

PROFESSOR SMARTT'S GUIDE TO THE UNIVERSE

Presented by

smarttscience



ROCKY PLANETS

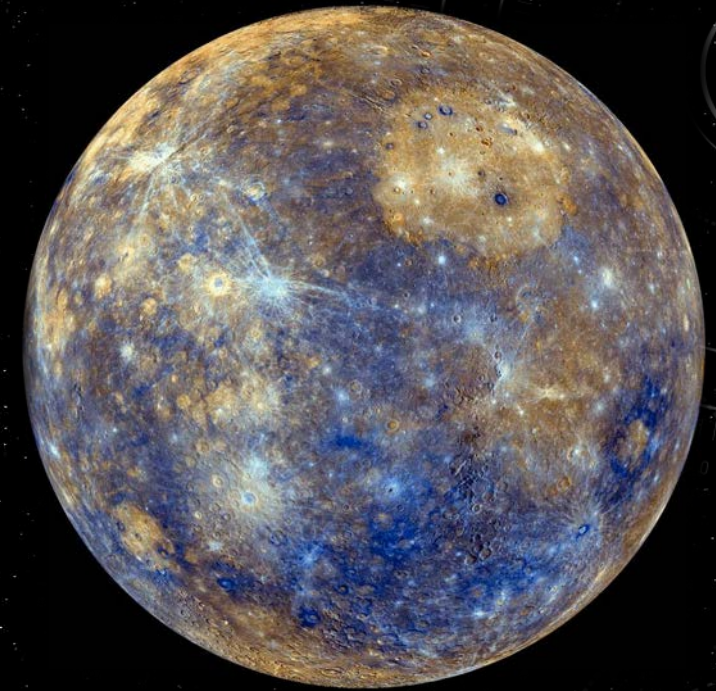
The four innermost planets of our Solar System are made up of rock, metals, water and ice.

Our planet, Earth, is the largest of them. All three other rocky planets can be seen from Earth by the naked eye.

