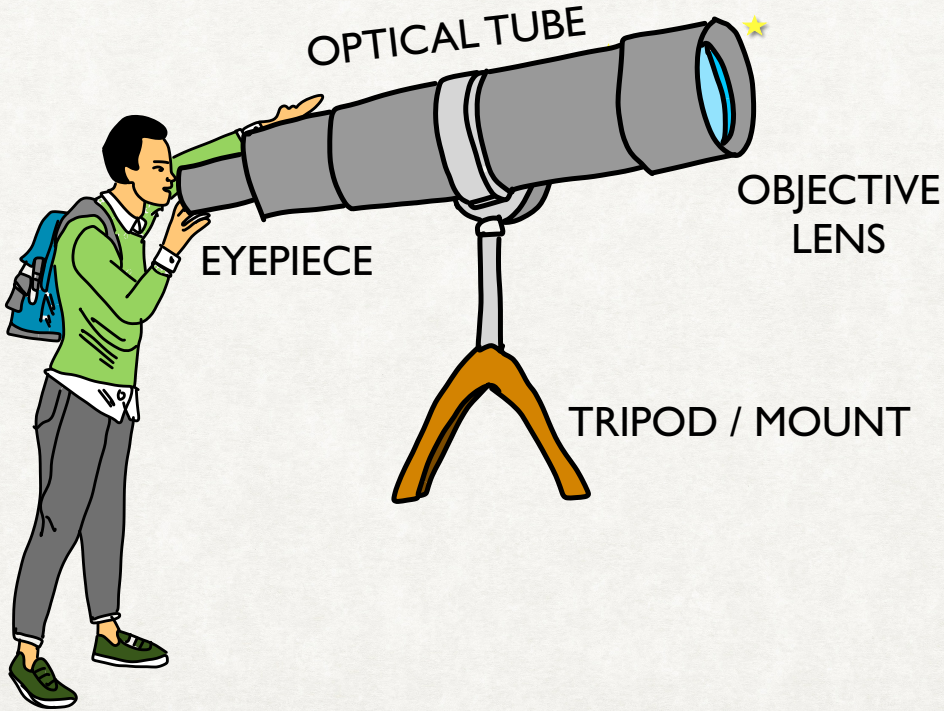
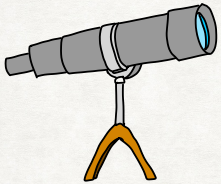
OPTICAL INSTRUMENT

