

Unit Challenge—Sun-Earth-Moon Calendar

You will complete this challenge at the end of the unit. Read the following introduction now and keep it in mind as you complete the unit's explorations.

Introduction to the Challenge

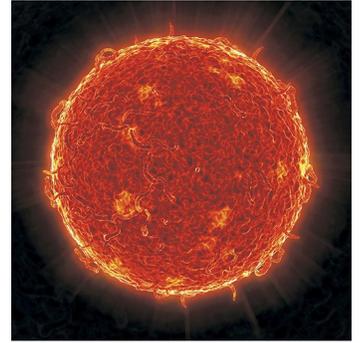
We often take our moon for granted. We watch it rise or set; we listen to songs about it; and we use its changing cycle as a basis for our calendar; the month, based on the word “moon.”

In this challenge, you will construct a wall calendar that will summarize your understanding of different aspects of the motions of the Sun-Earth-Moon system.

Your wall calendar will span 12 months, beginning with the month you start this unit. Each month will feature, in the area above the calendar dates, a decorative section that you will create to explain a particular event or phenomenon resulting from the relative positions of Earth, The Sun, and/or the Moon. At the bottom of each decorative section will be a caption that describes the causes of the picture event, the orientation of the three bodies, and the resulting appearance of the event as seen by humans on Earth.

In the calendar's lower section, which exhibits the days of the month, you will make annotations in calendar date spaces to note astronomical events and other data. Your teacher will provide you with a template for this section.

You will complete the challenge after you have done all the activities in this unit. A list of the general and specific requirements for each month will be given to you later in the unit.



JANUARY

The Sun's photosphere, bright disk, is visible for many hours during astronomical twilight. The Sun's corona is visible during total solar eclipses.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 New Moon 12:00 AM 12:00 AM	2 Waxing Crescent 12:00 AM 12:00 AM	3 First Quarter 12:00 AM 12:00 AM	4 Waxing Gibbous 12:00 AM 12:00 AM	5 Full Moon 12:00 AM 12:00 AM	6 Waning Gibbous 12:00 AM 12:00 AM	7 Last Quarter 12:00 AM 12:00 AM
8 New Moon 12:00 AM 12:00 AM	9 Waxing Crescent 12:00 AM 12:00 AM	10 First Quarter 12:00 AM 12:00 AM	11 Waxing Gibbous 12:00 AM 12:00 AM	12 Full Moon 12:00 AM 12:00 AM	13 Waning Gibbous 12:00 AM 12:00 AM	14 Last Quarter 12:00 AM 12:00 AM
15 New Moon 12:00 AM 12:00 AM	16 Waxing Crescent 12:00 AM 12:00 AM	17 First Quarter 12:00 AM 12:00 AM	18 Waxing Gibbous 12:00 AM 12:00 AM	19 Full Moon 12:00 AM 12:00 AM	20 Waning Gibbous 12:00 AM 12:00 AM	21 Last Quarter 12:00 AM 12:00 AM
22 New Moon 12:00 AM 12:00 AM	23 Waxing Crescent 12:00 AM 12:00 AM	24 First Quarter 12:00 AM 12:00 AM	25 Waxing Gibbous 12:00 AM 12:00 AM	26 Full Moon 12:00 AM 12:00 AM	27 Waning Gibbous 12:00 AM 12:00 AM	28 Last Quarter 12:00 AM 12:00 AM
29 New Moon 12:00 AM 12:00 AM	30 Waxing Crescent 12:00 AM 12:00 AM	31 First Quarter 12:00 AM 12:00 AM	1 Waxing Gibbous 12:00 AM 12:00 AM	2 Full Moon 12:00 AM 12:00 AM	3 Waning Gibbous 12:00 AM 12:00 AM	4 Last Quarter 12:00 AM 12:00 AM

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Our Local Neighborhood

Knowing about your neighborhood is important. You need to know street names, directions, and distances to find your way from one place to another. When you leave your neighborhood and travel to a location you are unfamiliar with, landmarks, distance, and direction become particularly important. Maps and sometimes models are used as aids for measuring distances and scales.

As you proceed in this part of the unit, keep the following essential question in mind:

How do important characteristics of the Sun, the Earth, and the Moon compare to one another?

First thoughts—Making Claims

As we begin, let's start with making some claims about what we think is true about the Sun, the Earth, and the Moon. I bet you're pretty confident about some of these questions already, but it's OK not to know the "answer" or to be unsure about a claim. Just use your best judgment.

1. Of the Sun, the Earth, and the Moon, which do you think is:
 - Hottest?
 - Coldest?
 - Biggest in diameter?
 - Smallest in diameter?
 - Most massive?
 - Least massive?
2. Which have rocky surfaces?
Which have liquid surfaces?
Which have gaseous surfaces?
3. Which have atmospheres?
4. Which is farther from the Earth?