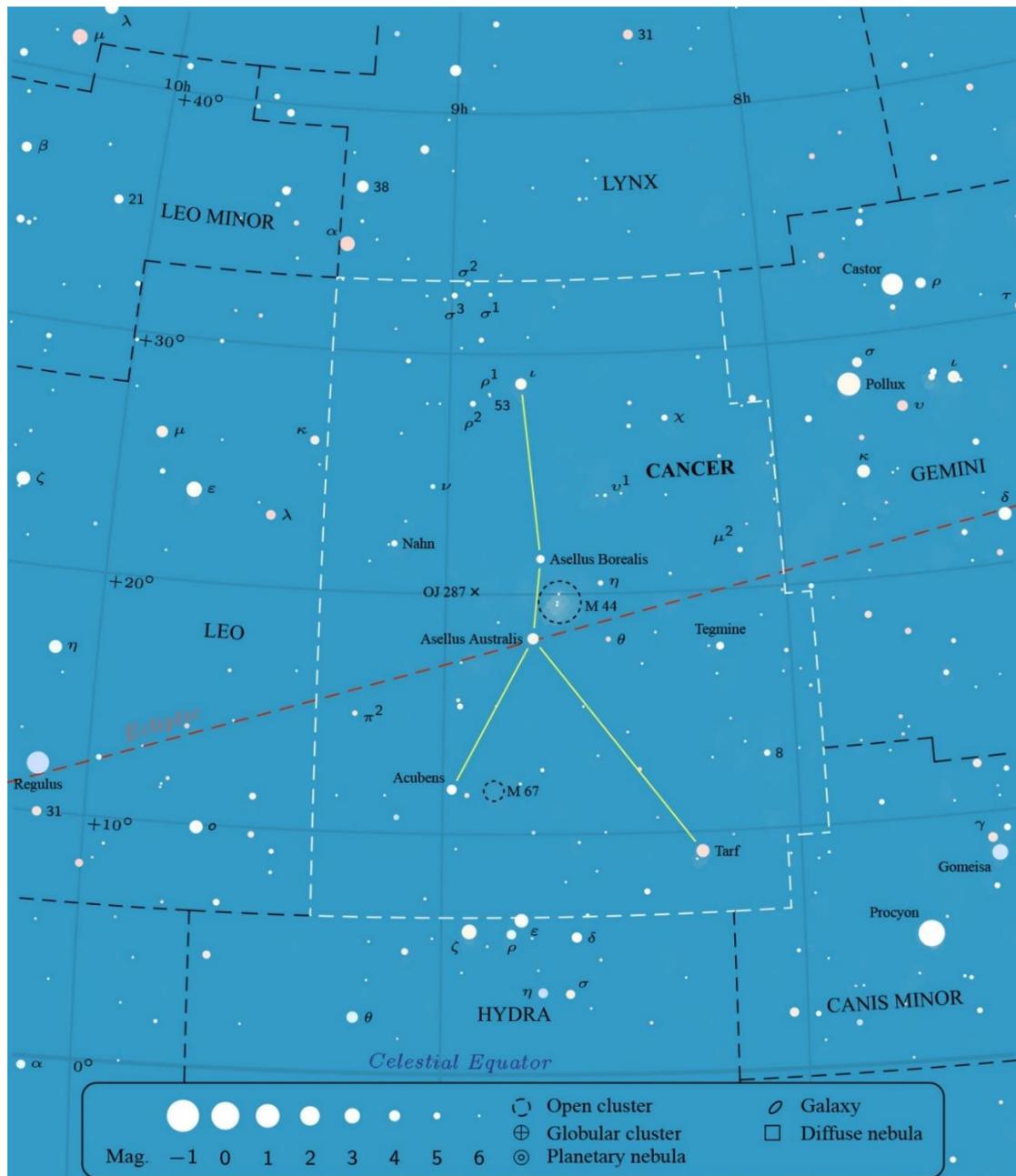


CNC

CANCER

CANCRI



Cancer is a faint constellation – filling the apparent gap between the bright stars Castor and Pollux (in Gemini) and Regulus (in Leo). It contains no stars brighter than 4th magnitude. It is best seen from the UK during evenings in late winter and early spring.

Cancer is one of Ptolemy's original 48 constellations and one of the 12 traditional zodiac constellations. The Sun lies within its borders from July 21st until August 10th. About 2,000 years ago the Sun reached its northern solstice within Cancer. It is from this that the Tropic of Cancer is named – the line on Earth at which the Sun would have been overhead at the solstice. The effects of precession have shifted this point through Gemini and into Taurus since then.

In Greek mythology Cancer represents the giant crab which was sent to attack the great hero Heracles while he fought the many-headed Hydra. Heracles killed the crab after it bit his foot. The crab was nevertheless deemed worthy by the gods of a place in the sky.