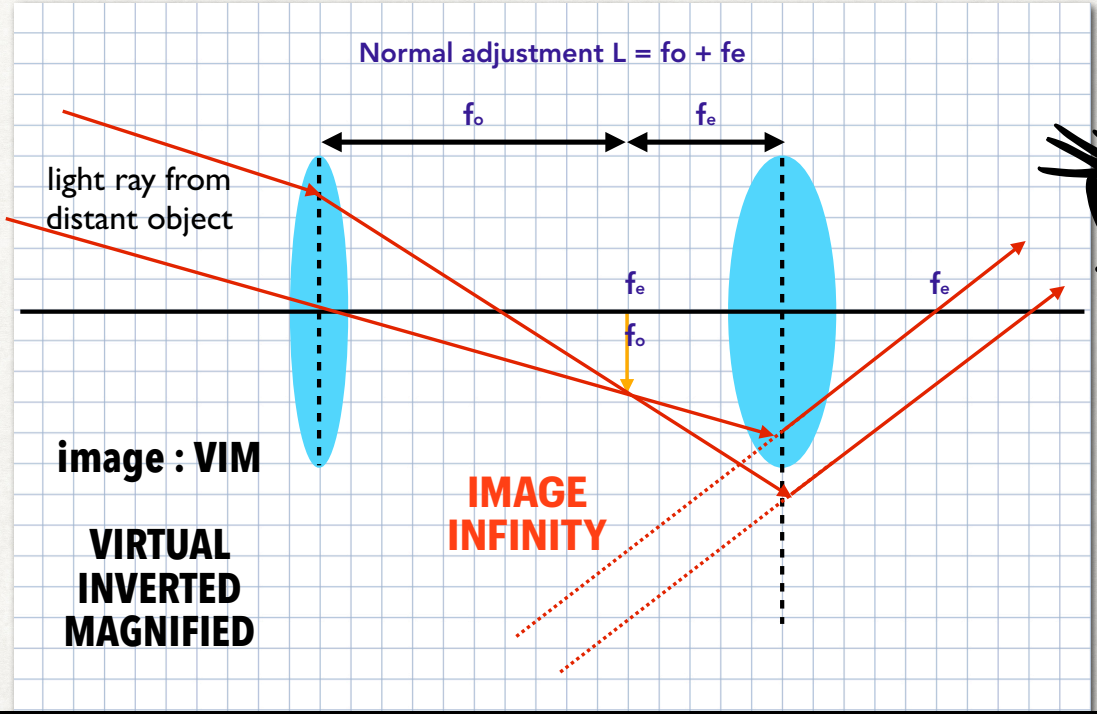
LIGHT & OPTIC

TELESCOPE



TELESCOPE RAY DIAGRAM



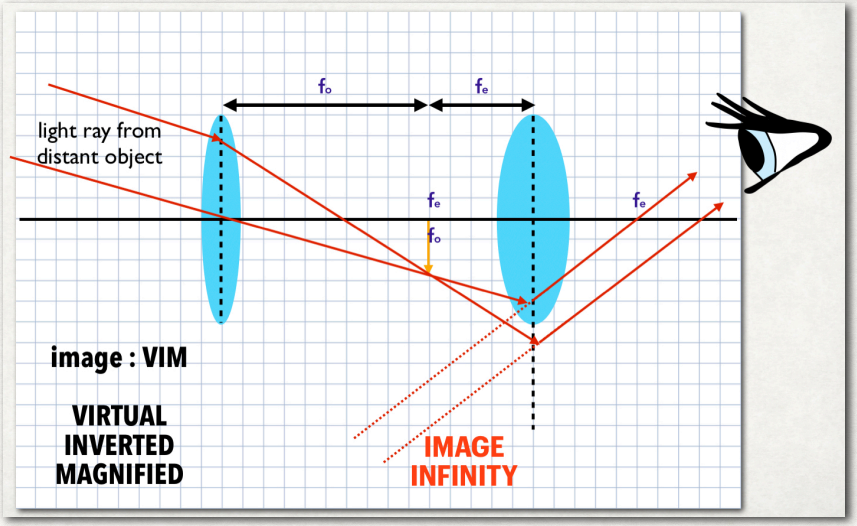


Magnification,

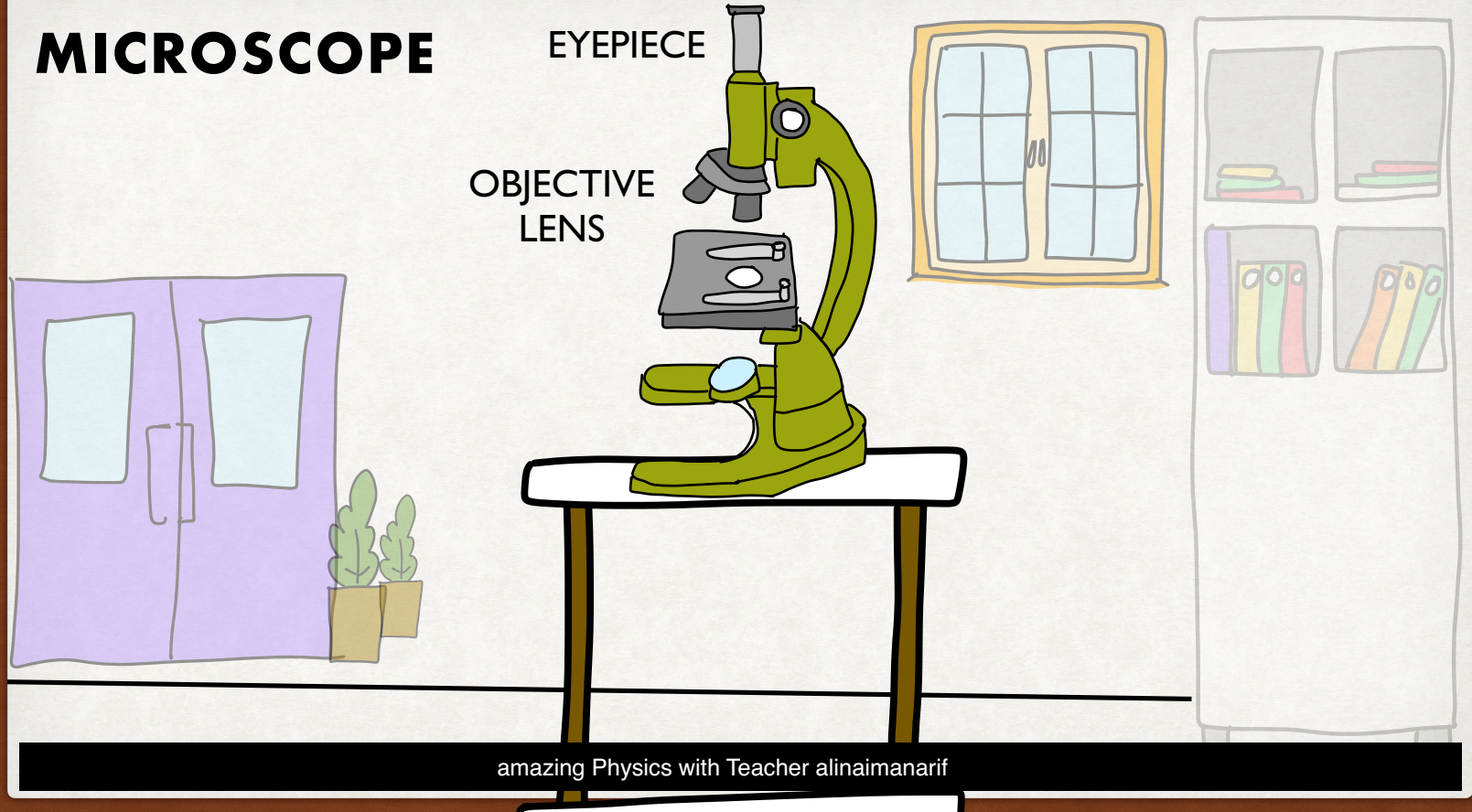
$$M = \frac{fo}{fe}$$

TELESCOPE
MODIFICATION

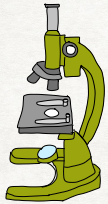
Characteristic	Explanation
use convex lens	all the light ray will be focused (converge)
fo > fe	to produce higher magnification
shorter fe	higher power of lens
u at infinity	1st image: RID Real, Inverted, Diminished
2nd object at fe	Final image:VIM Virtual, Inverted, Magnified
Normal adjustment L = fo + fe	to produce sharp and bright image