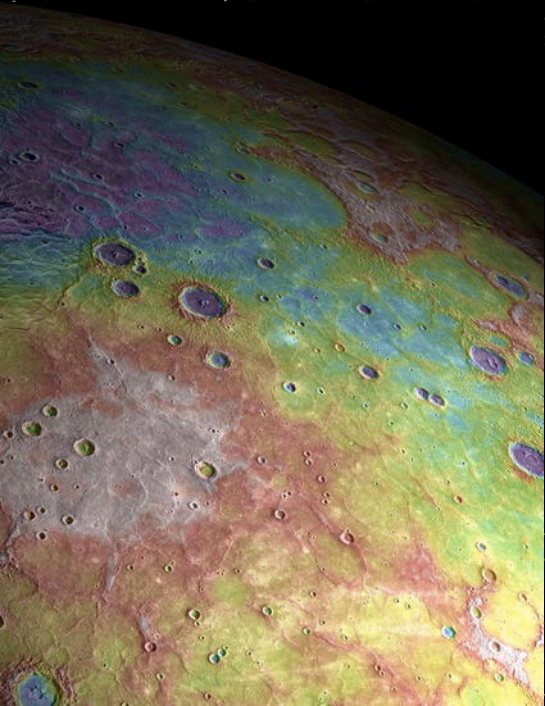


MERCURY

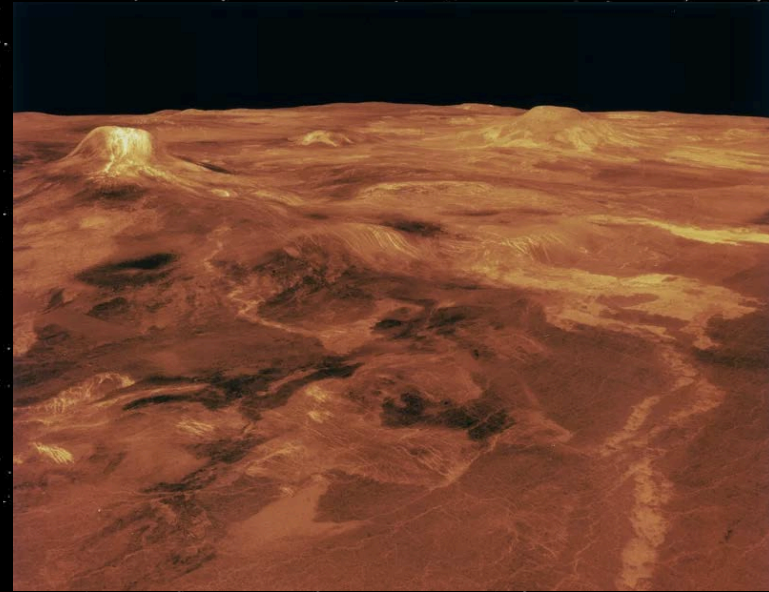
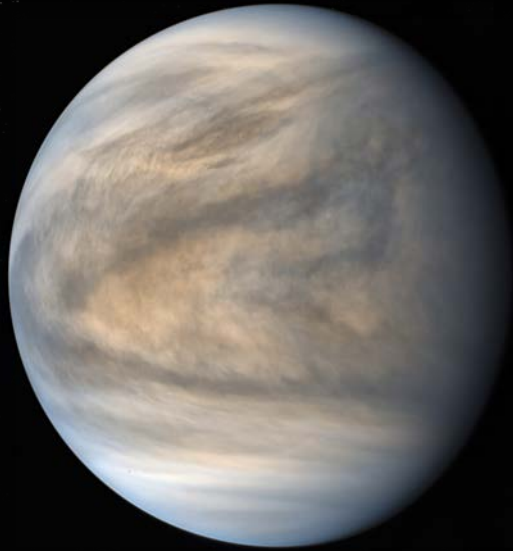
- Mercury is about as wide as the Atlantic Ocean, 18 times smaller than Earth.
- It is both hot and cold: 425°C on its day side and -175°C on its night side.
- It has such low gravity that you could jump three times as high as you can on Earth.
- It doesn't have any moons or natural satellites.



NASA/JHU-APL/CARNEGIE INSTITUTION OF WASHINGTON



VENUS



It was once thought that Venus was a tropical paradise, but was later found to be completely inhospitable. The atmosphere is mostly carbon dioxide, covered in a layer of clouds of **sulphuric acid**.

- Like Mercury, it also has no moons.
- You can see Venus in the night sky. It is the brightest object apart from the Moon.
- If you landed on Venus you would be poisoned by the atmosphere, squashed by the intense atmospheric pressure and burnt to a crisp by the temperature, around 460°C.

ACTIVITY

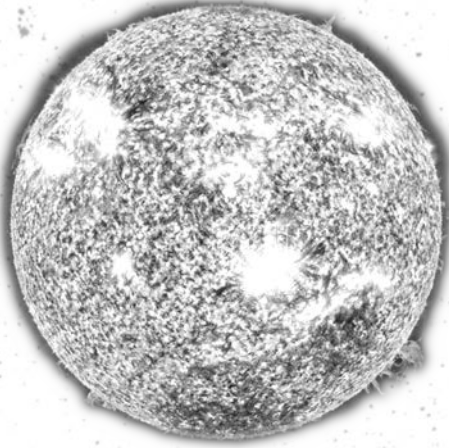
Draw the position of Mercury at four points in its orbit around the Sun.

Shade in the night side of the planet on each position.

Bonus activity:

List three reasons why life isn't likely to exist on Mercury or Venus.

HERE IS THE SUN. DRAW THE POSITION OF MERCURY AT FOUR POINTS IN ITS ORBIT AROUND THE SUN. AT EACH POSITION, LABEL THE NIGHT AND DAY SIDE BY SHADING IN THE DARK SIDE OF THE PLANET.



BONUS ACTIVITY: LIST THREE REASONS WHY THERE IS NO LIFE LIKELY TO EXIST ON MERCURY OR VENUS.

EARTH



Image Credit: NASA

Earth is the only known planet with water in **frozen, liquid and vapour** forms. It is the perfect distance from the Sun so the temperature is just right to support life. It is in what we call the **Goldilocks Zone**.

- Our planet is the largest rocky planet in the Solar System, and the only one known to support life.
- It was once thought to be the centre of the universe, with the Sun and planets orbiting it. It was also believed to be flat, which some (crazy) people still believe today!



NASA / Apollo 8

THE MOON

Our Moon is the only celestial body that mankind has visited. This was done in 1969, with less complex technology than that which is inside your mobile phone today!



Gregory H. Revera



- There have been 6 Moon landings in total, all American missions. 12 people have walked on the Moon's surface.
- No one has visited the Moon since 1972.
- The gravitational pull from the Moon controls the tides on Earth.

MARS

- Pieces of Mars have crash landed on Earth in the form of meteorites that have been ejected from the planet.
- There is water on Mars, but this has only been confirmed in ice form.
- Mars has no oxygen in the atmosphere, so we would have to wear space suits on the surface.
- The temperature varies a lot, but typically is -50°C .
- Mars' existence was first recorded by the ancient Egyptians.
- Mars has two small moons, Phobos and Deimos.