STARS

α Cancri (**Acubens**, mag. +4.2) is the second brightest star in Cancer. It is a binary system consisting of a white, main-sequence star and an 11th magnitude orange-dwarf companion separated by 11 arcseconds. There is some evidence that the primary is also a binary system. The distance is about 164 light-years.

β Cnc (**Tarf**, mag. +3.5) is the brightest star in Cancer. It is an orange giant star with 14th magnitude red dwarf companion. The separation is about 30 arcseconds but large telescopes are required to detect the faint companion. An exoplanet with a mass approximately 8 times that of Jupiter was discovered orbiting Tarf in 2014. The distance to this system is about 290 light-years.

γ Cnc (**Asellus Borealis**, mag. +4.7) is a white subgiant star at a distance of about 109 light-years.

δ Cnc (**Asellus Australis**, mag. +3.9) is a binary star comprising two components separated by 5 arcseconds. The secondary is magnitude +8.2 and the period is in excess of 1,000 years. The distance to the star is about 59 light-years.

ϵ Cnc, (mag. +6.3) is the brightest member of the open cluster M 44 (see below). It has an estimated distance of 630 light-years.

ζ Cnc (**Tegmine**, mag. +4.8) is a multiple star system about 83 light-years away. Telescopes reveal a pair of 5th and 6th magnitude yellow stars (A and C) separated by 6 arcseconds. The pair orbit one another with a period of 1,100 years. The primary is actually a close binary system with the two components (A and B) separated by about 1 arcsecond with an orbital period of about 60 years. The secondary (C) is actually a triple star system consisting of a yellow main sequence star and a red dwarf binary system. The separation of all components in C is beyond all but the biggest amateur telescopes!

η Cnc (mag. +5.3) is an orange giant star about 300 light-years away.

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ι Cnc (mag. +4.0) is one of the finest double stars in the sky for small telescopes. The primary is a 4th magnitude yellow giant. The secondary is a 7th magnitude, white main-sequence star. The pair are separated by 30 arcseconds, making this an easy split for telescopes at low power. The two stars are travelling through the Milky Way on similar trajectories and may actually form a genuine binary system. The estimated distance to iota Cancri is 330 light-years.

κ Cnc (mag. +5.2) is a blue-white star (actually a spectroscopic binary) about 460 light-years away.

ξ Cnc (Nahn, mag. +5.2) is a spectroscopic binary system. The distance to xi Cancri is about 370 light-years.

DEEPSKY OBJECTS

M 44 (mag. +3.7) is one of the nearest open clusters in the sky. It is more popularly known as the Beehive or Praesepe (Latin for 'Manger'). The Beehive is easily visible as an extended misty patch of light to the naked eye and it covers an area of sky nine times larger than the moon. The cluster is actually brighter than any of the individual stars in the constellation!

The Beehive cluster is easy to observe with binoculars and small telescopes. The brightest stars within it form a V-shape which is reminiscent of pattern made by the stars within the Hyades cluster in Taurus. There are several apparent double stars within the cluster.



Figure 1 (left) the open cluster M 44 which is more popularly known as the Beehive. (Right) The open cluster M 67.

The Beehive Cluster has been known since antiquity. Around 130BCE Hipparchus referred to it as “the little cloud”. In the second century AD, the astronomer Ptolemy described it as a "nebulous mass in the breast of Cancer". During the early 17th century Galileo studied it with his primitive telescope and resolved into individual stars for the first time: he counted 40 stars within it. The actual number is closer to 1,000 but the many a low mass and very faint. The distance to the Beehive Cluster is estimated to be about 580 light-years.

M 67 (mag. +6.1) is an open cluster situated just under 2 degrees west of the star Acubens. This cluster is a real gem and likely overlooked because of the Beehive Cluster. The cluster is visible as a misty patch with binoculars and easily resolved into stars by small telescopes. About 200 stars are scattered over an area the size of the full moon on the sky. M 67 is one of the oldest known clusters (about 4 billion years) and so contains only low mass stars (up to about the Sun’s mass) and numerous red giants.

OJ 287 (mag. +15.4) is an active galactic nuclei containing one of the biggest supermassive blackholes currently known and weighing in at 18 billion solar masses. OJ 287 is classed as a BL Lacertae object. Material accreted by the blackhole spirals inwards, heating up and emitting radiation as it does. Some of the radiation is directed outwards along jets and for BL Lacertae objects, the jets are oriented almost exactly towards our line of sight. Recent studies have indicated OJ 287 is probably a binary blackhole system with smaller secondary a mere 100 million solar masses! The position of OJ 287 is shown on the constellation chart. The estimated distance is 3.5 billion light-years.