

10:00 pm on January 1  
 9:00 pm on January 15  
 8:00 pm on February 1

**To use this chart:** hold the chart in front of you and turn it so the direction you are facing is at the bottom of the chart.

- **Bright Stars**
- **Medium Bright Stars**
- **Faint Stars**

**Scan dark skies with binoculars:**

- M-31: The Andromeda Galaxy
- M-42: The Orion Nebula
- M-45: Pleiades open star cluster

Winter is here! It may not feel like it yet, but the days are now getting longer and the nights shorter. This will continue until the first day of summer on June 20.

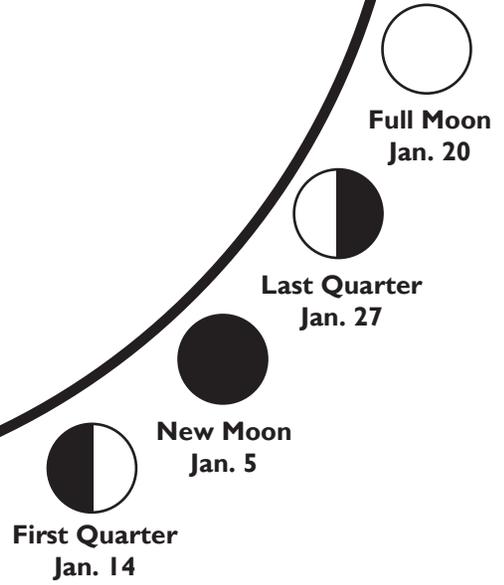
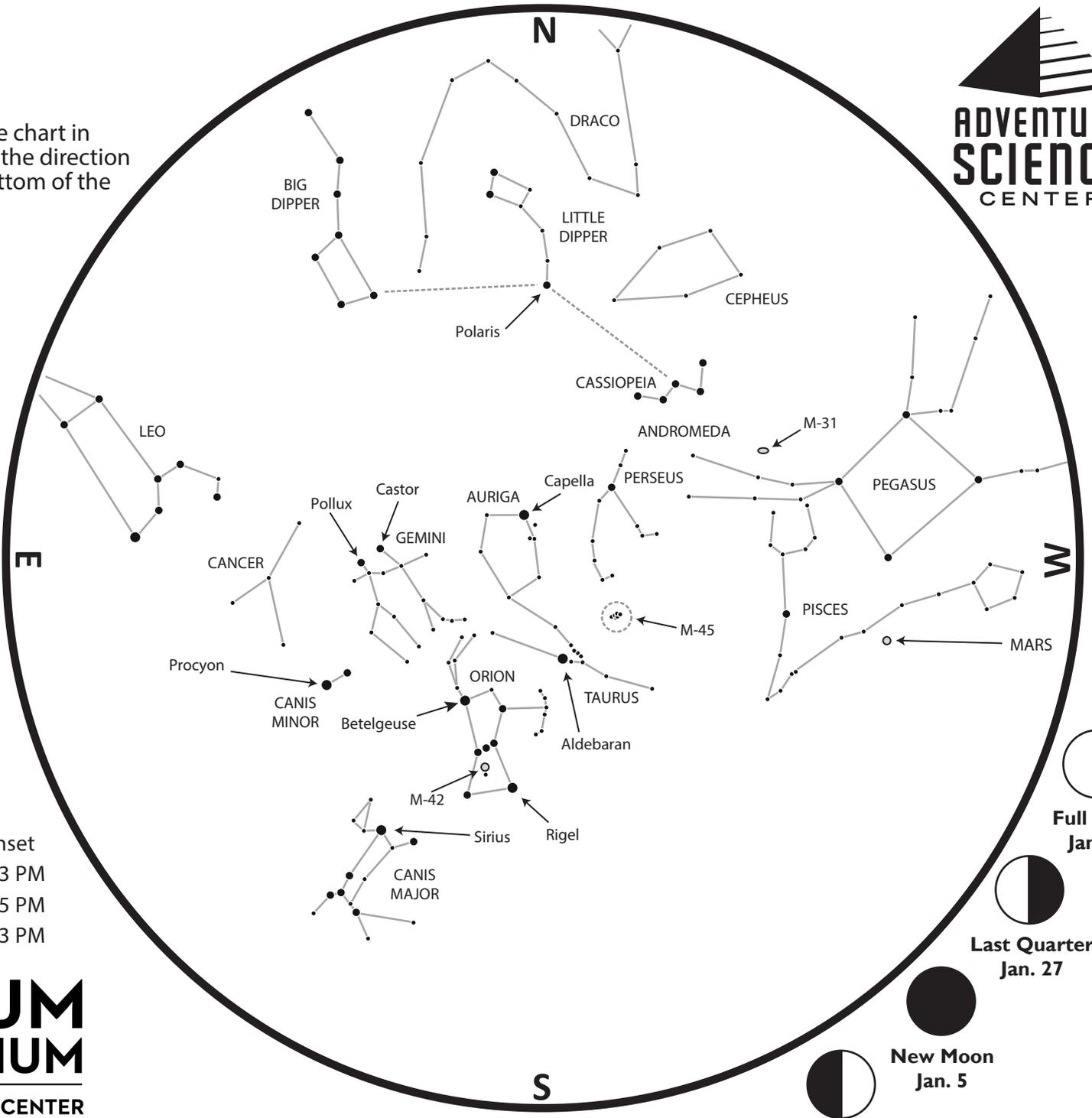
From Nashville:

	Sunrise	Sunset
Jan 1	6:58 AM	4:43 PM
Jan 15	6:58 AM	4:55 PM
Feb 1	6:49 AM	5:13 PM

## SUDEKUM PLANETARIUM

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# JANUARY 2019

## After Sunset

Look high in the west for the **Great Square of Pegasus**. The square marks the body of **Pegasus the Flying Horse**. Under dark skies, you might also see the horse's neck, head, and front legs. The star at the corner of the square lying opposite the horse's head is called **Alpheratz**, "the navel of the mare". However, Alpheratz actually belongs to the constellation **Andromeda the Princess**.

As you face Pegasus in the west, look slightly to the left for red planet **Mars**. Look for a crescent **Moon** near Mars on the evening of January 12.

For much of the year, we use the stars of the **Big Dipper** to help us find **Polaris**, the **North Star**. However, the Big Dipper is harder to find in the early evening hours this time of year. It appears very low to the northern horizon after sunset. Some of its stars even set below the horizon from our latitude in Tennessee. You'll have to wait until 10 or 11 at night to see it all.

Fortunately, another group of stars can help us find our way. Look for a group of five stars known as **Cassiopeia the Queen**. When the Big Dipper is low to the horizon, Cassiopeia is high in the north. The central peak of this constellation's W-shape also points you in the direction of **Polaris**.

**Polaris** is not a particularly bright star, but it does remain fixed in the sky throughout the night and throughout the year. When you face the North Star, you're facing due north. **Polaris** is at the end of the handle of the **Little Dipper**. This group of stars is officially known as **Ursa Minor the Little Bear**.

High in the east, you can find the bright stars of the winter evening sky. The most famous and easily found constellation is **Orion the Hunter**. Look for the three stars in a straight line that mark his belt, the two stars that mark his shoulders, and the two stars of his feet. **Betelgeuse**, one of his shoulder stars, is distinctly red in color. Learn to find Orion, and he can direct you to many other sights of the winter sky.

Follow the line made by the three stars of Orion's belt up and to the right to find **Aldebaran**, the bright orange star marking the eye of **Taurus the Bull**. Follow the line down and to the left to find the brightest star in the night sky. **Sirius**, sometimes called the 'dog star', is part of **Canis Major the Big Dog**.

Other bright stars to look for are **Capella** in **Auriga the Charioteer**, **Procyon** in **Canis Minor the Small Dog**, and **Castor** and **Pollux** which mark the heads of **Gemini the Twins**. All of these stars can be found using Orion as a guide.

