

1. Diaphragm is like the iris of the eye.
The objective is like the crystalline lens.
The light sensitive surface is like the retina
2. For a camera the change in focus is done by moving the lens closer or further away from the image surface.

For the eye the focus is done by changing the shape of the lens. Muscles on the side of the lens stretch & flatten the lens.

Also, the six muscles surrounding the eye can change the shape of the eye making it a little longer or shorter. This can be shown by simple experiments, but is not widely recognized for some reason.

3. The camera & eye create real images.

The two telescopes, reflecting & refracting, and the microscope create virtual images.

4. a) 1. Refracting telescope 2. Microscope

b) The objectives gather light to create an initial lens.
The eyepieces create larger virtual images for the eye to see.

c) The telescope is designed to make distant objects seem closer & brighter by gather more light than the naked eye & creating a larger image.

The microscope makes very small objects appear larger. With lighting on the object brightness is not usually an issue.

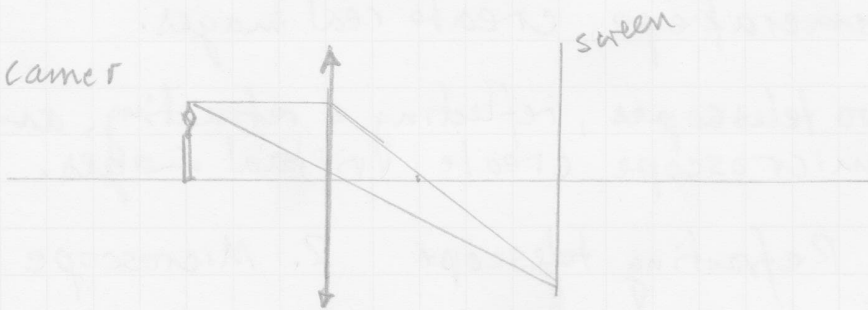
5. Reflecting telescopes use parabolic mirrors which do not have chromatic aberration.

Lenses are still typically still spherical & have both chromatic & spherical aberration. Chromatic aberration is caused by the index of refraction not being the same for different wavelengths of light.

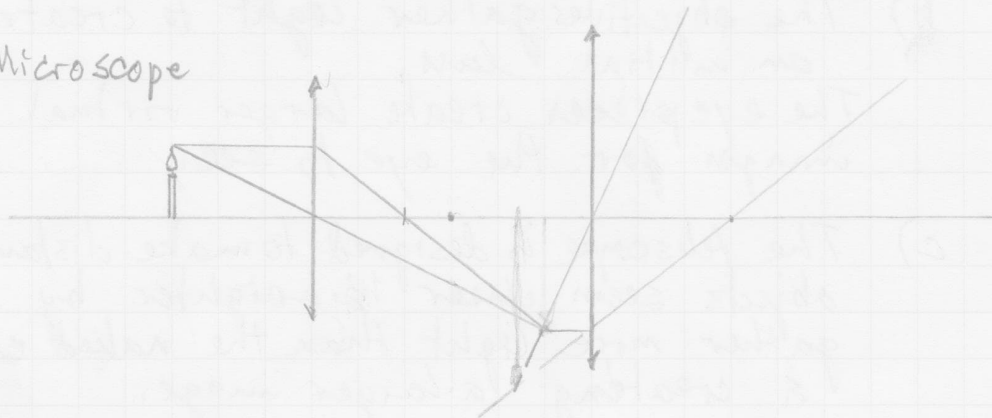
6.

Optical Device	Component	Optical phenomenon (Reflection/Refraction)
Microscope	Objective	Refraction
	Eyepiece	Refraction
Reflecting Telescope	Primary Mirror	Reflection
	Secondary Mirror	Reflection

7. a) camera



b) Microscope



c) Telescope

