

Module 4: Astronomy – The Solar System

Topic 3 Content: The Terrestrial Planets Notes

Introduction

The Terrestrial Planets

Introduction

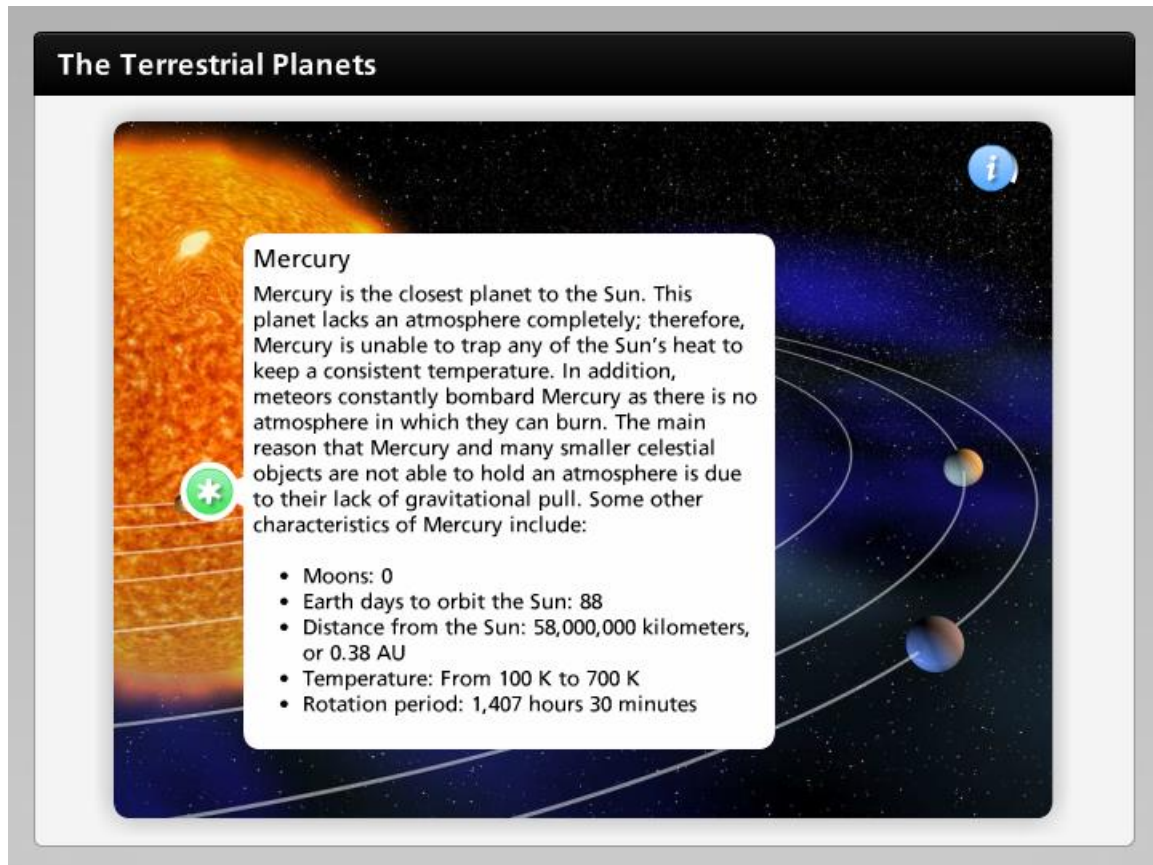
The four planets closest to the Sun are called "the terrestrial planets." These inner planets are considered to be small and rocky. Although they are all rocky, their varying distances from the Sun create drastically different conditions on each planet. Click on the circle icons next to each planet to learn more about the terrestrial planets.

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Mercury



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Mercury

Mercury is the closest planet to the Sun. This planet lacks an atmosphere completely; therefore, Mercury is unable to trap any of the Sun's heat to keep a consistent temperature. In addition, meteors constantly bombard Mercury as there is no atmosphere in which they can burn. The main reason that Mercury and many smaller celestial objects are not able to hold an atmosphere is due to their lack of gravitational pull. Some other characteristics of Mercury include:

- Moons: 0
- Earth days to orbit the Sun: 88
- Distance from the Sun: 58,000,000 kilometers, or 0.38 AU
- Temperature: From 100 K to 700 K
- Rotation period: 1,407 hours 30 minutes

