

1.5: Predicting These Motions

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A sundial located in the Forbidden City, Beijing, China. Construction of the Forbidden City lasted from 1406 to 1420. [” Beijing sundial ” by Sputnikcccp~commonswiki , licensed under [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/)]

People would use simple markers and sundials in ancient times to determine the time. These devices worked due to the Sun’s position in the sky, relative to the individual. A rod, known as a gnomon, projected a shadow onto a base or plate.

The time of day, or night, was also important to sailors and their navigation. Carrying a sundial on a rocking, moving ship was virtually impossible; other methods were required.

Today, finding out the exact time is easy; from depending on our smartphones to computers, watches and clocks, television and radio. But, what about sunrise and sunset times? Those sunrise and sunset times will vary, depending on where you are on Earth.

One of the most-reliable sites for not only the exact time but other important astronomical data is the United States Naval Observatory, USNO. This observatory was established in 1825 with the original mission of instrument calibration and repair. Establishing precise time, necessary for navigation, became another mission for the USNO. Since those early days, the USNO has been charged with a variety of activities. The two moons of Mars, Phobos and Deimos, were discovered at the USNO. ⁽¹⁾



The United State Naval Observatory was first established in 1825 by Congress with President John Quincy Adams encouragement and then signature on the bill. [” [USNO Logo](#) ” by USNO is in the [Public Domain](#)]
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