



The New Syzygy

The Newsletter of the Kern Astronomical Society

number 610

2026

Our regular monthly meeting will be held at

Round Table Pizza

4200 Gosford Rd, Bakersfield, CA 93313

August 7

Social Hour @ 6:00p

Meeting @ 7:00p



facebook.com/groups/syzygy



kernastro.org



kernastronomicalsociety@gmail.com

ANNOUNCEMENTS

WELCOME BACK!

After our summer break in July, we're looking forward to seeing you all at the next club meeting at the usual time and place. See you there!

EVENTS

This month's Star Party will be hosted again at Wind Wolves Preserve southwest of Bakersfield. See page 2 for details.

TELESCOPE WORKSHEET

Greg Lipscomb with the Tulare Astronomical Association has shared his incredibly helpful Telescope Clinic Worksheet. To help set up your telescope, check out the worksheet on page 6!



WIND WOLVES STAR PARTY

This month's Star Party will be held at the Wind Wolves Preserve. Due to staffing, there is limited gate access for entrance and departure.

The gate will open at 7:30 p.m. and then locked at 8:15 p.m. The next departure time will be 11 pm. A final group departure will be at 1:00 a.m, unless you are camping overnight.

We will also be hosting a group of individuals the Preserve is taking on a Star Gazing Hike, in which the hikers will be able to look at what we are observing.

For important details about directions, parking, proper attire, and more, **[click here to visit the event details at Groups.io](#)**



AUGUST PRESENTATION DARK SKY FESTIVAL

This month's topic will be the Dark Sky Festival event, presented by speakers from the Sequoia Parks Conservancy. They will be talking about event details, what to expect, accommodations, and more. This is a fantastic annual event that you won't want to miss!



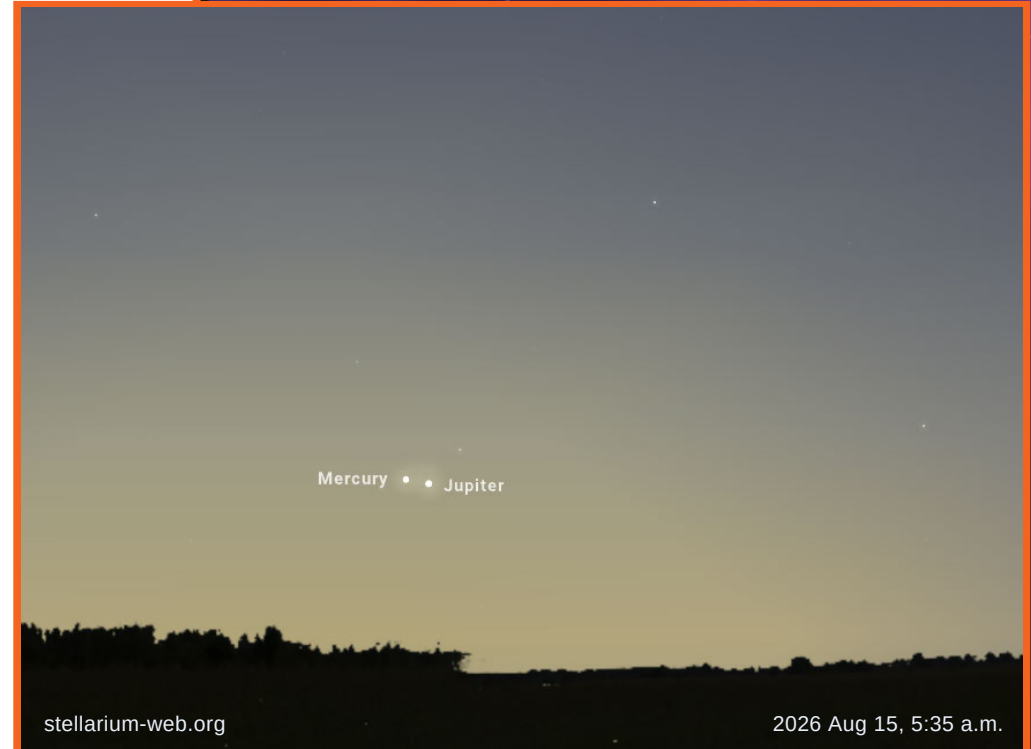
IN THE SKY

THINGS TO LOOK FOR IN AUGUST

This month, most of the interesting events are between midnight and dawn.