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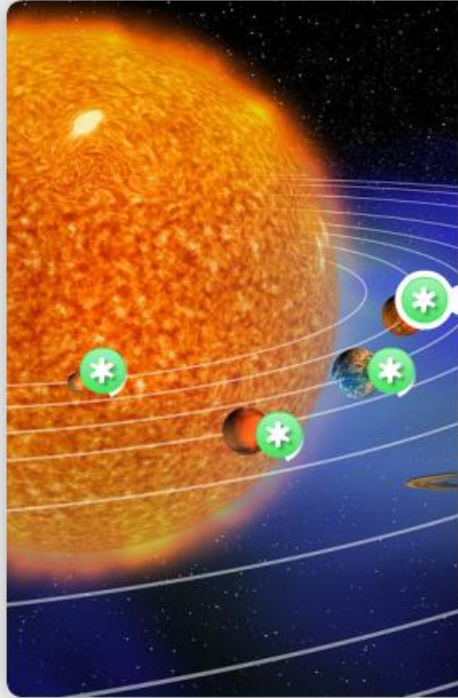
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Venus

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Venus

Venus has an atmosphere made mostly of carbon dioxide with a small portion of nitrogen and other trace elements. Due to this atmosphere of carbon dioxide, Venus has a “runaway” greenhouse effect. The gases that help to make up Venus’s atmosphere prevent the escape of radiation from the Sun after it has been reflected off of the surface of Venus. This makes the planet very hot. Also, the surface of Venus has extensive volcanic features which have been made by motions in the mantle of the planet, allowing a convection of lava to rise to the surface. Some other characteristics of Venus include:

- Moons: 0
- Earth days to orbit the Sun: 225
- Distance from the Sun: 108,000,000 kilometers, or 0.72 AU
- Temperature: Around 735 K
- Rotation period: 5,832 hours in a retrograde motion

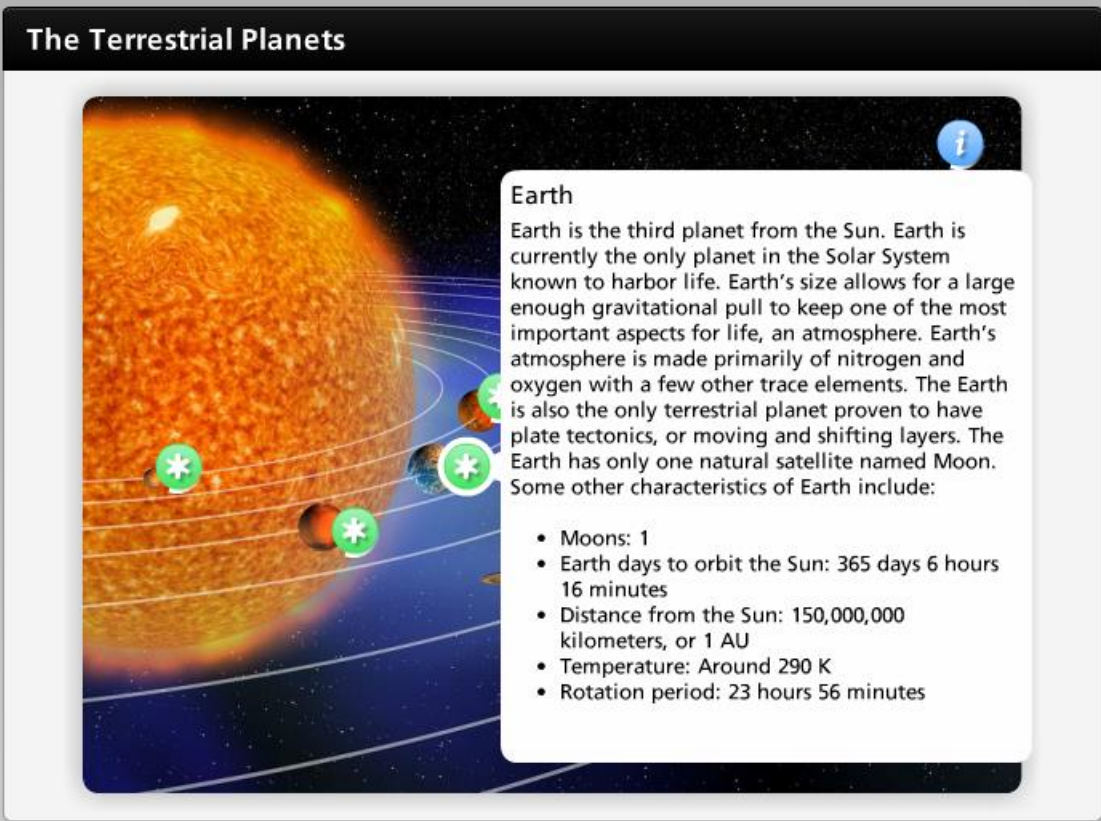
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Earth



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Earth is the third planet from the Sun. Earth is currently the only planet in the Solar System known to harbor life. Earth's size allows for a large enough gravitational pull to keep one of the most important aspects for life, an atmosphere. Earth's atmosphere is made primarily of nitrogen and oxygen with a few other trace elements. The Earth is also the only terrestrial planet proven to have plate tectonics, or moving and shifting layers. The Earth has only one natural satellite named Moon. Some other characteristics of Earth include:

