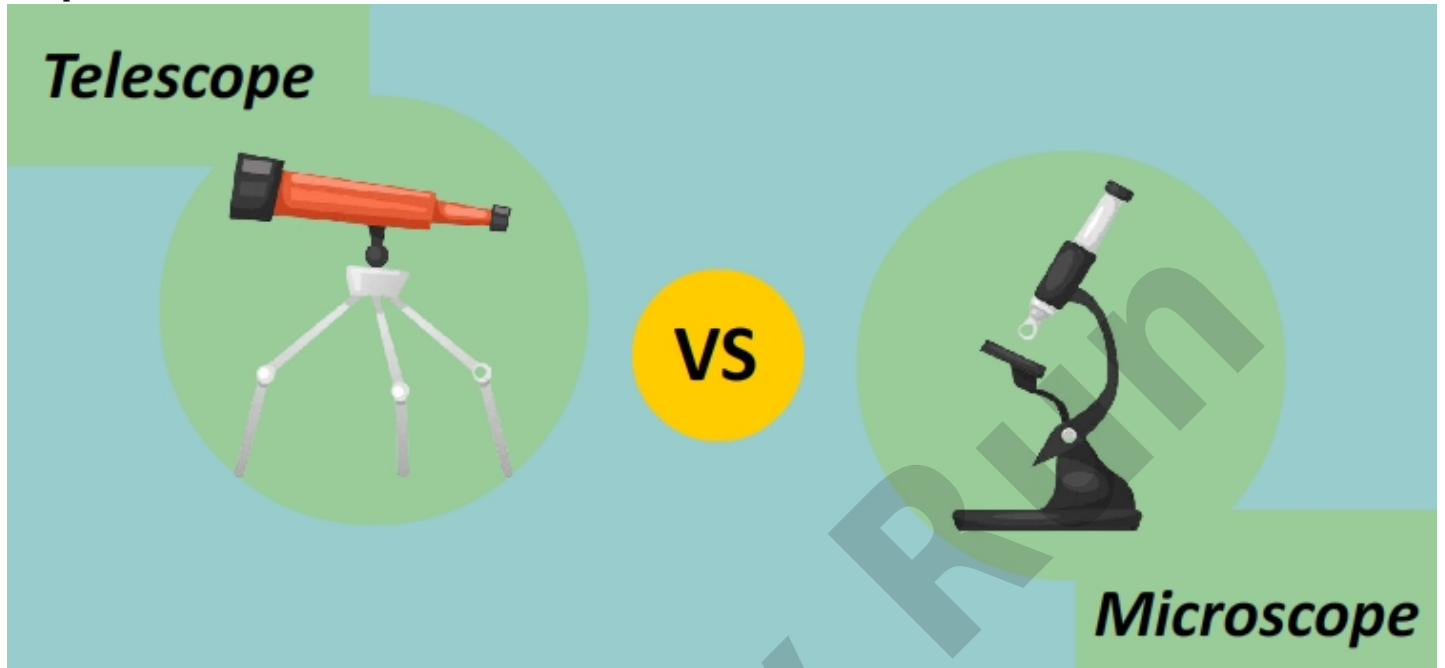


Distinguish, differentiate, compare and explain what is the Difference between Telescope and Microscope. Comparison and Differences.



Microscopes and telescopes are optical instruments that are designed to permit observation of objects and details of objects that are impossible to observe with the unaided eye. The term magnification as applied to telescopes refers to the degree of apparent increase of linear angular dimensions when an object is observed through the instrument. Magnification is defined in a similar manner for microscopes, but an observation distance needs to be supplied. The standard for this distance has been set for decades at 250 millimeters. Both types of instruments require an objective to form an image that is magnified by an eyepiece (ocular.)

Microscopes

First, let us consider microscopes. Human eyes are sensitive to radiation having wavelengths between about 390 and 780 nm. Optical microscopes are designed to utilize these wavelengths to produce magnified images of objects. The wave nature of light restricts the resolution of microscopes. Microscope objectives take in a cone of light. The angle of the most divergent rays that can pass into an objective is called its angular aperture.

Telescopes

Telescopes have many features and formulae in common with microscopes, but the similarities are often masked by differences in notation. The wave nature of light limits magnification of telescopes just as it does with microscopes. With telescopes a larger objective serves two functions: It increases resolution and increases the amount of light gathered by the objective. Except for planetary observation, the latter function is usually far more important.

Differences between Telescope and Microscope

S.No.	Telescope	Microscope
1	The position of object is at infinity.	The position of an object is near objective at a distance lying between f_o and $2f_o$.
2	Aperture of the objective is large.	Aperture of the objective is small.
3	The position of an image is at the focal plane of the objective.	The position of an image is at beyond $2f_o$ where f_o is the focal length of the objective.
4	Used to see large and distant objects.	Used to see very small objects.
5	Focal length of the objective is greater than eyepiece.	Focal length of the eyepiece lens is greater than the focal length of the objective lens.