- Late August 30 and into the early hours of August 31, Saturn makes its closest pass to the nearly-full moon.
- ☄ The Perseid Meteor Shower peaks between August 11-13, perfectly coinciding with the month's new moon. The viewing conditions should be fantastic! This event is among the brightest and most reliable meteor showers of the year, occurring every August as Earth passes through a stream of dust and debris left behind by the Comet Swift-Tuttle.
- In the pre-dawn hours of August 9, there will be a sliver of a waning crescent moon next to Mars. An excellent photo op!
- **AUGUST CHALLENGE** – In the early morning hours of August 15, try to capture Mercury and Jupiter at their closest point before the sun rises!

Look for more events at the back of this newsletter!



2025-26 KERN COUNTY ASTRONOMICAL SOCIETY SCHEDULE

REMINDER – Below is a list of our upcoming meetings for the '25-2026 club year. Monthly club meetings will be held at the Round Table Pizza at 4200 Gosford Rd. from 6pm to roughly 9pm. Monthly board member meetings are held the Thursday of the week before the monthly club meeting. August's meeting will be at the DoubleTree Hilton at 3100 Camino Del Rio Ct from 6pm to 7pm. We would like to remind everyone that club members are welcome to join our board meetings!

BOARD MEETINGS

October 30
November 20 *
December 18 *
January 29
February 26
March 26
April 23
May 28
June – no meeting
July 30
August 27
September 24

* Moved one week early due to holidays

CLUB MEETINGS

November 7
December 5
January 9
February 6
March 6
April 3
May 1
June 5
July – no meeting
August 7
September 4



KAS
KERNASTRO.ORG

KAS Information

Since 1956, the Kern County Astronomical Society has promoted community awareness of current events in astronomy and provides a forum for sharing of knowledge and experiences among amateur astronomers. Annual membership is \$35.00 which also provides membership in the Amateur Astronomical League, access to their newsletter (Reflector Magazine), and participation in observational programs.

Star Parties & Outreach

The Kern County Astronomical Society typically has two Club Star Parties each month depending on the weather. Our Club Parties are held on Saturdays nearest the New Moon. We also host Public Star Parties at various locations around town during April - October. These parties are held on Saturdays nearest the first quarter Moon. In addition, we also host Lunar, Solar, and Planetary viewing for public schools. Requests may be directed to our Star Party Coordinator.

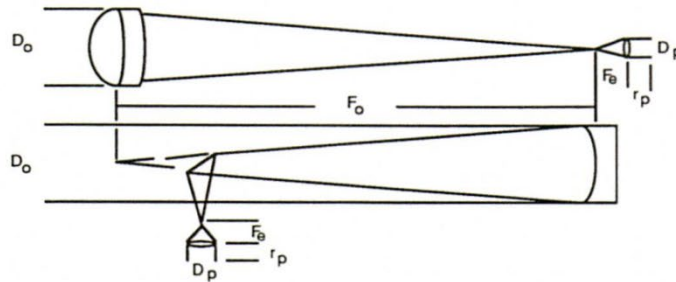
Club Equipment

The Kern County Astronomical Society has telescopes and accessories (listed below) available for loan to Club Members in good standing. Members are encouraged to borrow the different types of telescopes in stock (especially if you are considering purchasing one). Trying out different sizes and types of telescopes can help you make an informed decision about purchases. If you have a Club telescope in your possession, you will be expected to participate in at least one public star party.

