

Mars: The basics

Mars is the fourth planet from the Sun. It is one of the four small terrestrial planets of the inner solar system, along with Mercury, Venus, and Earth.

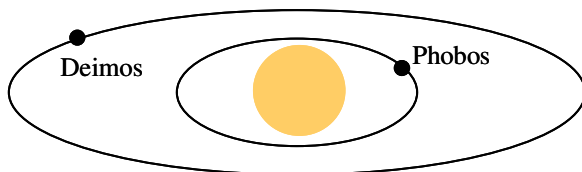
Of all the planets in the solar system, Mars is considered to be the most Earth-like. In part, this is why Mars has been the subject of great popular and scientific interest. Mars is the only solid body, other than the Moon, for which surface details can be seen from Earth through telescopes – even through the smaller telescopes used by amateur astronomers.

The diameter of Mars is about half the diameter of Earth. In terms of volume, Mars is only about 15 percent the size of Earth. Only Mercury and Pluto are smaller planets than Mars. The total surface area of Mars is about the same as the surface area of the land mass of Earth. Mars has no oceans, lakes, or rivers.

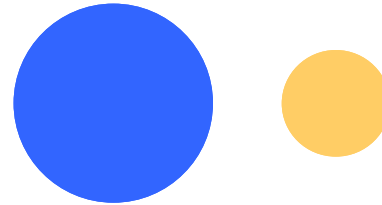
A day on Mars is only slightly longer than on Earth. Mars rotates on its axis once every 24 hours and 37 minutes. The axis of Mars is tilted at 25.2 degrees, which is almost the same as the 23.5 degree tilt of Earth's axis. The tilt of the axis causes seasonal changes on Mars as it moves in its orbit around the Sun.

A year on Mars is nearly twice as long as on Earth. It takes 686 Earth days for Mars to travel around the Sun once.

Like Earth, Mars also has an atmosphere. However, unlike Earth the Martian atmosphere is nearly all carbon dioxide (95 percent) and is much thinner. The surface atmospheric pressure on Mars is less than one-hundredth the surface pressure on Earth. In spite of the



Mars has two moons, which are probably captured asteroids. Deimos is about 12.6 kilometres in diameter, and Phobos is about 22.2 kilometres in diameter. Phobos is slowly falling towards the planet, and may crash into Mars in about 50 million years.



Earth has a diameter of 12,756 kilometres, whereas Mars has a diameter of 6,787 kilometres.

relatively thin atmosphere, strong winds can develop on Mars, and these winds can produce planet-wide dust storms, which can last for months. The surface temperature on Mars ranges from -133 to $+27$ degrees Celsius, with an average temperature of about -55 degrees Celsius.

Geologically, Mars has many interesting features. Mars has the largest volcano in the solar system, Olympus Mons. Mars also has a huge canyon system, which spans over 4,000 kilometres and is 7 to 8 kilometres deep in places. The northern half of Mars is relatively smooth, and has lower overall elevation, compared to the planet's southern half, which is more rugged and heavily cratered.

Mars has a distinctive orange colour. This is due to the oxidized iron in the Martian soil, and this soil is well distributed over the planet by global dust storms.

Mars has north and south polar caps. These caps consist of frozen water covered with frozen carbon dioxide, which is also known as dry ice. The polar caps change in size over the course of a year as the carbon dioxide changes between ice and gas forms.

Scientists believe Mars has lots of water, but the vast majority is frozen in the ice caps and beneath the soil surface, with a very small amount as gas in the atmosphere. However, there is considerable photographic evidence that liquid water did flow on the surface of Mars in the distant past – two or more billion years ago. If liquid water did exist on Mars at one time, then there is a possibility that life may have started on Mars. However, today Mars is a cold, barren desert, with very little chance that the surface can support life as we know it.

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