MERCURY

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1. Mercury is the **closest planet** to the Sun.
2. It is also the **smallest planet** in the solar system.
3. Its diameter is about **4,880 km**.
4. That's just a bit larger than Earth's Moon.
5. Mercury has **no moons**.
6. It is a **rocky, terrestrial planet**.
7. The surface is covered with **craters**, like the Moon.
8. Mercury has **no atmosphere** in the way Earth does.
9. Instead, it has a very **thin exosphere**.
10. This exosphere is made of atoms blasted off by the solar wind.
11. Mercury has **no weather** or seasons like Earth.
12. Temperatures are **extreme**.
13. Daytime can reach **430°C (800°F)**.
14. Nighttime can drop to **-180°C (-290°F)**.
15. This huge swing is due to the lack of atmosphere.
16. A **day on Mercury** (one rotation) lasts about **59 Earth days**.
17. A **year on Mercury** (one orbit) is only **88 Earth days**.
18. This means one Mercury year is less than one Mercury day!
19. The Sun looks **2–3 times larger** in Mercury's sky.
20. And the sunlight is up to **7 times brighter** than on Earth.
21. Mercury's **orbit is elliptical**, not circular.
22. It has the most **eccentric orbit** of all planets.
23. Mercury's orbit causes it to move faster when closer to the Sun.
24. Its **orbital speed** is about **47.9 km/s** — the fastest of all planets.
25. Because of its orbit and rotation, the Sun appears to **rise, stop, and reverse** in Mercury's sky.

MERCURY

26. Mercury has a **large iron core**, taking up about 85% of the planet's radius.
27. It has a **magnetic field**, though much weaker than Earth’s.
28. Mercury's magnetic field is about **1% as strong as Earth’s**.
29. It may have a **partially molten core**, which helps create the magnetic field.
30. The surface has **plains, cliffs, ridges**, and **impact basins**.
31. One of the largest craters is **Caloris Basin**.
32. Caloris is over **1,500 km wide**.
33. It was formed by a massive asteroid impact billions of years ago.
34. That impact created **ripples and fractures** on the opposite side of the planet.
35. Mercury has **scarps**, or cliffs, formed as the planet cooled and shrank.
36. Some scarps are **hundreds of kilometers long** and up to **3 km high**.
37. Scientists believe Mercury has **no plate tectonics**.
38. Despite being small, Mercury is very **dense**.
39. It's the **second-densest planet** after Earth.
40. Its core may be solid inside with a liquid outer layer.
41. The planet is thought to have **shrunk** by several kilometers in radius.
42. This shrinkage is due to the cooling of its interior.
43. Mercury has **no known active volcanoes** today.
44. However, its surface shows signs of **past volcanic activity**.
45. Ancient lava flows created **smooth plains**.
46. There is **no liquid water** on Mercury.
47. But water ice has been found at the **poles**.
48. This ice survives in **permanently shadowed craters**.
49. These polar regions never receive direct sunlight.
50. Mercury has been known since **ancient times**.
51. It was observed by **Babylonians, Greeks, and Romans**.
52. In Roman mythology, **Mercury** was the messenger god.

MERCURY

53. The planet was named for its **swift motion across the sky**.

54. Mercury can be seen with the **naked eye**.

55. It's usually visible **just after sunset or before sunrise**.

56. It never strays far from the Sun in our sky.

57. So it’s often **hard to see** and best viewed during **elongations**.

58. The first spacecraft to visit Mercury was **Mariner 10**.

59. Mariner 10 flew by three times in **1974–75**.

60. It mapped about **45% of the planet’s surface**.

61. The second mission was **MESSENGER**, launched by NASA.

62. MESSENGER orbited Mercury from **2011 to 2015**.

63. It mapped the entire surface and studied the core, exosphere, and magnetic field.

64. MESSENGER ended its mission by **crashing into the planet**.

65. In 2018, the **BepiColombo** mission launched.

66. It is a joint mission by **ESA and JAXA**.

67. BepiColombo will arrive at Mercury in **2025**.

68. It will study the planet in even more detail.

69. Scientists are interested in Mercury because it **preserves early solar system history**.

70. It shows what small, rocky planets may have looked like early on.

71. Mercury is an example of a **“core-dominated” planet**.

72. Some exoplanets may be similar.

73. Mercury is not suitable for life as we know it.

74. But it helps us understand **planetary formation**.

75. Mercury has a **“double sunrise”** effect in some locations.

76. The Sun rises, pauses, sets briefly, and rises again.

77. That’s because of Mercury’s slow rotation and fast orbit.

78. The surface is **heavily cratered**, much like Earth’s Moon.

79. There are **no clouds**, no wind, and no erosion.

MERCURY

80. So craters remain well-preserved over billions of years.

81. Mercury has **no rings**.

82. Its brightness varies depending on its position relative to Earth.

83. It is often one of the **brightest objects** near the horizon.

84. Mercury has been studied in **infrared, ultraviolet, and x-rays**.

85. Its **day-night cycle** is strange due to its orbital resonance.

86. Mercury rotates **3 times every 2 orbits** around the Sun.

87. This 3:2 resonance is unique among planets.

88. Its **high density** suggests a violent past.

89. A theory is that a giant impact stripped away its outer layers.

90. Another theory is that the Sun's heat burned off the lighter material.

91. Scientists continue to debate Mercury's origin.

92. Mercury is **not tidally locked**, despite its slow rotation.

93. The **equator receives more solar energy** than the poles.

94. The **surface is dark** — it reflects only about 10% of sunlight.

95. That makes Mercury **darker than our Moon**.

96. Studying Mercury helps us understand other rocky worlds.

97. Especially exoplanets close to their stars.

98. Mercury may be small, but it holds **big scientific mysteries**.

99. It is one of the least explored planets — but that's changing.

100. Mercury remains a fascinating frontier in our solar system.

THANK YOU