- **6" f/6, 8" f/6, 10" f/5.6, 13" f/4.5 Dobsonian Telescopes**
- **Parks Jovian 90**
- **3½" f/13 Maksukov-Cassegrain**
- **4" f/15 Unitron Refractor**
- **8" Solar Filter**
- **Assorted Eyepieces**

Telescope Clinic Worksheet:

Telescope Arithmetic



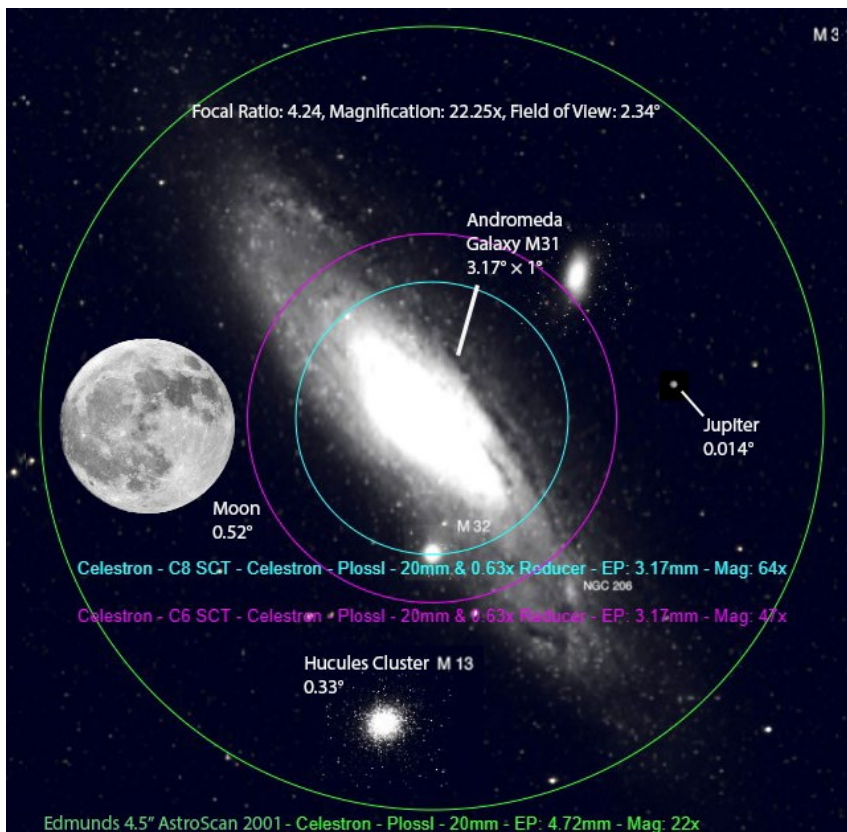
D_o = clear aperture of the objective
 F_o = focal length of the objective
 F_e = focal length of the eyepiece
 F = focal length of the system

D_p = diameter of the exit pupil
 r_p = eye relief distance
 v = true field of view in degrees
 v_a = apparent field of view in degrees
 (associated with the eyepiece)

The **focal length** (F_o) is the distance from the **objective** to the point where the image comes to focus.

Focal ratio is the **focal length** of an **objective** divided by the diameter of the **objective**,

F_o _____ mm / D_o _____ mm = _____ f/r (aka f/stop)



There is an accepted **limit to the amount of magnification** possible with a telescope. Two times the **aperture** in millimeters or 50 times the **aperture** in inches are good rules of thumb,

2 X _____ **Do** mm = _____ **X limit** or

50 X _____ **Do** Inches = _____ **X limit**

To calculate the shortest **eyepiece Fe** in use on a given telescope, divide the **focal length (Fo)** of the **telescope** by its **X limit**.

Telescope **Fo** _____ mm / **X limit** _____ = _____ mm shortest **eyepiece Fe** in use (Double **Fe** if used with a **2x Barlow Lens**, **triple** if used with a **3x Barlow Lens**, etc.)

To calculate **eyepiece (#)** magnification given by a telescope, divide the **focal length** of the **telescope** by the **focal length** of the **eyepiece** in use.

#1: Telescope **Fo** _____ mm / Eyepiece **Fe** _____ mm = _____ X magnification.

#2: Telescope **Fo** _____ mm / Eyepiece **Fe** _____ mm = _____ X magnification.

#3: Telescope **Fo** _____ mm / Eyepiece **Fe** _____ mm = _____ X magnification.

#4: Telescope **Fo** _____ mm / Eyepiece **Fe** _____ mm = _____ X magnification.

#5: Telescope **Fo** _____ mm / Eyepiece **Fe** _____ mm = _____ X magnification.

To calculate the **exit pupil (Dp)** in millimeters, divide the aperture of the **objective** (in millimeters) by the **magnification**. A simpler formula is to divide the **focal length** of the **eyepiece** by the telescope's **focal ratio**.