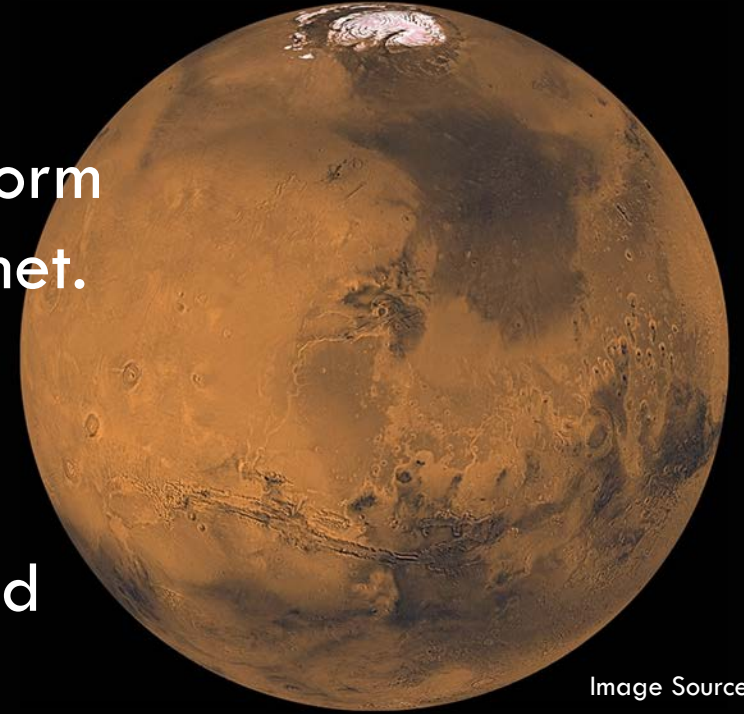


Image Source: NASA

CURIOSITY ROVER



Image Source: NASA

- In 2012, the Curiosity Rover landed on Mars with a mission:
 - To determine whether Mars could ever have supported life.
 - To help plan for a human mission to Mars.
- Though the mission was only supposed to last 98 days, Curiosity has been exploring the planet for 6 years! Ground control programmed him to sing Happy Birthday to himself on the 1st anniversary of landing.

ACTIVITY

Fill in the question sheet.

Rocky Planets

- What is the closest planet to the Sun?*
 - Mars
 - Venus
 - Mercury
- What planet is, on average, the hottest?*
 - Earth
 - Mercury
 - Venus
- True or False: We could breathe on the surface of Mars.*
 - True
 - False
- How many moons does Mercury have?*
 - 3
 - 43
 - None
- Number the planets 1-4, with 1 being the closest and 4 being the furthest from the Sun.*
 - Mars
 - Venus
 - Mercury
 - Earth
- Where is the Curiosity Rover currently exploring?*
 - Mars
 - Venus
 - The Moon
- Phobos is a moon belonging to which planet?*
 - Mercury
 - Venus
 - Mars
- What do we call the region where a planet is the perfect distance from its star, so as to allow water in ice, liquid and vapour forms, and make it a potential home for life?*
 - The Rapunzel Belt
 - The Cinderella Space
 - The Goldilocks Zone
- What is another name for our Moon?*
 - Luna
 - Sol
 - Deimos
- What is the largest rocky planet in our solar system?*
 - Venus
 - Earth
 - Mars

Score: / 10

BONUS ACTIVITY

As a class, come up with some questions about the Solar System and tweet them to Professor Smartt.

[@smarttscience](https://twitter.com/smarttscience)



Rocky Planets

1. What is the closest planet to the Sun?
 - a. Mars
 - b. Venus
 - c. Mercury
2. What planet is, on average, the hottest?
 - a. Earth
 - b. Mercury
 - c. Venus
3. True or False: We could breathe on the surface of Mars.
 - a. True
 - b. False
4. How many moons does Mercury have?
 - a. 3
 - b. 43
 - c. None
5. Number the planets 1-4, with 1 being the closest and 4 being the furthest from the Sun.
 - o Mars 4
 - o Venus 2
 - o Mercury 1
 - o Earth 3
6. Where is the Curiosity Rover currently exploring?
 - a. Mars
 - b. Venus
 - c. The Moon
7. Phobos is a moon belonging to which planet?
 - a. Mercury
 - b. Venus
 - c. Mars
8. What do we call the region where a planet is the perfect distance from its star, so as to allow water in ice, liquid and vapour forms, and make it a potential home for life?
 - a. The Rapunzel Belt
 - b. The Cinderella Space
 - c. The Goldilocks Zone
9. What is another name for our Moon?
 - a. Luna
 - b. Sol
 - c. Deimos
10. What is the largest rocky planet in our solar system?
 - a. Venus
 - b. Earth
 - c. Mars

Score: / 10