MICROSCOPE



MICROSCOPE RAY DIAGRAM



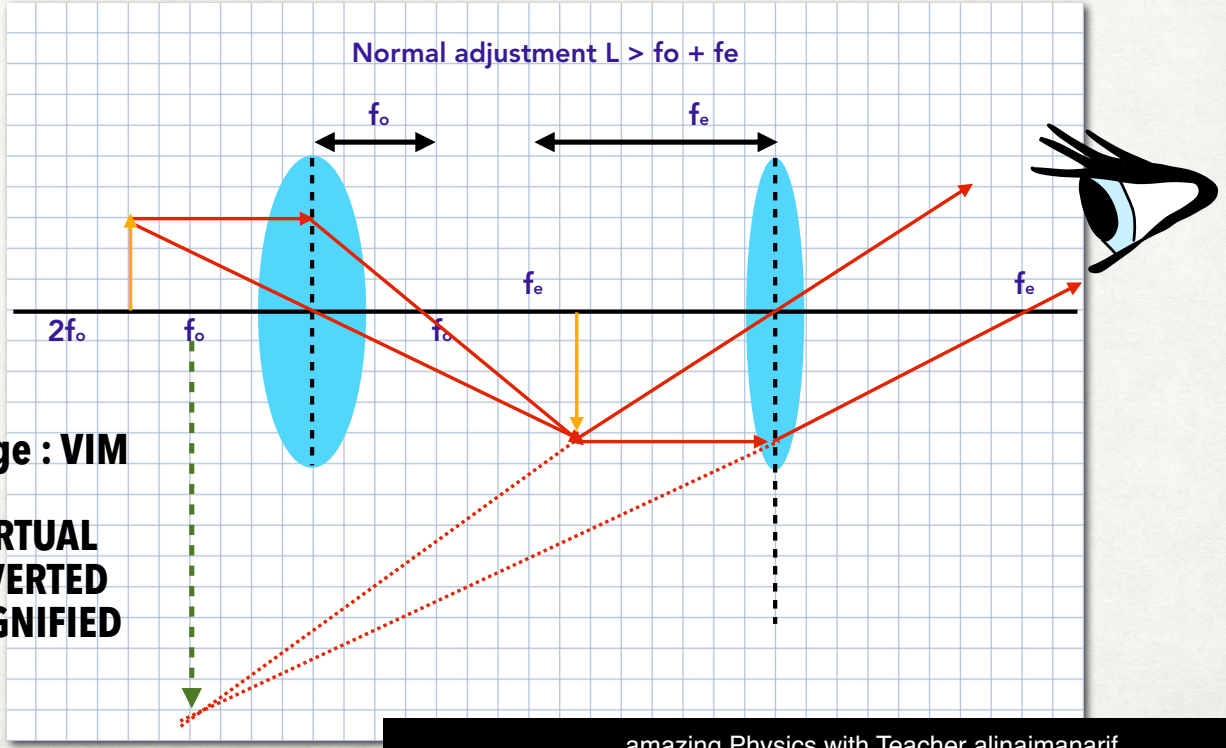
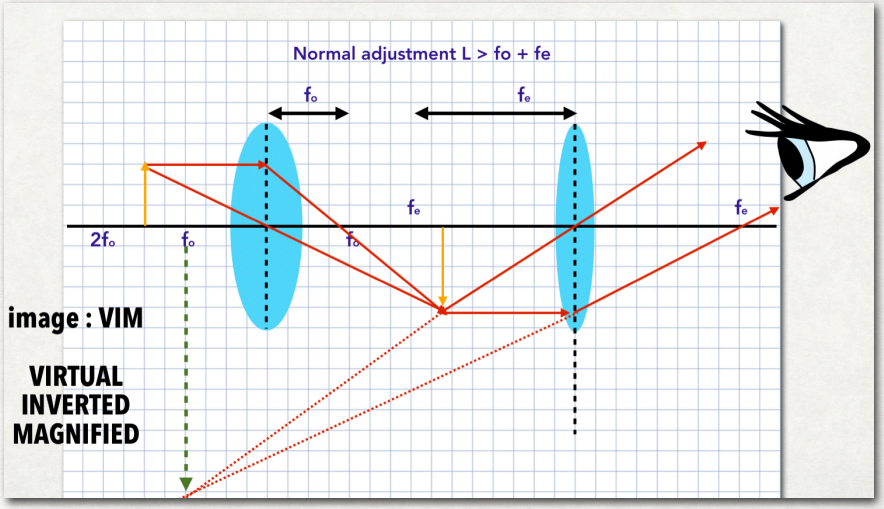


image : VIM

VIRTUAL
INVERTED
MAGNIFIED

MICROSCOPE
MODIFICATION

Characteristic	Explanation
use convex lens	all the light ray will be focused (converge)
fe > fo	low power of lens
shorter fo	higher power of lens
fo < u < 2fo	I st image: RIM Real, Inverted, Magnified
Normal adjustment L > fo + fe	To produce bigger image from the eyepiece // to increase the magnification