Fe _____ mm / _____ **F/r** = _____ mm **exit pupil (Dp)**

Most observers under the age of 30 have a maximum pupil dilation of about 7 mm under very dark skies, it is common for older observers to have a maximum dilation of about 5 mm.

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

Follow us on Bluesky
skymaps.com/bsky/

- 4 **Mars 0.1° SE of Uranus** at 7h UT (38° from Sun, morning sky). Mags. 1.3 and 5.8.
- 6 **Earth at Aphelion** (farthest from Sun) at 17h UT. The Sun-Earth distance is 1.016644 a.u. or about 152.1 million km.
- 7 **Moon near Saturn** at 17h UT (morning sky). Mag. 0.8.
- 7 **Last Quarter Moon** at 19:30 UT.
- 9 **Venus 0.97° NNE of Regulus** at 23h UT (42° from Sun, evening sky). Mags. -4.1 and 1.4.
- 11 **Moon near the Pleiades** at 0h UT (morning sky).
- 11 **Moon near Mars** at 14h UT (morning sky). Mag. 1.3.
- 13 **Mercury at inferior conjunction** with the Sun at 1h UT. The innermost and most elusive planet passes into the morning sky.
- 13 **Mars 5.3° N of Aldebaran** at 2h UT (41° from Sun, morning sky). Mags. 1.3 and 0.9.
- 13 **Moon at perigee** (closest to Earth) at 7:57 UT (distance 359,112km; angular size 33.3').
- 14 **New Moon** at 9:44 UT. Start of lunation 1281.
- 17 **Moon near Regulus** at 0h UT (evening sky).
- 17 **Moon near Venus** at 16h UT (evening sky). Mag. -4.1.
- 21 **Moon near Spica** at 3h UT (evening sky).
- 21 **First Quarter Moon** at 11:05 UT.
- 24 **Moon near Antares** at 21h UT (evening sky). Occultation visible from Antarctica and nearby islands and territories.
- 25 **Moon at apogee** (farthest from Earth) at 17h UT (distance 405,548km; angular size 29.5').
- 26 **Pluto at opposition** at 21h UT. Mag. 14.4.
- 29 **Jupiter at conjunction** with the Sun at 12h UT. The largest planet passes into the morning sky.
- 29 **Full Moon** at 14:36 UT.
- 31 **Southern delta Aquarid meteor shower** peaks. Active from July 12 to August 23. Produces medium speed, faint meteors (about 15 to 20 per hour). Best seen from southern latitudes. Moonlight interferes in 2026.

