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**Wonders
of the
night sky
to watch for
throughout
the year**

Gases and dust from star formation around the M17 nebula are revealed in this infrared image from NASA's Spitzer Space Telescope.

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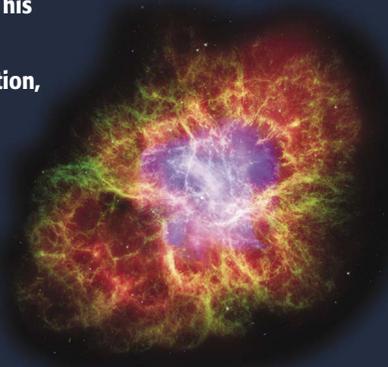
Winter

More bright stars are on display in winter than during any other time of the year. On the clearest night in the darkest place, about 3,000 stars are visible to the naked eye.

BETELGEUSE, the largest star visible to the naked eye, resides in the constellation

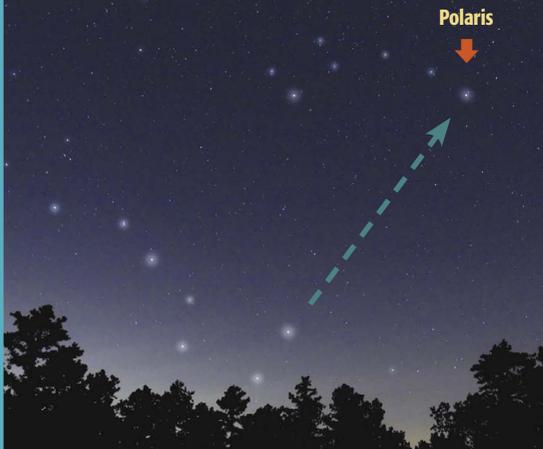
ORION, which was originally a sheep, not a hunter. This famous red star's name means "sheep's armpit."

The **CRAB NEBULA** (right), in the Taurus constellation, is a giant gas cloud made up of the remnants of a star that "went supernova," or blew up, in 1054. The explosion was so bright that it could be seen during daylight hours for weeks. Today, a 12-mile-wide pulsar star spins at the center of the Crab Nebula, flashing 30 times per second. The energy released from this wild rotation lights up the entire cloud, making it visible with a telescope.

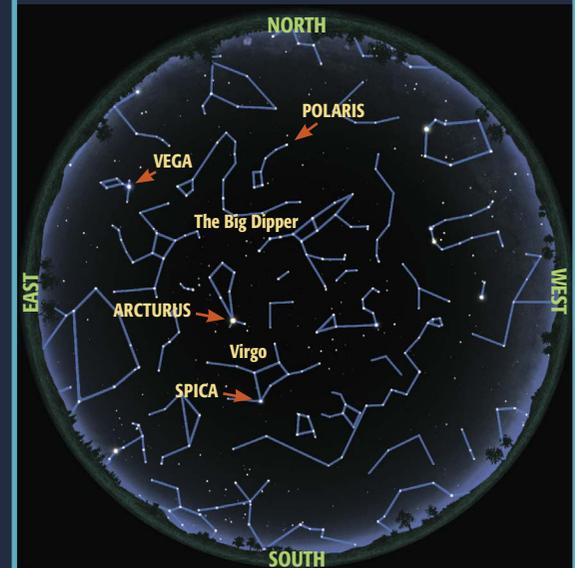


Spring

The **BIG DIPPER** reaches its highest place in the sky in spring. Look for its two pointer stars on the outer side of its bowl aiming toward **POLARIS**, the North Star. Take note: The North



WINTER CONSTELLATIONS



SPRING CONSTELLATIONS

Above, a fireball meteor speeds through the constellation Orion and lights up the Mojave Desert during a Geminid meteor shower in December.

Star is not the brightest star in the sky. Forty-five other stars are brighter. Polaris is the only star that doesn't appear to move.

The most crowded part of the night sky is also the darkest. Halfway up the southern sky is the constellation **VIRGO**. It is identified by the bright-blue star **SPICA**, above which (65 million light-years from Earth) lurks the **VIRGO CLUSTER**, containing thousands of galaxies. Through backyard telescopes, these galaxies look like gray blobs; they are invisible to the naked eye.

