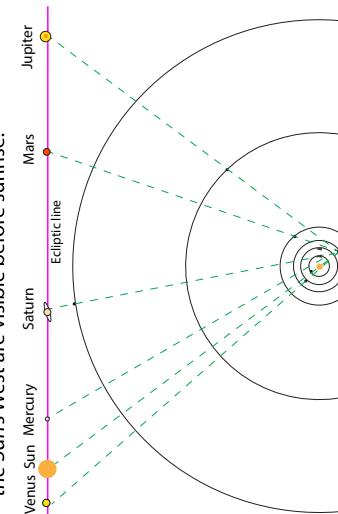


The best way to understand the night sky is through the classical idea of the ecliptic. Earth and the Planets orbit the Sun in nearly the same plane (the ecliptic plane). So we see the Sun, Moon, and Planets in nearly one line across the sky (the ecliptic). As the Earth rotates daily, the celestial sphere appears to rotate, and the Sun, Moon, and Planets rise and set in sequence along the ecliptic. The Sun and Planets move slowly along the ecliptic through the Zodiac constellations that divide it, with the planets' sequence and apparent motion based on where they are in their orbits. Due to the Earth's tilt, the ecliptic is tilted and the Sun crosses the celestial equator during spring and fall equinoxes in its annual cycle.

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The Ecliptic

Globetarium.com

Blood Moon Edition

Sun, Moon and
Planet Positions
January 21, 2018



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Frustum-shaped star minder, celestial sphere, pinpoint planetarium

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Blue Moon

Each orbit of the Moon around Earth takes only about 27 days. But because the Earth is orbiting the Sun and the Sun's relative position is moving, it takes about 30 days between full moons. Twelve such "moons" take only about 360 days, so to make 12 months fit evenly into a year, most months are longer than 30 days. As a result, and two full moons occasionally occur in the same month. The second one is called a "blue moon" though its color is unaffected.

Construction Instructions

- 1) Poke out holes for stars using a push-pin.
 - 2) Fold up along dashed lines.
 - 3) Tape together edges with clear tape.

Viewing Instructions

- 1) Look in from below to see constellations.
 - 2) In a small darkened room, shine cellphone light in from below to see stars on ceilings and walls.

Selected constellations, asterisms, and bright stars shown. Sun, Moon, and planets not to scale.

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As the Moon orbits the Earth, it passes between the Sun and Earth (new moon) and directly opposite the Sun (full moon). Each orbit it also crosses the ecliptic plane of the Sun and planets twice. When it crosses the ecliptic plane while opposite the Sun, Earth blocks the Sun and a lunar eclipse occurs. As the Earth blocks the Sun's light from hitting the moon directly, some light shines around the edges through Earth's atmosphere. The red light from these sunrises and sunsets all around the globe shines indirectly onto the moon, turning it red and creating a "blood moon". Unlike a solar eclipse which is visible only briefly along a narrow area on Earth, a lunar eclipse is visible from the whole side of the Earth facing the Moon. This January's eclipse will be best viewed from India where the Sun will set just before the eclipse.