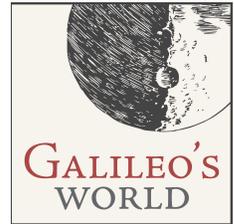


Introduction to the Celestial Globe: Celestial Equator

EXHIBIT: *Galileo's World*
GALLERY: Music of the Spheres; Controversy over the Comets;
The Sky at Night; Space Science after Galileo



1. On a celestial globe, find the celestial equator.
2. Trace the great circle of the celestial equator around the celestial globe. Identify the constellations that include the celestial equator.

Each day and night, the fixed stars rotate around the earth like a giant celestial sphere.

3. Find the North Star (*Polaris*), which is the end of the Little Dipper, and the tail of *Ursa Minor*, the Little Bear.



Circumpolar stars are stars which remain above the horizon in the north. They turn in circles around the north celestial pole all night long, without setting beneath the horizon.

Stars that are not circumpolar rise in the east and set in the west, just like the Sun. Perpendicular to the north celestial pole is the celestial equator, which lies directly above any observer located on the equator of the Earth. In their daily or diurnal motion, stars located on the celestial equator rise due east and set due west as seen from anywhere on Earth.

4. Does the celestial equator always intersect the horizon at due east and due west?
5. On a celestial globe, find **Mintaka**, the top star of Orion's belt.

Does Mintaka rise straight east on the horizon, and set straight west on the horizon, at your location, at any time of the year?

The Earth's equator, projected into the sky as the celestial equator, is marked off in "hours" and "minutes" of "**Right Ascension**," corresponding to terrestrial longitude.

The Earth's latitude circles are projected into the sky as circles of "**Declination**," measured in degrees north or south of the celestial equator.

6. *How many "hours" of Right Ascension are marked off along the celestial equator?*

By convention, the starting point for marking off the celestial equator, or 0 hours of right ascension, is a point on the celestial equator called the vernal or March equinox.

7. *Which constellation contains the March equinox, according to the celestial globe?*

8. *On a celestial globe, find the constellation Orion the Hunter. Examine his belt, and identify the star Mintaka.*

What is the Right Ascension of Mintaka?

What is the Declination of Mintaka?

9. *On a celestial globe, find the constellation Ursa Major the Big Bear, which contains the asterism the Big Dipper. The two stars that make up the pouring side of the Big Dipper point to Polaris, the North star. Trace from the Big Dipper to find Polaris.*

What is the Right Ascension of the pointer stars of the Big Dipper?

What is their Declination?

What is the Declination of the north celestial pole?

Why is it meaningless to speak of a Right Ascension of the north celestial pole?

See also the Introduction to Diurnal Motion, and how to use a Nocturnal Dial as a star clock.

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