Earth: Basic Data, Radius, Circumference and Structure

Earth is located in the **Solar System**, which is located in the **Orion** (or local) **arm of Milky Way Galaxy**, which is a part of **Virgo Super cluster**. As a part of the Milky Way Galaxy, the Earth is accelerating outward toward the outer regions of the universe. The Earth and the other members of the solar system are orbiting the galaxy at about 225 kilometers per hour. Earth is third planet from the Sun and Fifth largest planet. It is largest among the Solar System's four terrestrial planets (Mercury, Venus, Earth, and Mars). Earth is also the *densest planet of the solar system*.

Radius and Circumference of Earth

The Mean radius of Earth is 6,371.0 km. Equatorial radius is 6,378.1 km, while polar radius is 6356.8 kilometers. This means that Earth is not perfectly spherical; no single value serves as its natural radius. Even calling it Radius is factually incorrect because "radius" normally is a characteristic of perfect spheres. Earth's rotation causes it to be like an oblate spheroid with a bulge at the equator and flattening at the North and South Poles. So the equatorial radius is larger than the polar radius.

The ***farthest point from Earth's centre is Chimborazo*** , an inactive volcano in the Andes mountains in Ecuador, in South America. Chimborazo is not the highest mountain by elevation above sea level, but its location along the **equatorial bulge** makes its summit the farthest point on the Earth's surface from the Earth's center.

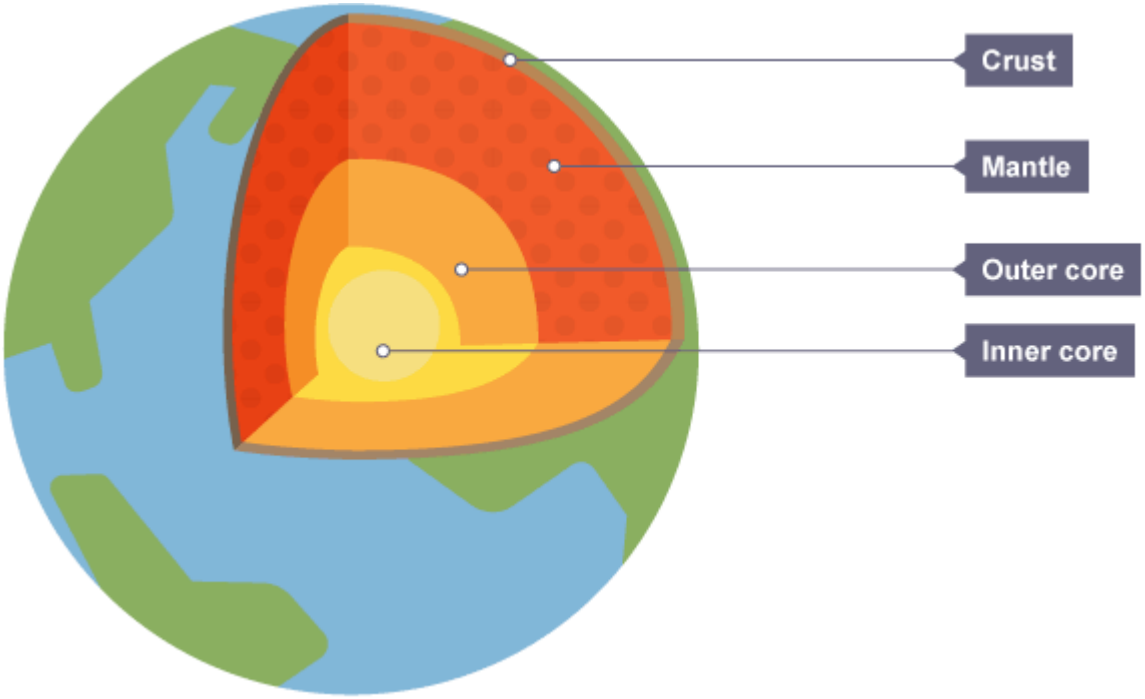
The **Equatorial Circumference** of Earth is 40,075.16 km, while the **Meridional Circumference** is 40,008.00 km.

Other Basic Data

Variable	Information
Surface area	510,072,000 km^2
Land Area	148,940,000 km^2 (29.2 %)
Water Area	361,132,000 km^2 (70.8 %)
Volume	1.08321 × 10^{12} km3
Mass	5.9736 × 10^{24} kg
Mean density	5.515 g/cm^3
Equatorial surface gravity	9.780327 m/s^2
Escape velocity	11.186 km/s
Sidereal rotation period	23h 56m 4.100s
Equatorial rotation velocity	1,674.4 km/h
Axial tilt	23°26'21".4119
Albedo	0.36
Surface temp	Minimum -89.4 °C Median=14 °C Maximum =58 °C
Surface pressure	101.325 kPa
Composition	78.08% nitrogen, 20.95% oxygen, 0.93% argon, 0.038% carbon dioxide, approx. 1% water vapour

Structure of Earth

The internal structure of earth is layered. The Earth is generally divided into four major layers: the crust, mantle, inner core, and outer core.



The following defines each division.

Crust

The Earth's crust is the outermost layer and is the most familiar, since people live on the outer skin of the crust. It is rigid, brittle, and thin compared to the mantle, inner core, and outer core. Because of its varying characteristics, this outer layer is divided into the continental and oceanic crusts.

Mantle

Earth's mantle lies beneath the crust and above the outer core, averaging about 1,802 miles (2,900 kilometers) thick and representing ***68.3 percent of the Earth's mass*** and 84% of Earth's volume. A transition zone divides this layer into the upper and lower mantles.

Outer core

The **liquid outer core** is a layer between 2,885 and 5,155 kilometers deep in the Earth's interior. It is thought to move by convection (the transfer of heat through the circulating motion of materials), with the movement possibly contributing to the Earth's magnetic field. The outer core represents about 29.3 percent of the Earth's total mass.

Inner core

The inner core is thought to be roughly the size of the Earth's Moon. It lies at a depth 5,150 to 6,370 kilometers beneath the Earth's surface and generates heat close to temperatures on the sun's surface. It represents about 1.7 percent of the Earth's mass and is thought to be composed of a solid iron-nickel alloy suspended within the molten outer core.

Density of Various Earth Layers

The average density of Earth is 5,515 kg/m^3. Since the average density of surface material

is only around 3,000 kg/m^3, it can be concluded that denser materials exist within Earth's core. When we move from earth's Crust to Core, the density increases. The following table shows the depth as well as the average density of various layers:

Depth (Sq. Kms)	Layer	Density gm per cubic cm.
0–60	Lithosphere	1.2-2.9
0–35	Crust	2.2–2.9
35–60	Upper mantle	3.4–4.4
35–2890	Mantle	3.4–5.6
100–700	Asthenosphere	NA
2890–5100	Outer core	9.9–12.2
5100–6378	Inner core	12.8–13.1