

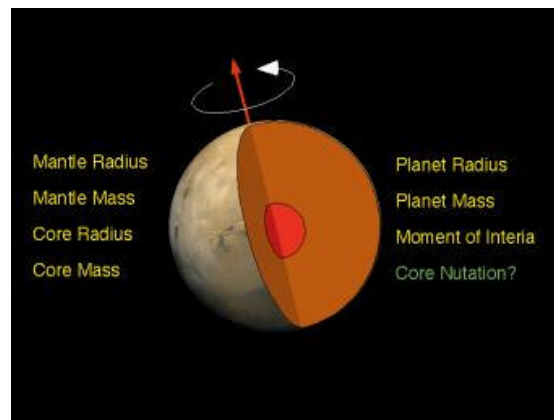
## Mars as a Solar System Body

### Place in the Solar System

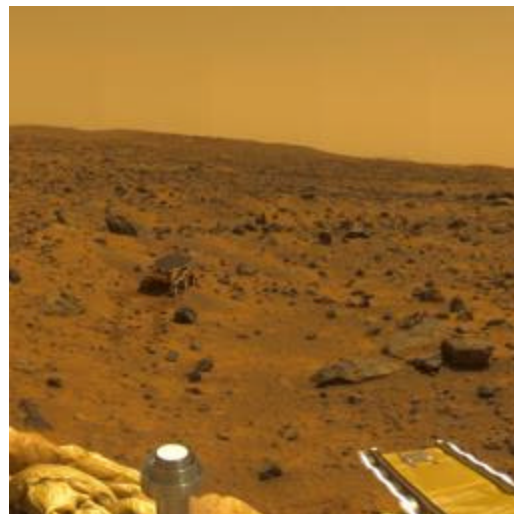
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Mars has a mass of  $6.4 \times 10^{23}$  kg, or about 100 times less than the mass of Earth. It has a diameter of 6,000 km, or about half that of Earth. The surface area of Mars is about the same as the land area of Earth. There is no evidence of current plate tectonic activity or active volcanism on Mars, although there is evidence to suggest that such phenomena have been present in the past. Mars is made of an inner core with a 1700 km radius, a molten mantle, and a very thin crust that ranges from 80 km to 30 km thick in places. The planet is made mostly of iron. In fact, iron oxide (rust) on the surface of Mars is what

makes the so-called “Red Planet” appear red.

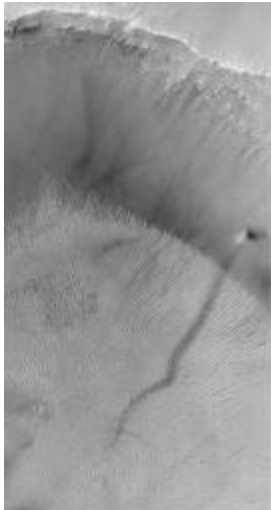


The interior of Mars. NASA/JPL.



The surface of Mars. NASA/JPL.

Because Mars is not very massive, it can retain only a thin atmosphere of mostly carbon dioxide. Carbon dioxide makes up 95.3 percent of the atmosphere, while nitrogen at 2.7 percent, argon at 1.6 percent, oxygen at 0.15 percent, and water at 0.03 percent make up the remainder. The carbon dioxide on Mars does produce a small greenhouse effect that raises the temperature on the planet about five degrees. The atmosphere is thick enough to produce very large dust storms that can be seen from Earth.



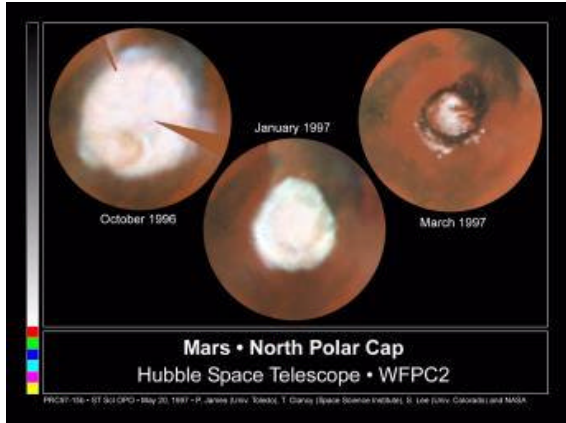
A dust devil on Mars, taken by the Mars Global Surveyor. NASA/JPL.



A Martian sunset, taken by the Imager for Mars Pathfinder. NASA/JPL.

The red and blue colors in this Martian sunset are caused by absorption and scattering of light by dust in the atmosphere.

Mars also has ice caps on both its north and south poles. The ice caps grow and shrink with the seasons, and they are made of both carbon dioxide ice (“dry ice”) and water ice. The ice caps can be seen from Earth.



Martian North Polar Cap. NASA/JPL.

**The Benchmark Lessons were developed with the help of the following sources:**

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College of Education, University of Texas at Austin,  
<http://www.edb.utexas.edu/missiontomars/index.html>  
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Project funded by the Center for Instructional Technologies,  
University of Texas at Austin

