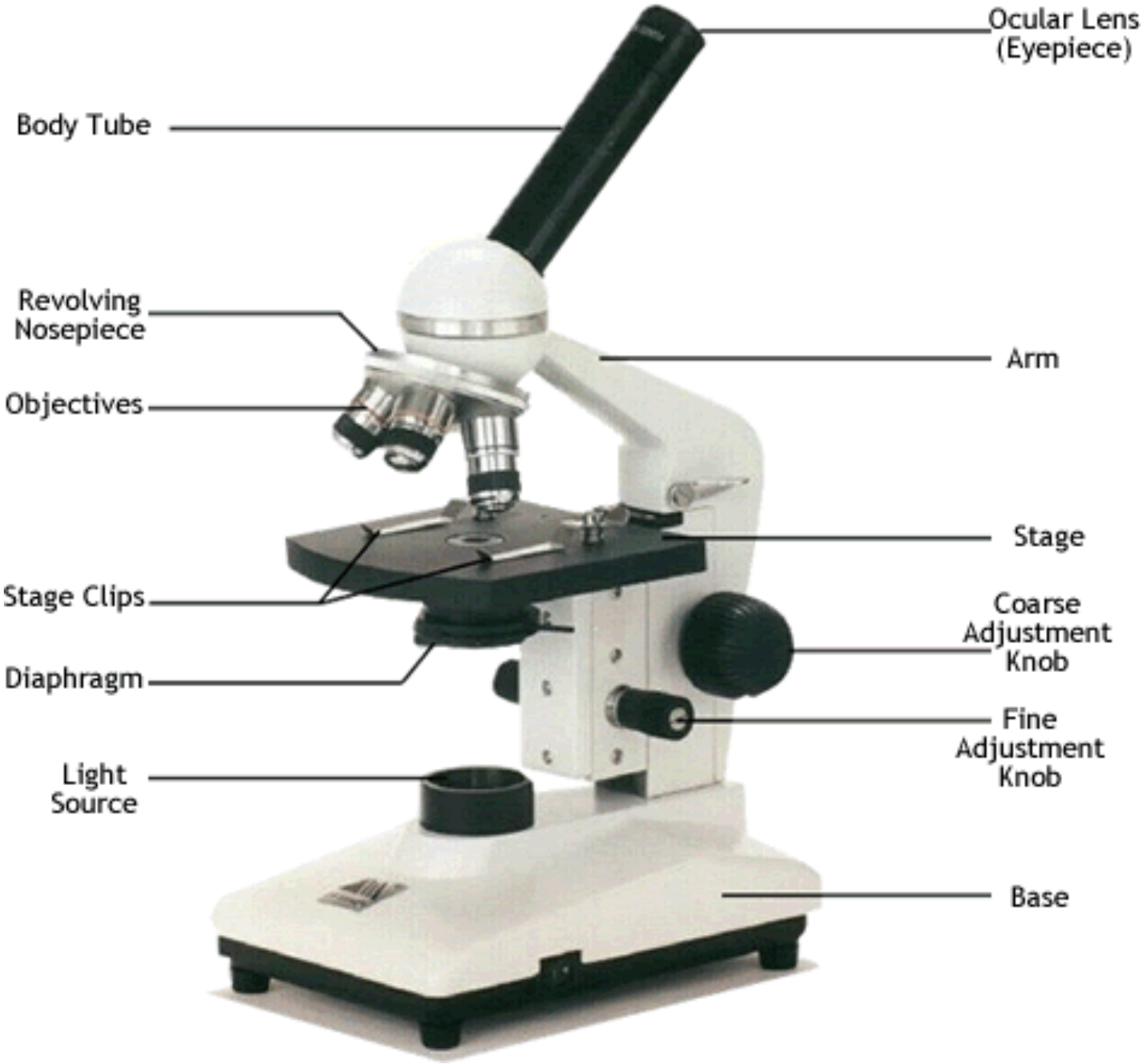
Use the word list to label the microscope below:

Light Source
Stage Clips
Base
Arm
Ocular Lens (Eyepiece)
Coarse adjustment knob
Objectives
Stage
Revolving nosepiece
Diaphragm
Fine Adjustment Knob
Stage Clips
Body tube



Microscope Parts and Their Function

microscope part	function
	- your eye is positioned here; look through this part - magnifies the object (usually 10 times or “10X”)
	- holds the eyepiece and objective lense at correct distance
	- rotating disk holds 2 or more objective lenses and is turned to change lenses; lenses “click” into place
	- magnifies the object (usually 4X for high schools) - start observing your specimen using this lens
	- magnify the object - use these lenses to provide a more detailed view of the specimen; use medium then high power lens
	- connects the base and the tube; used for carrying
	- moves the tube up and down - used only with the low power objective lense
	- used with medium and high magnification lenses - brings the specimen into sharper focus
	- supports the microscope slide
	- holds the slide in one place
	- controls the amount of light reaching the object being viewed
	- shining light through the object being viewed makes it easier to see the details
	- supports the entire microscope - used for carrying


Ocular Lens
(Eyepiece)
Body Tube
Revolving
Nosepiece
Arm
Objectives
Stage
Stage Clips
Coarse
Adjustment
Knob
Diaphragm
Fine
Adjustment
Knob
Light
Source
Base

Microscope Parts and Their Function

microscope part	function
eyepiece or ocular	- your eye is positioned here; look through this part - magnifies the object (usually 10 times or “10X”)
tube	- holds the eyepiece and objective lense at correct distance
revolving nosepiece	- rotating disk holds 2 or more objective lenses and is turned to change lenses; lenses “click” into place
low power objective lens	- magnifies the object (usually 4X for high schools) - start observing your specimen using this lens
medium (10X) or high power (40X) objective lenses	- magnify the object - use these lenses to provide a more detailed view of the specimen; use medium then high power lens
arm	- connects the base and the tube; used for carrying
coarse adjustment knob	- moves the [redacted] Stage up and down - used only with the low power objective lense
fine adjustment knob	- used with medium and high magnification lenses - brings the specimen into sharper focus
stage	- supports the microscope slide
stage clips	- holds the slide in one place
diaphragm	- controls the amount of light reaching the object being viewed
light source	- shining light through the object being viewed makes it easier to see the details
base	- supports the entire microscope - used for carrying

Light Microscopes

Magnification

- To find the total magnification, you multiply the power of the objective lens by the power of the ocular lens (eyepiece).

Resolution [Figure 1.9 page 19]

- The ability to see clear detail in an image depends on the resolution, or resolving power, of the microscope.
- Resolution is the ability to distinguish between two objects that are very close together

Contrast

- It is the difference between different colours, or white and black levels of an image.
- Higher contrast allows the viewer to differentiate between parts of the image.

Field of View

- Measure the diameter of the low-power field of view to the nearest tenth of a millimetre
- Convert the diameter from millimetres to micrometres
  [1 mm = 1000 μm]
- use the following ratio to calculate the field diameter under high power

$$\frac{\text{high-power field diameter}}{\text{low-power field diameter}} = \frac{\text{low-power magnification}}{\text{high-power magnification}}$$

Electron Microscopes

- uses electrons instead of a beam of light

Transmission Electron Microscope - (TEM)

- capable of magnifications of up to 1 500 000x (Figure 1.21)
- a beam of electrons pass through thin slices of cells
- cannot be used to look at living cells.

Scanning Electron Microscope - (SEM)

- provides information about the surface features of a specimen (Figure 1.22)
- magnification of 300 000x
- produces three-dimensional images of cells.