

## THIS IS A CLASS SET - PLEASE TAKE NOTES ON THE HANDOUT AND IN YOUR NOTEBOOK

### Venus

#### 1. Earth-Sized

Venus is only a little smaller than Earth. If the sun were as tall as a typical front door, the Earth and Venus would each be about the size of a nickel.

#### 2. Second Rock

Venus orbits our sun, a star. Venus is the second closest planet to the sun at a distance of about 108 million km (67 million miles) or 0.72 AU.

#### 3. A Day Longer Than a Year

One day on Venus (the time it takes for Venus to rotate or spin once with respect to the stars) lasts as long as 243 Earth days. One day-night cycle on Venus takes 117 Earth days because Venus rotates in the direction opposite of its orbital revolution around the Sun. Venus makes a complete orbit around the sun (a year in Venusian time) in 225 Earth days or slightly less than 2 Venusian day-night cycles.

#### 4. Rough Terrain

Venus is a rocky planet, also known as a terrestrial planet. Venus' solid surface is a cratered and volcanic landscape.

#### 5. Always Cloudy

Venus' thick and toxic atmosphere is made up mostly of carbon dioxide (CO<sub>2</sub>) and nitrogen (N<sub>2</sub>), with clouds of sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) droplets.

#### 6. Moonless

Venus has no moons.

#### 7. Ringless

There are no rings around Venus.

#### 8. Many Visitors

More than 40 spacecraft have explored Venus. The Magellan mission in the early 1990s mapped 98 percent of the planet's surface.

#### 9. No Place to Live

No evidence for life has been found on Venus. The planet's extreme high temperatures of almost 480 degrees Celsius (900 degrees Fahrenheit) make it seem an unlikely place for life as we know it.

## 10. Backspin

Venus spins backwards (retrograde rotation) when compared to the other planets. This means that the sun rises in the west and sets in the east on Venus.

Venus is the second planet from the sun and our closest planetary neighbor.

Similar in structure and size to Earth, Venus spins slowly in the opposite direction most planets do. Its thick atmosphere traps heat in a runaway greenhouse effect, making it the hottest planet in our solar system with surface temperatures hot enough to melt lead. Glimpses below the clouds reveal volcanoes and deformed mountains. Venus is named for the ancient Roman goddess of love and beauty, the counterpart to the Greek goddess Aphrodite.

From space, Venus is bright white because it is covered with clouds that reflect and scatter sunlight. At the surface, the rocks are different shades of grey, like rocks on Earth, but the thick atmosphere filters the sunlight so that everything would look orange if you were standing on Venus.

Venus has mountains, valleys, and tens of thousands of volcanoes. The highest mountain on Venus, Maxwell Montes, is 20,000 feet high (8.8 kilometers), similar to the highest mountain on Earth, Mount Everest. The landscape is dusty, and surface temperatures reach a scalding 880 degrees Fahrenheit (471 degrees Celsius).

It is thought that Venus was completely resurfaced by volcanic activity 300 to 500 million years ago. Venus has two large highland areas: Ishtar Terra, about the size of Australia, in the north polar region; and Aphrodite Terra, about the size of South America, straddling the equator and extending for almost 6,000 miles (10,000 kilometers). Venus is covered in craters, but none are smaller than 0.9 to 1.2 miles (1.5 to 2 kilometers) across. Small meteoroids burn up in the dense atmosphere, so only large meteoroids reach the surface and create impact craters.

Almost all the surface features of Venus are named for amazing Earth women. A volcanic crater is named for Sacajawea, the Native American woman who guided Lewis and Clark's exploration. A deep canyon is named for Diana, Roman goddess of the hunt.

## Atmosphere

Venus' atmosphere consists mainly of carbon dioxide, with clouds of sulfuric acid droplets. The thick atmosphere traps the sun's heat, resulting in surface temperatures higher than 880 degrees Fahrenheit (470 degrees Celsius). The atmosphere has many layers with different temperatures. At the level where the clouds are, about 30 miles up from the surface, it's about the same temperature as on the surface of the Earth.

As Venus moves forward in its solar orbit while slowly rotating backwards on its axis, the top level of clouds zips around the planet every four Earth days, driven by hurricane-force winds traveling at about 224 miles (360 kilometers) per hour. Atmospheric lightning bursts light up these quick-moving clouds. Speeds within the clouds decrease with cloud height, and at the surface are estimated to be just a few miles per hour.

On the ground, it would look like a very hazy, overcast day on Earth. And the atmosphere is so heavy it would feel like you were 1 mile (1.6 kilometers) deep underwater.