

So, you want a telescope?

Top Tips for choosing the right telescope for you.

- **Telescopes**

- **Refractor**

- Ideal for widefield views
 - Compact
 - Robust
 - Portable
 - Focal lengths ~200mm - ~1400mm
 - Apertures from 60mm - 130mm
 - Doublets can show chromatic Aberration.
Triplet, quadruplet, quintuplet are free of chromatic Aberration

- **Reflector**

- General purpose optics
 - Best value for aperture
 - Free of chromatic aberration
 - Focal lengths ~600mm to ~1500mm
 - Apertures from ~100mm to ~300mm
 - Regular collimation required

- **Catadioptric**

- Compact design for long focal length
 - Robust
 - Mostly free of chromatic aberration
 - Require occasional collimation
 - Focal lengths ~1500mm - ~4000mm
 - Apertures from ~100mm to ~350mm

- **Mounts**

- **Alt/Azimuth**

- Relatively light weight
 - Compact
 - Easy to use
 - No Balancing required
 - Manual operation

- **Dobsonian**

- Quickest setup time
 - Exclusive to Newtonian reflectors
 - Simple to use
 - Manual operation

- **German Equatorial**

- Tracks stars by moving one axis only
 - Longer setup time than Alt/Az type mounts
 - Manual, Motor drive or Go-To operation
Go-To ideal for Astrophotography
 - Requires balancing and counterweights
 - Meridian flip required to prevent collision

- **Fork Mount**

- Alt/Az or Equatorial modes
 - Fast setup in Alt/Az mode
 - Usually Go-To operation
 - Use of camera or long optical train can restrict certain areas of sky
 - Meridian flip not required
 - Balancing is optional

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Specifications

- **Focal length**
 - The distance between the first optical element and the focal plane
 - Short focal length = wider field of view
 - Long focal length = narrow field of view
- **Aperture**
 - The diameter of the opening in the telescope
 - Large apertures gather more light
 - Larger apertures can resolve more detail
 - Larger apertures can handle more magnification (up to the atmospheric limit)
- **Focal ratio**
 - The ratio of focal length / aperture
 - Expressed as F/#
 - Low focal ratio ideal for deep sky objects
 - High focal ratio ideal for lunar and planetary
- **Magnification**
 - Dependant on focal length of eyepiece
 - Telescope Focal length / Eyepiece focal length
 - For low magnification use a long focal length eyepiece
 - For high magnification use a short focal length eyepiece

Focal Ratio = Focal length / Aperture

Magnification = Telescope Focal Length / Eyepiece Focal Length

Considerations

- Can you carry that "lightbucket" telescope?
- How much time and motivation do you have to learn your way around the sky?
- What field of astronomy interests you the most?
- What is your budget?
- Is the telescope suitable for the mount?
- The best telescope is the one that you will use! If it is easy to transport, setup and get pointed at your first target it will get more use
- Getting started can be daunting, read instructions and ask at your local astrosoc for help if you need it

Recommendations

- **Visual use**
 - Dobsonian mounted reflector ~150mm aperture - good general purpose scope
 - Refractor up to ~80mm on go-to mount - good for deep sky objects but limited for planets
- **Astrophotography**
 - ~80mm triplet or better refractor on an equatorial go-to mount - ideal for many larger deep sky objects, such as nebulae, open clusters
 - Schmidt-Cassegrain telescope on an equatorial go-to mount - ideal for lunar & Planetary imaging, also suitable for high resolution imaging (advanced)