## A Look Ahead

As Earth orbits the Sun throughout the year, the constellations rise and set just a little bit earlier every day. You won't see much difference from night to night, but you will over the course of weeks or months. What we see in today's pre-dawn sky is a preview of the early evening sky in later months. Go out before dawn this month for a look ahead at the winter evening sky.

Just before dawn, our winter constellations have set in the west. The Big Dipper is now nearly straight overhead. Just below it is famous springtime constellation **Leo the Lion**. Observers with clear southeastern horizons can spot **Jupiter** and **Venus** just before sunrise. These planets will be close to each other from the 22nd to the 25th. Watch for a thin crescent Moon between them on the 31st.

## Total Lunar Eclipse: January 20

On January 20, the Moon will slip into the shadow of the Earth in a **total lunar eclipse**. The last lunar eclipse visible from Tennessee was back in September 2015.

Partial eclipse begins: 9:33 pm CST  
Total eclipse begins: 10:41 pm CST  
Total eclipse ends: 11:43 pm CST  
Partial eclipse ends: 12:50 am CST

Please note: You may see web sites that list the lunar eclipse as occurring on January 21. That is correct in Universal, or Greenwich Mean Time. For the United States, the eclipse begins on the 20th.

A lunar eclipse occurs when the Moon moves through Earth's shadow. As the eclipse progresses we see more and more of Earth's shadow falling on the Moon's surface. As totality begins, the Moon will appear to change color to a coppery orange or deep red. This is caused by sunlight scattered through Earth's atmosphere onto the lunar surface. The exact color is affected by atmospheric conditions such as recent volcanic eruptions on Earth.

Lunar eclipses are perfectly safe to view, and you don't need any special equipment. All you really need to enjoy a lunar eclipse are your eyes and clear weather. You don't even have to watch the whole thing. Just go out and take a look, even if just for a few minutes.

## From Dark Skies

Bright outdoor lighting can make it hard to see all but the brightest stars. On a clear night, find a dark spot far away from city lights, give your eyes time to adjust to the dark, and look for even more celestial sights.

Winter nights are great for spotting the **Milky Way**, coursing from the southeast, high overhead through Cassiopeia, and on towards the northwest horizon.

The **Andromeda Galaxy**, or **M-31**, lies within the constellation of Andromeda. Try binoculars if you can't see it with your unaided eyes. That faint smudge in the sky is a massive galaxy composed of hundreds of billions of stars, two million light years away from us.

Just beneath the belt of Orion is a faint patch of light that marks the hunter's sword. This is **M-42**, the **Great Orion Nebula**. A small telescope can reveal the overall shape of the nebula. A quartet of young stars near the center are called the **Trapezium**. These stars formed out of the gas and dust of the nebula.

Don't have a telescope? Don't know where to find dark skies? The next free public star party hosted by the Barnard-Seyfert Astronomical Society is scheduled for Friday, January 11 from 6:30 to 8:30 at the **Bells Bend Outdoor Center**. Come observe Mars, the Andromeda Galaxy, the Orion Nebula, and more through telescopes provided by BSAS members.

Another star party, to observe the total lunar eclipse, is scheduled for January 20 from 8pm to midnight at **Warner Park Nature Center**. Dress warmly, in layers, for both events!

Visit the BSAS web site at [bsasnashville.com](http://bsasnashville.com) for details. If the weather is bad, the star party will be canceled. Make sure to check their web site for updates before making the trip to a star party, especially if the weather is iffy. On the BSAS web site you'll also find driving directions and a list of future events.

## This Month in the Sudekum Planetarium

### January 12: Second Saturday

4:30pm The Beatles  
5:30pm Beyoncé  
6:30pm Fulldome Feature:  
Sakanaction: Goodnight Planetarium  
7:30pm Michael Jackson  
8:30pm Queen  
9:30pm Beyoncé

### January 26

9:00am Yoga Under the Stars



Full schedule at  
[adventuresci.org/sudekum-planetarium](http://adventuresci.org/sudekum-planetarium)

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