

Telescope Quiz Review

Review the parts of the telescope. Know what each term describes

Tripod - The support for the telescope. The number on one leg is directed South (toward Igor's tower).

Optical Tube - Large tube which holds the pieces of the telescope in place. The main body of the telescope.

Finder scope (spotter scope) - Small, low magnification refractor telescope mounted on the side of the large telescope and aligned with the large telescope axis. By first finding an object in the finder scope and centering it, it will be able to be located with the large telescope.

Diagonal - reflects the light coming from the optical back by and connects to the eyepiece

Eyepiece – controls the magnification that we see.

Focus knob – focusses the light we see in the eyepiece. It should be adjusted for each person and each time the eyepiece is changed.

Keypad – allows users to put in the correct time and date, so that the telescope can use the onboard stellar map to locate objects.

2-Star Auto Align – Revised procedure we use to do telescope alignment. Center one known star in the telescope eyepiece, then choose another named star to center to make the alignment more precise.

3 Star Alignment – use any three bright stars or objects for alignment, without knowing which stars or objects they are.

Visual back – the aperture at the back of the optical tube which the diagonal connects to. When you want to change the angle of the diagonal, the visual back connector is loosened then retightened by hand after repositioning the diagonal.

Motor Speed – set on the keypad, allows the motor to move from fast (9) to slow (1).

Directional Keypad – The only thing that should ever be touched to make the telescope move.

Review your notes on the telescope. The larger the diameter or radius of the telescope primary aperture, the more light collecting it will be able to do. The collecting power of the primary is dependent on the area of the primary. If you have 10 times the radius (or diameter) the area will be 100 times as large, because the formula for area is $A = \pi r^2$. If the area of the primary increases it will collect more light allowing dimmer stars to be seen.

Magnification = (focal length of the objective)/(focal length of the eyepiece)

With the 25mm eyepiece, our telescopes magnify about 50X. Using the 18mm eyepiece, they magnify about 70X and with the smallest 12mm eyepiece you get about 100X. We always begin observing with the 25mm eyepiece because it gives us the greatest field of view.

Field of View (FOV) – the amount of sky we can see, measured as an angle

The field of view of the finder scope is about 5 deg, but the field of view for the telescope is less than one degree (about 1 degree for 50X to about half a degree for 100X).

Bigger power (magnification) is not always better. Magnifying a single star will not make it noticeably clearer. Magnifying a planet will make it bigger and blurrier and dimmer. This is due to the fact that the light from stellar objects is comprised of a spectrum of colors, but the colors of light do not behave identically within the telescope, leading to chromatic aberration. By higher magnification we also see a smaller field of view which means that we are only seeing part of the light that was collected.