# Summer Solstice Celestial Calendar 2019

## Saturn
- **Evening Sky:** July - December
- **Morning Sky:** February - July
- **Opposition:** July 9

## Mars
- **Evening Sky:** January - June
- **Morning Sky:** October - December

## Perseid Meteor Shower
- Up to 60 meteors per hour will appear to radiate from the constellation Perseus.

## Venus
- **Evening Sky:** January - June
- **Morning Sky:** October - December
- **Greatest Eastern Elongation:** January 6

## Deep Sky Checklist
- **Spring:**
  - Beehive Cluster (M44)
  - Leo Triplet Galaxies (M65, M66, & NGC 3628)
  - Whirlpool Galaxy (M51)
  - Bode Galaxy (M81)
  - Cigar Galaxy (M82)
  - Double Star, Mizar & Alcor
  - Sombrero Galaxy (M104)
  - Globular Cluster (M3)
- **Summer:**
  - Milky Way
  - Hercules Cluster (M13)
  - Ring Nebula (M57)
  - Lagoon Nebula (M8)
  - Trifid Nebula (M20)
  - Sagittarius Cluster (M22)
  - Eagle Nebula (M16)
  - Omega Nebula (M17)
  - Dumbbell Nebula (M27)
  - Abell Double Star
  - Wild Duck Cluster (M11)
- **Autumn:**
  - Andromeda Galaxy (M31)
  - Double Cluster (NGC 885, NGC 888)
  - Globular Cluster (M15)
- **Winter:**
  - Orion Nebula (M42)
  - Pleiades Cluster (M45)
  - Beehive Cluster (M44)
  - Auriga Open Clusters (M35, M38, M36)
  - Lupus Globular Cluster (M16)
  - Hyades Cluster

## Total Lunar Eclipse
- The moon will pass completely through the Earth's shadow, or umbra, and turn a rusty red color during totality.

## Conjunction of Venus and Jupiter
- The two bright planets will appear within 2.4 degrees of each other in the eastern sky just before sunrise.

## Conjunction of Venus and Saturn
- The ringed planet has a close encounter with Venus, within 1.1 degrees. Look to the southeast before sunrise.

## Harvest Moon
- The full Moon closest to the autumnal equinox is called the Harvest Moon. Take a look at the yellowish-orange Moon low in the sky after sunset.

## Mars Passes Near Pleiades
- Mars and the Pleiades Star Cluster will appear close to one another in the night sky.

## Seasonal Blue Moon
- The Moon is not really blue. This phrase refers to two Full Moons that occur in the same season.

## Jupiter at Opposition
- It's the best night of the year to view Jupiter, which will be at its very brightest and visible all night.

## Total Solar Eclipse
- Day turns to night for observers in parts of the southern Pacific Ocean, central Chile, and central Argentina.

## Partial Solar Eclipse
- A portion of the Moon will darken during this partial eclipse. Viewable in Europe, Africa, central Asia, and the Indian Ocean.

## Venus Transit of the Sun
- Mercury's small, dark disk will appear to move across the solar disk. Approved solar glasses or telescope filters are required during the entire transit.

## Geminids Meteor Shower
- The biggest shower of the year can produce up to 120 meteors per hour. This year, observers will see fewer meteors due to a bright Moon.

## MERCURY TRANSIT OF THE SUN
- Even closer than their first conjunction in January, Venus and Jupiter appear within 1.4 degrees of one another in the western sky after sunset.

## Supermoon
- The Moon will be at its closest approach to Earth and will look slightly larger and brighter than normal.

## Winter Solstice
- **Northern Hemisphere:** December 21
- **Southern Hemisphere:** June 21

## Summer Solstice
- **Northern Hemisphere:** June 21
- **Southern Hemisphere:** December 21

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**Legend:**
- **JAN 21:** SUPERMOON
- **MAR 21:** SUPERMOON
- **FEB 18:** SUPERMOON
- **FEB 19:** SUPERMOON
- **JUN 10:** JUPITER AT OPPOSITION
- **JUL 2:** TOTAL SOLAR ECLIPSE
- **JUL 9:** SATURN AT OPPOSITION
- **JUL 16:** PARTIAL LUNAR ECLIPSE
- **JUL 23:** CONJUNCTION OF VENUS AND JUPITER
- **AUG 12/13:** GEMINIDS METEOR SHOWER
- **SEP 14:** HARVEST MOON
- **NOV 11:** MERCURY AT OPPOSITION
- **NOV 24:** CONJUNCTION OF VENUS AND JUPITER
- **DEC 13/14:** GEMINIDS METEOR SHOWER
- **DEC 26:** SUPERMOON

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**Celestial Events:**
- **Total Solar Eclipse:** June 21
- **Partial Solar Eclipse:** December 21
- **Supermoon:** January 20/21, January 22
- **Total Lunar Eclipse:** January 20/21, January 22
- **Conjunction of Venus and Jupiter:** Winter Solstice
- **Conjunction of Venus and Saturn:** Winter Solstice
- **Supermoon:** March 21
- **Conjunction of Venus and Jupiter:** Summer Solstice
- **Conjunction of Venus and Saturn:** Summer Solstice
- **Supermoon:** February 19
- **Summer Solstice:** June 21
- **Winter Solstice:** December 21
- **Harvest Moon:** September 14
- **Mars Passes Near Pleiades:** Late March
- **Perseid Meteor Shower:** August 12/13
- **Seasonal Blue Moon:** May 18
- **Geminids Meteor Shower:** December 13/14
- **Mercury Transit of the Sun:** November 11
- **Jupiter Transit of the Sun:** November 24
- **Annular Solar Eclipse:** December 26
- **Annular Solar Eclipse:** November 24