

Optical Instruments

Physics

How the standard instruments are built from lenses and mirrors.

Instrument and its optical arrangement.

Instrument	Arrangement
Magnifying glass	One converging lens, object inside f
Compound microscope	Two converging lenses, short focal lengths
Refracting telescope	Long-focus objective, short-focus eyepiece
Reflecting telescope	Concave mirror objective
Camera	Converging lens, real image on a sensor
Eye	Variable-focus lens, real inverted image on the retina

Telescope angular magnification is $f_{\text{objective}} \div f_{\text{eyepiece}}$. Reflectors avoid chromatic aberration entirely, which is why large telescopes use