



Solar eclipse sightings

Eclipses of the Sun and Moon occur in pairs. A solar eclipse occurs when the Moon passes between the Earth and the Sun and is aligned so that it blocks some or all of the Sun from our view. Approximately two weeks later the Moon has reached its full moon phase and will pass through some or all of the Earth's shadow. On February 26 and March 13, this year's first eclipse pair occurs. Both of the eclipses take place at times suitable for viewing across most of North and South America. Unfortunately, during the March lunar eclipse the Moon passes through only the outer portion of the Earth's fainter penumbral shadow, resulting in a virtually unnoticeable eclipse. On the other hand, the complimentary solar eclipse that precedes it will be more notable. However, it is dangerous to view the eclipse directly.

To view the eclipse safely, see the activity on page 43. As it sweeps across the Earth's surface, the Moon's shadow follows a path that starts over the Pacific Ocean, passes over the Galapagos Islands toward northern South America and many of the islands off its northern coast, and then moves out of the Earth's range over the eastern Atlantic Ocean. Viewing the solar eclipse in totality is limited to a very narrow band that falls within the width of the Moon's shadow, which is about 151 kilometers wide. A partial eclipse may be viewed from central South America up to southern California and diagonally northeastward across the United States to eastern Canada and southern Greenland. (See map above for eclipse path and times.) The eclipse occurs near midday,

when the eclipsed Sun will be close to its highest position over the horizon for that day. This will provide us with a good opportunity to view the last solar eclipse visible in North America until Christmas of the year 2000, and it will be a partial eclipse. Both solar and lunar eclipses have distinct phases. First contact begins the eclipse regardless of viewing location in relation to the eclipse viewing path. The closer the viewing location to the Moon's shadow, the greater the partial eclipse; conversely, the further the distance from the shadow, the lesser the partial eclipse. At the moment of maximum eclipse in Orlando, Florida, about 30 percent of the Sun will be covered by the Moon; in Washington, D.C., about 12 percent will be covered; and in Kansas City, only 8 percent. Nonetheless, for all these locations, viewing the eclipse indirectly will provide a good opportunity for a classroom astronomy activity.

Visible planets

- Mercury:** Visible low over western horizon after sunset during first half of March.
- Venus:** Visible over eastern horizon before sunrise.
- Saturn:** Visible over southwestern horizon after sunset; sets about an hour later.

Moon phases

- February*
- First Quarter - February 5
- Full Moon - February 12
- Last Quarter - February 20
- New Moon - February 28

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Solar eclipse viewing

Students should never view a solar eclipse directly. The following explains how to assemble a safe eclipse viewer.

Materials

- binoculars or small telescope
- tripod
- a box with white paper lining the bottom

Procedure

1. Secure your binoculars or telescope to a tripod or other fixed location.
2. Have one student hold the box in front of the eyepieces of the binoculars/telescope.
3. Ask another student to adjust the viewpiece until the Sun's image



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appears on the bottom of the box.
4. Have that same student adjust

the focus until the image appears sharp at the bottom of the box.



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