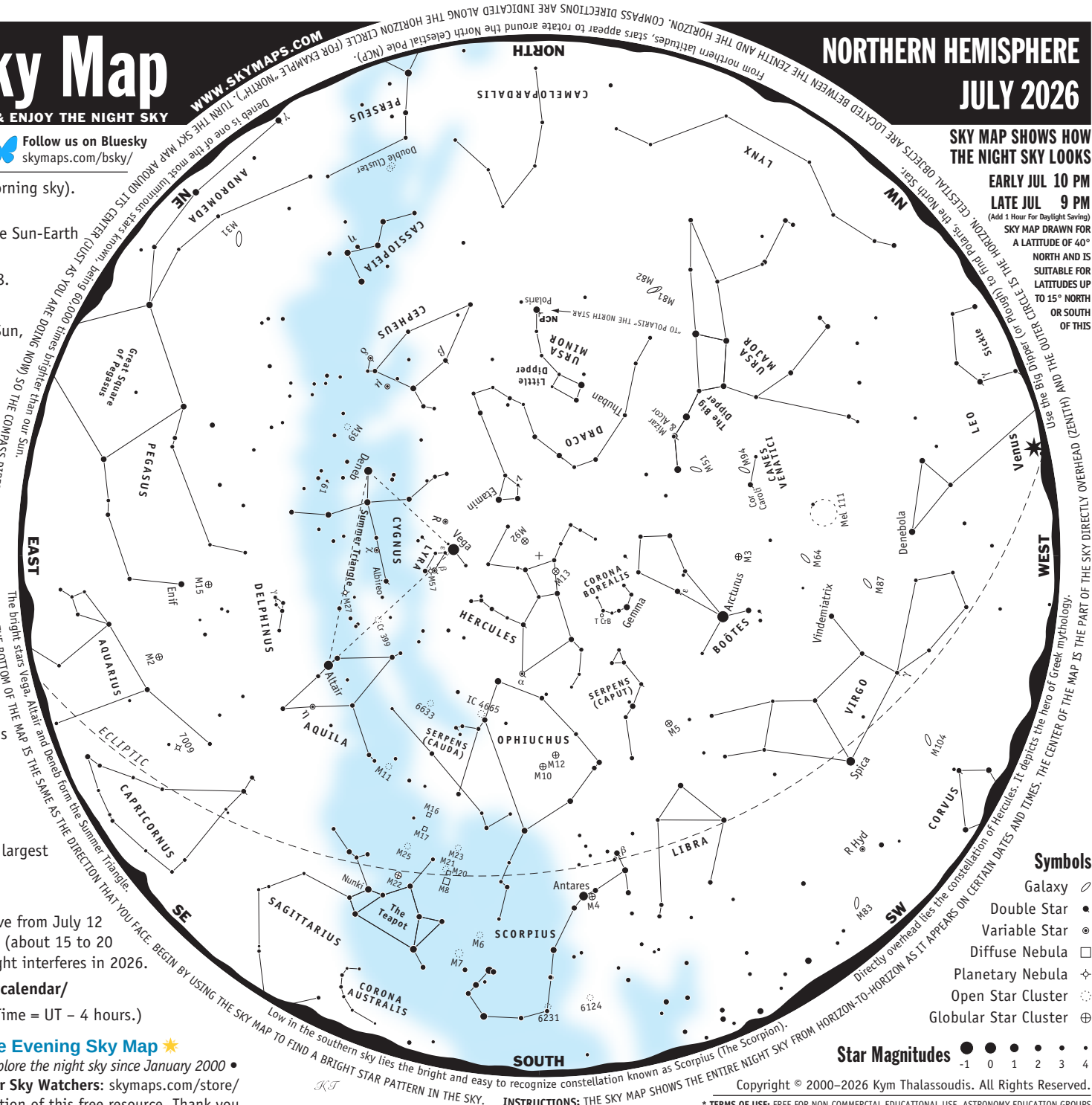
More sky events and links at <http://Skymaps.com/skycalendar/>

All times in Universal Time (UT). (USA Eastern Daylight Time = UT - 4 hours.)



☀ **Support The Evening Sky Map** ☀

• *Helping curious minds to explore the night sky since January 2000* •
Recommended Products for Sky Watchers: skymaps.com/store/
 All sales support the production of this free resource. Thank you.



Symbols

Galaxy *o*

Double Star ●

Variable Star

Diffuse Nebula ☐

Planetary Nebula

Open Star Cluster ☼

Globular Star Cluster ⊕

Star Magnitudes ● ● ● ● ● ●
-1 0 1 2 3 4

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About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary

Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

Constellation – A defined area of the sky containing a star pattern.

Diffuse Nebula – A cloud of gas illuminated by nearby stars.

Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

Ecliptic – The path of the Sun's center on the celestial sphere as seen from Earth.

Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

Galaxy – A mass of up to several billion stars held together by gravity.

Globular Star Cluster – A ball-shaped group of several thousand old stars.

Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.

Magnitude – The brightness of a celestial object as it appears in the sky.

Open Star Cluster – A group of tens or hundreds of relatively young stars.

Opposition – When a celestial body is opposite the Sun in the sky.

Planetary Nebula – The remnants of a shell of gas blown off by a star.

Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. USA Eastern Standard Time (for example, New York) is 5 hours behind UT.

Variable Star – A star that changes brightness over a period of time.

