

## Astronomical Terms: What is a ...

Astronomy uses many tricky words, technical terms and concepts that are specific to the observational and theoretical study of the universe. This brief list of some of the more common terms aims to help you get started in your quest to understand more.

### Galaxy

A galaxy is a gravitationally bound system of stars, stellar remnants, interstellar gas, dust, and dark matter. Galaxies range in size from dwarfs with just a few hundred million stars to giants with one hundred trillion stars – each orbiting its galaxy's centre of mass. Galaxies are categorised according to their appearance: elliptical, spiral, or irregular. Many galaxies are thought to have supermassive black-holes at their centres.

### Globular Cluster

Globular clusters are tightly bound groups of stars which orbit galaxies. Some are among the oldest objects in their galaxies and even the universe. The large mass in the rich stellar centre of the globular cluster pulls the stars inward to form a ball of stars. The Milky Way has over 150 known globular clusters and possibly many more are undiscovered.

### Nebula

Nebulae are interstellar clouds of dust, hydrogen, helium, and other ionized gases. Most nebulae are vast with some being hundreds of light years in diameter. Many nebulae are visible due to brightness caused by embedded hot stars, while others are so diffused that they can be detected only with long exposures and special filters. Nebulae form in various ways:

- Emission nebulae form as a cloud collapses under its own weight and produces stars.
- Reflection nebulae are clouds of interstellar dust which reflect the light of nearby stars.
- Dark nebulae, or absorption nebulae, are a type of interstellar cloud that is so dense that it obscures the light from any objects behind it.

### Constellation

A constellation is an area in the sky in which visible stars form an outline or pattern – typically representing an animal, mythological person, or object.

Different cultures and countries adopted their own constellations, some of which lasted into the early 20<sup>th</sup> century before today's 88 constellations were internationally recognised.

The Southern Cross is the smallest of the modern 88 constellations.

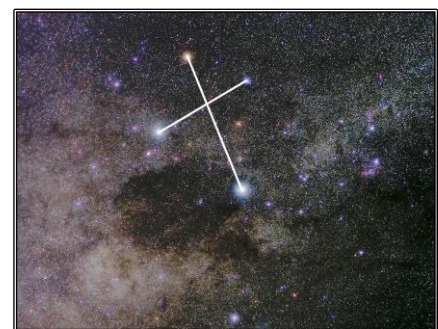
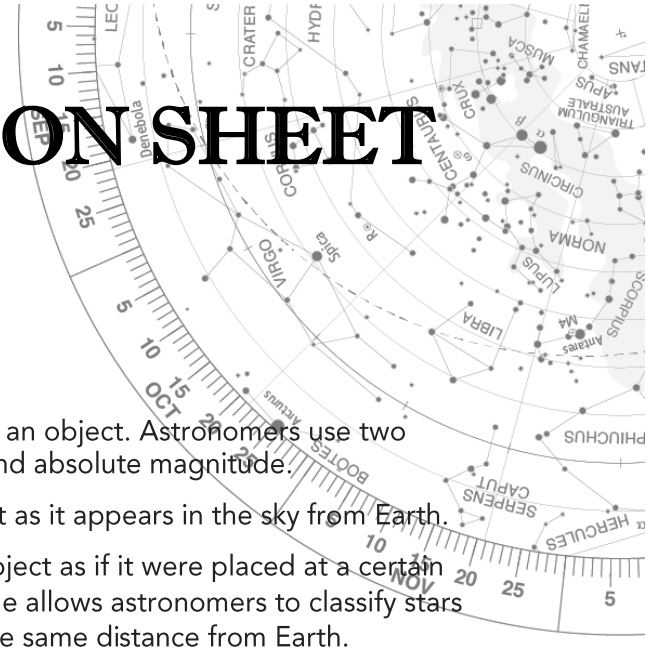


Photo: Southern Cross by Joe Bergeron



## Magnitude

In astronomy magnitude is a measure of the brightness of an object. Astronomers use two different definitions of magnitude: apparent magnitude and absolute magnitude.

- The apparent magnitude is the brightness of an object as it appears in the sky from Earth.
- Absolute magnitude describes the brightness of an object as if it were placed at a certain distance from Earth. The system of absolute magnitude allows astronomers to classify stars based on how they would appear if they were all at the same distance from Earth.

## Star Class

Stellar classification is a scheme for assigning stars to types: the Harvard system which is based on the star's surface temperature, and the Morgan-Keenan system which is based on the star's brightness. Most stars are classified using the letters O, B, A, F, G, K, and M. O-type stars are the hottest and M-type stars are the coolest.

## Light Year

A light-year is a measure of distance, not time. It is the total distance that a beam of light, moving in a straight line, travels in one year: 9.7 trillion kilometres. The speed of light, travelling in a vacuum, is constant throughout the universe.

## Seeing

"Seeing" is the term astronomers use to describe the sky's atmospheric conditions. The atmosphere is in continual motion with changing temperatures, air currents, weather fronts and dust particles. If stars are twinkling considerably, the seeing is poor; if star images are steady the seeing conditions are good.

## Telescope

There are three common types of optical telescopes:

- Refracting: a curved lens at one end of the tube which focusses light along the tube towards a second lens (eyepiece) which then magnifies the image.
- Reflecting: light travels along the tube to the main mirror, which reflects the light back to a smaller mirror. The smaller mirror reflects light towards the eyepiece.
- Catadioptric: a type of reflecting telescope where light first passes through a curved lens at the top of the telescope tube before travelling to the primary mirror.

## Want to know more?

Visit the many ASSA Astronomy Education sessions which are available for free on [YouTube](#).

There are also many online glossaries that are freely available, eg: [Wikipedia](#), [Sky & Telescope](#), and [Western Australia's Astronomy collective](#).