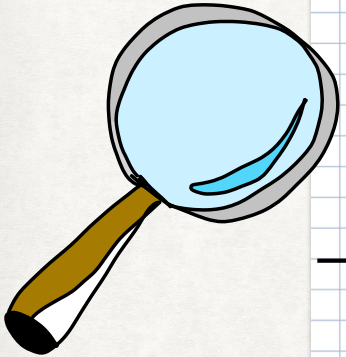


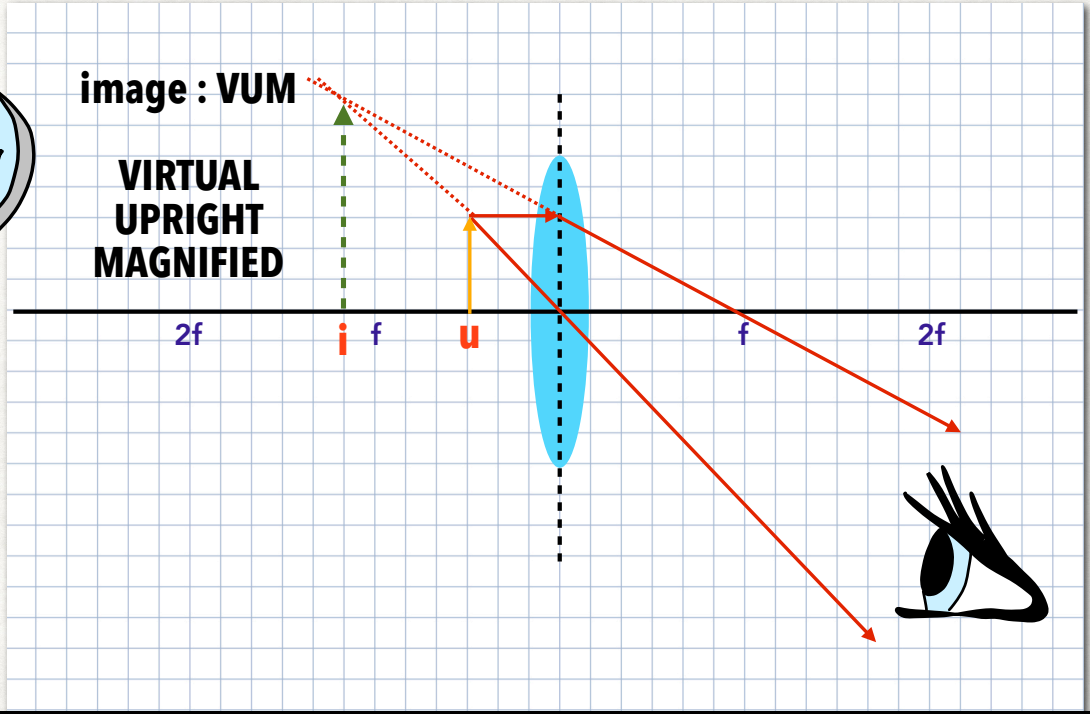
MAGNIFYING GLASS

MODIFICATION

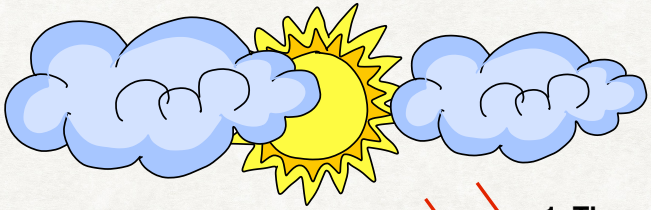
Characteristic	Explanation
use convex lens	all the light ray will be focused (converge)
bigger diameter of lens	more light can pass through produced brighter image
low density of magnifying glass	easy to handle lighter portable
u < f	image:VUM Virtual, Upright, Magnified
refractive index of lens higher	To produce bigger and sharp image more light can be focused

MAGNIFYING GLASS RAY DIAGRAM

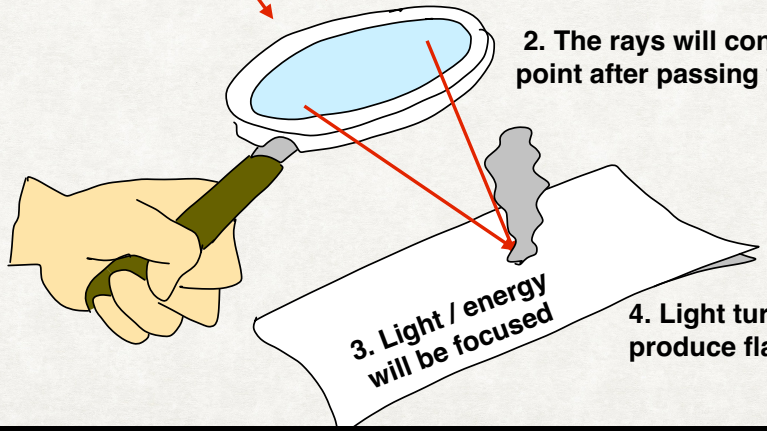




MAGNIFYING GLASS



1. The rays of the hot sun are parallel



2. The rays will converge to a focal point after passing through the lens

3. Light / energy will be focused

4. Light turns to heat and produce flame