These star charts show the view from the mid-Northern Hemisphere. The outer edge of the circles is the closest to the horizon, while the center of the circle shows the night sky directly overhead.

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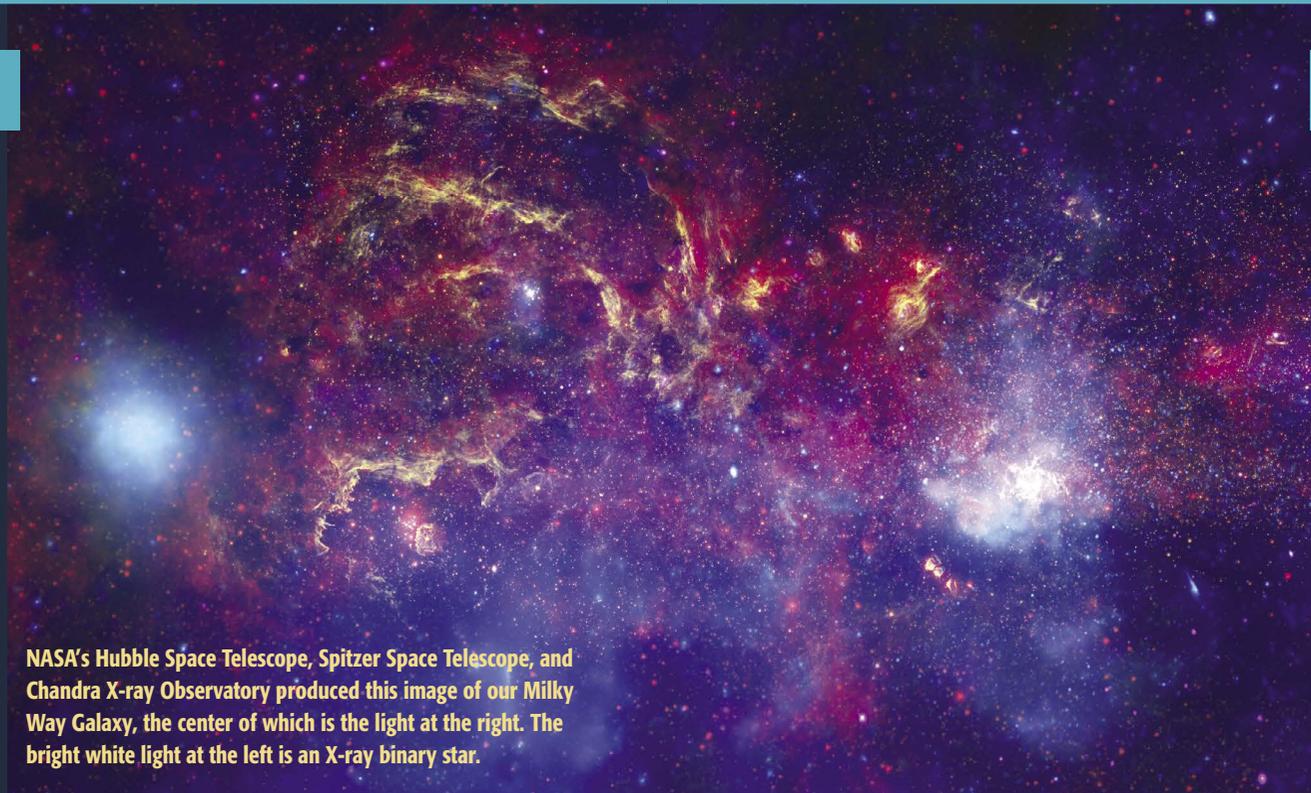
Summer

In early summer, blue-white star **VEGA** and orange star **ARCTURUS** are both bright and high in the night sky. Peering lower, you can see several white, orange, and blue stars.

