



AN EARTH-BASED TOUR OF THE MOON

A quick look at the Moon in the night sky (even without binoculars) shows light areas and dark, somewhat circular areas. These different features record our Moon's history. Can you find them?


Where you see  means that the feature is smaller and you will need binoculars or a telescope.

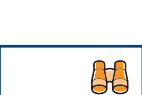

 **Sea of Rains (Mare Imbrium)** — Imbrium Basin, one of the largest impact basins on the Moon, formed when a giant impactor hit the lunar surface a little more than 3.8 billion years ago. Floods of lava filled the basin floor 500 million years later. This cooled to form a dark, fine-grained igneous rock — basalt — creating the dark, smooth surface (mare).



  **Apennine Mountains** — The lunar surface is punctuated by mountain ranges — the uplifted rims of impact basins. Apollo 15 astronauts worked in the shadow of Mount Hadley, one of the peaks of the Apennine Mountains that form the rim of Imbrium Basin. Mount Hadley is almost 3 miles (4.5 km) high!

 **Sea of Serenity (Mare Serenitatis)** — Apollo 17 astronauts sampled some of the oldest rocks on the Moon from the basin walls surrounding the Sea of Serenity. These ancient rocks formed in the Moon's magma ocean 4.5 billion years ago. They were exposed at the lunar surface when a giant impactor struck the Moon 3.9 billion years ago, forming Serenitatis Basin.

 **Sea of Tranquility (Mare Tranquillitatis)** — This 500-mile-wide (800 kilometer) basalt lava plain is the site of the Apollo 11 landing in 1969. It infills an ancient basin, created when a giant impactor struck the Moon more than 3.8 billion years ago.

 **Lunar Highlands** — The brighter, whiter regions on the Moon are the lunar highlands. These are the oldest crust of the Moon; they formed from the magma ocean. Because they are so old, they have been hit by impactors many more times than the dark, smooth basalt plains (maria), making the highlands very rough.

  **Copernicus Crater** — A small, bright circle south of Imbrium Basin, with rays spreading up to 500 miles (800 km) in all directions, marks Copernicus Crater. Its sharp rays and crisp rim suggest Copernicus is geologically young; rocks suspected to have been formed by the impact have been dated to be 800 million years old.

  **Tycho Crater** — A bright star of material stands out on the light-colored lunar highlands of the Moon's southern hemisphere. This is Tycho Crater, a 53-mile-wide (85 km) crater with ejecta rays stretching over 1200 miles (2000 km) north to the Apollo 17 landing site. The astronauts may have sampled some of the ejecta from Tycho; the ages of the rocks suggest the crater formed about 110 million years ago.

How many features can you identify on a clear night?

