Sky Calendar – January 2024

1. Moon at apogee (farthest from Earth) at 15h UT (distance 404,909km; angular size 29.5').
2. Earth at Perihelion (closest to Sun) at 1h UT. The Sun-Earth distance is 0.983307 a.u. (147.1 million kilometers).
3. Last Quarter Moon at 3:32 UT.
4. Quadrantid Meteor Shower peaks at 9h UT. Active between December 26 and January 16. Expect up to 25 meteors per hour under dark skies. Radiant is in northern Boötes. Northern hemisphere only. Moonlight interferes.
5. Moon near Spica at 2h UT (morning sky).
6. Moon near Antares at 16h UT (morning sky). Occultation visible from USA, Mexico, Central America, and NW South America.
7. Moon near Venus at 19h UT (36° from Sun, morning sky). Mag. –4.0.
8. Moon near Mercury at 19h UT (23° from Sun, morning sky). Mag. 1.4.
9. Moon near Mars at 9h UT (15° from Sun, morning sky). Mag. –0.2.
10. New Moon at 11:57 UT. Start of lunation 1250.
11. Mercury at greatest elongation west at 14h UT (24° from Sun, morning sky). Mag. –0.2.
12. Moon near perigee (closest to Earth) at 10:39 UT (distance 362,267km; angular size 33.0').
13. Moon near Saturn at 12h UT (evening sky). Mag. 1.0.
14. First Quarter Moon at 3:53 UT.
15. Moon near Jupiter at 19h UT (evening sky). Mag. –2.5.
16. Moon near the Pleiades at 15h UT (evening sky).
17. Full Moon at 17:53 UT.
18. Moon near Beehive cluster M44 at 0h UT (midnight sky).
19. Mercury 0.24° N of Mars at 17h UT (20° from Sun, morning sky). Mags –0.2 and 1.3.
20. Moon near Regulus at 21h UT (morning sky).
21. Moon at apogee (farthest from Earth) at 8h UT (distance 405,777km; angular size 29.4').

More sky events and links at http://Skymaps.com/skycalendar/
All times in Universal Time (UT). (Singapore Standard Time = UT + 8 hours.)
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). These 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. 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.
Variable Star – A star that changes brightness over a period of time.

Eclipsed Binary Star – Two stars that orbit each other, with one star partially blocking the light from the other, causing a periodic dimming of the total brightness. This dimming can be observed with a small telescope.
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.
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Easily Seen with the Naked Eye

Sirius CMa – The brightest star in the sky. Also known as the “Dog Star”. Dist=8.6 ly.
Procyon CMi – Greek name meaning “before the dog” — rises before Sirius (northern latitudes). Dist=11.4 ly.
Canopus Car – Second brightest star in the sky. 14,000 times more luminous than the Sun. Dist=309 ly.
Castor Gem – Multiple star system with 6 components. 3 stars visible in telescope. Dist=32 ly.
Pollux Gem – With Castor, the twin sons of Leda in classical mythology. Dist=34 ly.
Rigel Ori – Brightest star in Orion. Blue supergiant star with mag 7 companion. Dist=770 ly.
Beteigeuse Ori – One of the largest red supergiant stars known. Diameter=300 times that of Sun. Dist=430 ly.
Algol Per – Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days.
Fomalhaut PsA – Brightest star in Piscis Austrinus. In Arabic the “Fish’s mouth”. Dist=25 ly.
Hyades Tau – Large V-shaped star cluster. Binoculars reveal many more stars. Dist=152 ly.
Aldebaran Tau – Brightest star in Taurus. It is not associated with the Hyades star cluster, Dist=66.7 ly.

Easily Seen with Binoculars

M31 And – The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.
M38 Aur – About half-size of M38. Located in rich Milky Way star field. Dist=4,100 ly.
M44 Cnc – Praesepe or Beehive Cluster. Visible to the naked eye. Dist=590±20 ly.
M41 CMA – First recorded observation by Aristotle in 325 BC as “cloudy spot”. Dist=2,300 ly.
M35 Gem – Fine open cluster located near foot of the twin Castor. Dist=2,800 ly.
M48 Hya – 12+ stars in 7x binoculars. Triangular asterism near centre. Dist=1,990 ly.
2332 Mon – A large scattered star cluster of 20 stars. Dist=1,300 ly.
2244 Mon – Surrounded by the faint Rosette Nebula. Dist=5,540 ly.
M50 Mon – Visible with binoculars. telescope reveals individual stars. Dist=3,000 ly.
Cr 69 Ori – Lambda Orionis Cluster. Dist=1,630 ly.
ζ Phoenicis Phe – Eclipsing binary star and double (mag 8). Varies between 3.9 & 4.4 over 1.667 days.
L1 L – Semi-regular variable. Magnitude varies between 2.6 & 6.2 over 140.42 days.
M47 Pup – Bright star cluster. 15+ stars in 7x binoculars. Dist=1,500 ly.
M46 Pup – Dist=5,400 ly. Contains planetary NGC 2438 (Mag 11, d=65°) -- not associated.
2451 Pup – 30+ stars in binoculars. The brightest star, χ Pup, is red. Dist=850 ly.
2477 Pup – Very rich but distant star cluster (4,200 ly). Resembles globular through binoculars.
253 Scl – Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.
47 Tucanae Tuc – Spectacular object. Telescope will reveal stars. Near edge of SMC. Dist=15,000 ly.

Telescopic Objects

γ Andromedae And – Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8″.
γ Arietis Ari – Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8″.
M67 Cnc – Contains 500+ stars mag 10 & fainter. One of the oldest clusters. Dist=2,350 ly.
η Cassiopeiae Cas – Yellow star mag 3.4 & orange star mag 7.5. Dist=139 ly; Orbit=488 years. Sep=12″.
9207 Dor – Bright nebula located in LMC. A star forming region.
0 Εridani Eri – Striking blue-white double star. Mags 3.2 & 4.3. Visible in a small telescope. Sep=8.2″.
β Monocerotis Mon – Triple star. Mags 4.6, 5.0 & 5.4. Requires telescope to view arc-shape. Sep=7.3″.
2264 Mon – Christ Tree Cluster. Associated with the Cone Nebula. Dist=2,450 ly.
x Orionis Ori – Superb multiple star. 2 mag 7 stars one side, mag 9 star on other. Struve 761 triple in field.
κ Puppis Pup – Telescope easily shows two blue-white stars of almost equal brightness. Sep=0.9″.
M1 Tau – Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly.
M33 Tri – Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million ly.

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