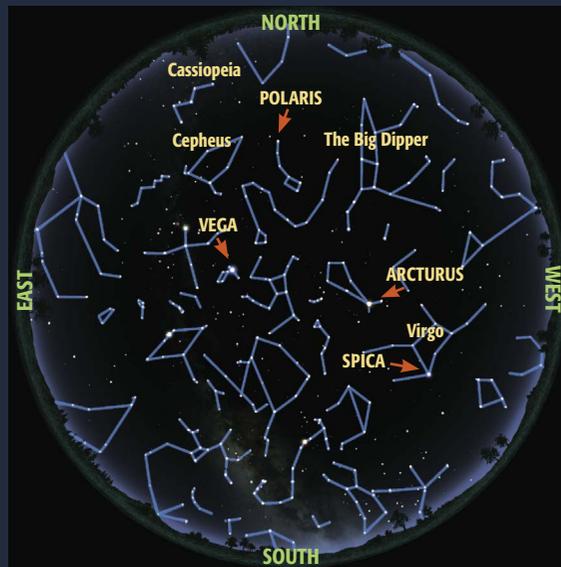
The season's most popular stargazing night is August 11–12, when the **PERSEID METEORS** blaze across the sky. Usually, on a clear night, one meteor per minute can be seen after midnight. All are actually 50 to 100 miles overhead and all move at exactly 37 miles per second.

Moonless nights in summer offer the year's best views of the thickest part of our galaxy, the **MILKY WAY**. In dark, rural regions, it dominates the sky. Look for a hazy, white band of light, with the brightest portion near the southern horizon.

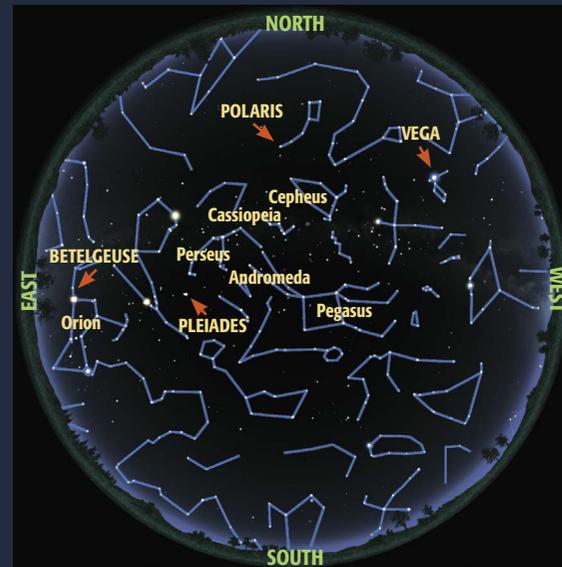
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NASA's Hubble Space Telescope, Spitzer Space Telescope, and Chandra X-ray Observatory produced this image of our Milky Way Galaxy, the center of which is the light at the right. The bright white light at the left is an X-ray binary star.



SUMMER CONSTELLATIONS



AUTUMN CONSTELLATIONS

Autumn

Can you name the most distant object visible to the naked eye? It's the **ANDROMEDA GALAXY**. About 2.5 million light-years away, it appears as a faint oval blob, almost directly above much of the United States and Canada. The glow that we see comes from 1 trillion stars.

The constellations **PERSEUS**, **PEGASUS**, **ANDROMEDA**, **CEPHEUS**, and **CASSIOPEIA** all appear on high now, yet none contains a first-magnitude star. Most of the stars of these famous legends in Greek mythology are of medium or fainter brightness.

The most famous star cluster is the **PLEIADES**, or Seven Sisters, but who's counting? Average eyesight sees six stars. Superb vision reveals 8 to 11 stars. Nobody sees exactly seven. No matter. This concentration of young blue stars is the finest sight through binoculars in all of the heavens.

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Star Light,

HOW BRIGHT?

Star brightness is called magnitude. The lower the magnitude number, the brighter the star. On a clear night, away from city lights and with binoculars, we can see stars that are a faint magnitude 6 or 7. On a clear night in a city or suburb, we can see stars of magnitude 2, 3, or 4 with the naked eye. **HERE ARE SOME RELATIVE EXAMPLES:**



YOU CAN SEE . . .	MAGNITUDE	WITH . . .
Sun	-26	eye protection; viewing not recommended without it
full Moon	-13	naked eye
crescent Moon	-6	naked eye
Venus	-4	naked eye
Jupiter	-2	naked eye
Sirius (star)	-1	naked eye
Vega (star)	0	naked eye
Saturn	+1	naked eye (best in dark, rural areas)
Big Dipper (stars)	+2	naked eye
Andromeda Galaxy	+3 or +4	naked eye
moons of Jupiter	+5	binoculars
Uranus	+6	binoculars
bright asteroids	+7	binoculars
Neptune	+8	telescope
some comets	+10 to +13	telescope
Pluto, at its brightest	+14	telescope