- Moons: 1
- Earth days to orbit the Sun: 365 days 6 hours 16 minutes
- Distance from the Sun: 150,000,000 kilometers, or 1 AU
- Temperature: Around 290 K
- Rotation period: 23 hours 56 minutes

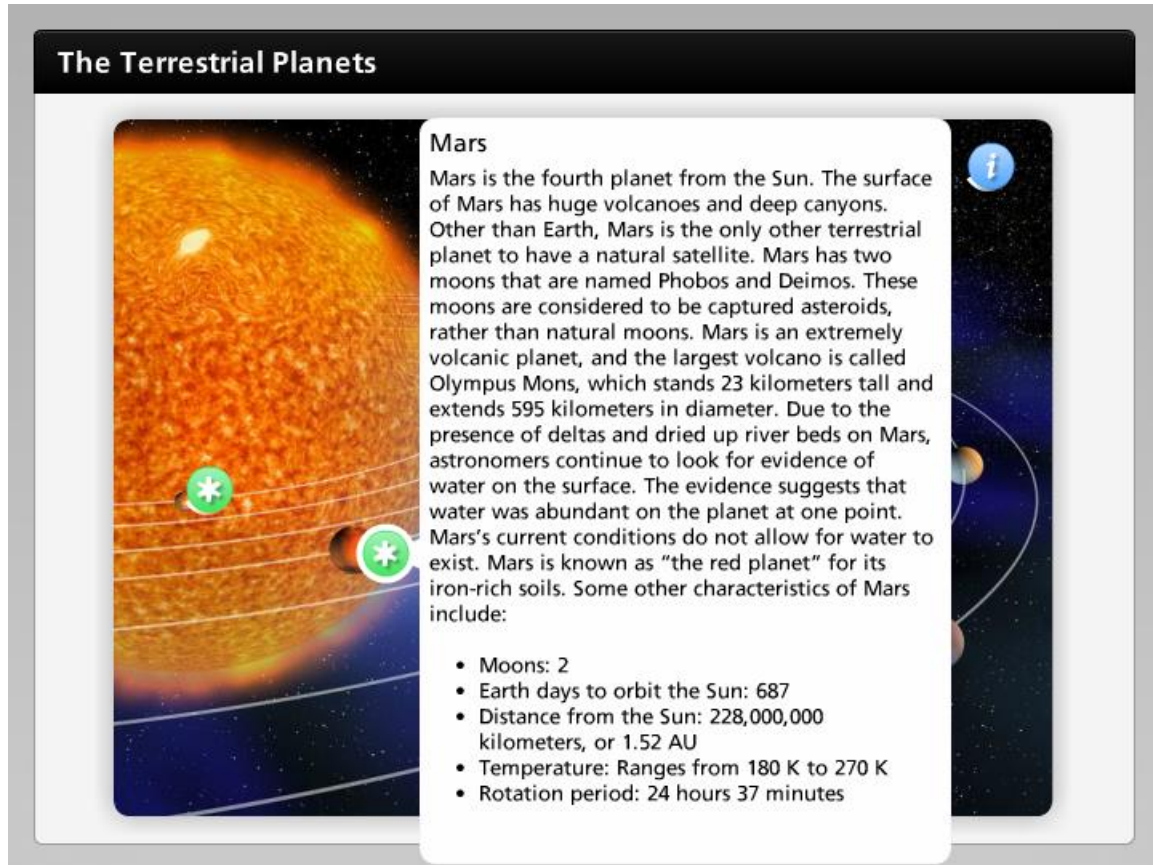
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Mars



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Mars

Mars is the fourth planet from the Sun. The surface of Mars has huge volcanoes and deep canyons. Other than Earth, Mars is the only other terrestrial planet to have a natural satellite. Mars has two moons that are named Phobos and Deimos. These moons are considered to be captured asteroids, rather than natural moons. Mars is an extremely volcanic planet, and the largest volcano is called Olympus Mons, which stands 23 kilometers tall and extends 595 kilometers in diameter. Due to the presence of deltas and dried up river beds on Mars, astronomers continue to look for evidence of water on the surface. The evidence suggests that water was abundant on the planet at one point. Mars's current conditions do not allow for water to exist. Mars is known as "the red planet" for its iron-rich soils. Some other characteristics of Mars include:

- Moons: 2
- Earth days to orbit the Sun: 687
- Distance from the Sun: 228,000,000 kilometers, or 1.52 AU
- Temperature: Ranges from 180 K to 270 K
- Rotation period: 24 hours 37 minutes

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