NORTHERN HEMISPHERE
JULY 2026

CELESTIAL OBJECTS

✦ ✦ ✦ ✦ ✦

Sky maps.com

Easily Seen with the Naked Eye

Altair	Aql	• Brightest star in Aquila. Name means "the flying eagle". Dist=16.7 ly.
Arcturus	Boo	• Orange, giant K star. Name means "bear watcher". Dist=36.7 ly.
δ Cephei	Cep	• Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
Deneb	Cyg	• Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400±200 ly.
α Herculis	Her	• Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion.
Vega	Lyr	• The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
Antares	Sco	• Red, supergiant star. Name means "rival of Mars". Dist=135.9 ly.
Polaris	UMi	• The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.
Spica	Vir	• Latin name means "ear of wheat" and shown held in Virgo's left hand. Dist=250 ly.

Easily Seen with Binoculars

η Aquilae	Aql	• Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.
M3	CVn	• Easy to find in binoculars. Might be glimpsed with the naked eye.
μ Cephei	Cep	• Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
Mel 111	Com	• Coma Berenices. 80 mag 5-6 stars in 5 deg. Dist=283 ly. Age=400 million years.
χ Cygni	Cyg	• Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
M39	Cyg	• May be visible to the naked eye under good conditions. Dist=900 ly.
ν Draconis	Dra	• Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
M13	Her	• Best globular in northern skies. Discovered by Halley in 1714. Dist=23,000 ly.
M92	Her	• Fainter and smaller than M13. Use a telescope to resolve its stars.
ε Lyrae	Lyr	• Famous Double Double. Binoculars show a double star. High power reveals each a double.
R Lyrae	Lyr	• Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
M12	Oph	• Close to the brighter M10. Dist=18,000 ly.
M10	Oph	• 3 degrees from the fainter M12. Both may be glimpsed in binoculars. Dist=14,000 ly.
IC 4665	Oph	• Large, scattered open cluster. Visible with binoculars.
6633	Oph	• Scattered open cluster. Visible with binoculars.
M15	Peg	• Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly.
M8	Sgr	• Lagoon Nebula. Bright nebula bisected by a dark lane. Dist=5,200 ly.
M25	Sgr	• Bright cluster located about 6 deg N of "teapot's" lid. Dist=1,900 ly.
M22	Sgr	• A spectacular globular star cluster. Telescope will show stars. Dist=10,000 ly.
M4	Sco	• A close globular. May just be visible without optical aid. Dist=7,000 ly.
M6	Sco	• Butterfly Cluster. 30+ stars in 7x binoculars. Dist=1,960 ly.
M7	Sco	• Superb open cluster. Visible to the naked eye. Age=260 million years. Dist=780 ly.
M5	Ser	• Fine globular star cluster. Telescope will reveal individual stars. Dist=25,000 ly.
Mizar & Alcor	UMa	• Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.
Cr 399	Vul	• Coathanger asterism or "Brocchi's Cluster". Not a true star cluster. Dist=218 to 1,140 ly.

Telescopic Objects

ε Boötis	Boo	• Red giant star (mag 2.5) with a blue-green mag 4.9 companion. Sep=2.8". Difficult to split.
M94	CVn	• Compact nearly face-on spiral galaxy. Dist=15 million ly.
M51	CVn	• Whirlpool Galaxy. First recognised to have spiral structure. Dist=25 million ly.
M64	Com	• Black-Eye Galaxy. Discovered by J.E. Bode in 1775 - "a small, nebulous star".
Albireo	Cyg	• Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4".
61 Cygni	Cyg	• Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
γ Delphini	Del	• Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.
β Lyrae	Lyr	• Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Fainter mag 7.2 blue star.
M57	Lyr	• Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
M23	Sgr	• Elongated star cluster. Telescope required to show stars. Dist=2,100 ly.
M20	Sgr	• Trifid Nebula. A telescope shows 3 dust lanes trisecting nebula. Dist=5,200 ly.
M21	Sgr	• A fine and impressive cluster. Dist=4,200 ly.
M17	Sgr	• Omega Nebula. Contains the star cluster NGC 6618. Dist=4,900 ly.
M11	Sct	• Wild Duck Cluster. Resembles a globular through binoculars. V-shaped. Dist=5,600 ly.
M16	Ser	• Eagle Nebula. Requires a telescope of large aperture. Dist=8,150 ly.
M81	UMa	• Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope.
M82	UMa	• Close to M81 but much fainter and smaller.
M87	Vir	• Supergiant galaxy with supermassive black hole at its core. Dist=53.5 million ly.
M27	Vul	• Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.