SUN

- The Sun is the star at the center of our solar system.
- It is a nearly perfect sphere of hot plasma.
- The Sun provides the Earth with light and heat.
- It is about 109 times wider than Earth.
- Over 1 million Earths could fit inside the Sun.
- The Sun is classified as a G-type main-sequence star (G2V).
- It is about 4.6 billion years old.
- The Sun was formed from the gravitational collapse of a molecular cloud.
- It is composed mostly of hydrogen (~74%).
- Helium makes up about 24% of the Sun.
- The remaining 2% includes heavier elements like oxygen, carbon, and iron.
- Nuclear fusion in the Sun's core converts hydrogen into helium.
- This fusion releases vast amounts of energy.
- That energy radiates outward and reaches Earth as sunlight.
- The core temperature is about 15 million°C (27 million°F).
- The Sun has six major regions:
- The core, radiative zone, convective zone, photosphere, chromosphere, and corona.
- The core is the energy-generating center.
- In the radiative zone, energy travels outward by radiation.
- In the convective zone, hot plasma rises and cooler plasma sinks.
- The photosphere is the visible "surface" of the Sun.
- The chromosphere lies above the photosphere.
- The corona is the Sun's outer atmosphere.
- The corona extends millions of kilometers into space.
- It is visible during a total solar eclipse.
- The Sun emits solar radiation, including visible light and ultraviolet.
- Solar wind is a stream of charged particles released by the corona.

SUN

- The solar wind shapes Earth’s magnetosphere.
- Solar flares are sudden bursts of energy on the Sun’s surface.
- Coronal mass ejections (CMEs) are massive bursts of solar plasma.
- Solar activity follows an 11-year solar cycle.
- During the solar maximum, sunspots are most numerous.
- Sunspots are cooler, darker areas on the Sun’s surface.
- They are caused by magnetic activity.
- Solar activity can disrupt Earth's satellites and power grids.
- Auroras are caused by solar particles interacting with Earth's atmosphere.
- The Sun orbits the center of the Milky Way galaxy.
- It takes about 225-250 million years to complete one orbit.
- This journey is called a galactic year.
- The Sun travels at about 828,000 km/h (514,000 mph).
- The Sun is about 150 million kilometers (93 million miles) from Earth.
- This distance is called an astronomical unit (AU).
- Light from the Sun takes about 8 minutes to reach Earth.
- Without the Sun, life on Earth could not exist.
- It drives weather, ocean currents, and the water cycle.
- Plants use sunlight to photosynthesize.
- The Sun's gravity holds the solar system together.
- All planets, comets, and asteroids orbit the Sun.
- The Sun will not stay the same forever.
- It is currently in its main sequence stage.
- In about 5 billion years, it will become a red giant.
- It will expand and engulf Mercury and Venus.
- Possibly Earth too.
- Then it will shed its outer layers.

SUN

- It will become a planetary nebula.
- The remaining core will be a white dwarf.
- Eventually, it will cool and fade into a black dwarf.
- The Sun's mass is about 330,000 times that of Earth.
- It contains 99.86% of the solar system's mass.
- The Sun produces 386 billion megawatts of power.
- That’s 386 trillion trillion watts.
- One second of solar energy could power Earth for 500,000 years.
- The solar constant is about 1,361 watts per square meter at Earth.
- The Sun appears yellow to our eyes.
- But it actually emits white light.
- Earth's atmosphere scatters blue light, giving the sky its color.
- That also makes the Sun appear yellow, orange, or red at sunrise/sunset.
- The Sun has inspired cultures and religions throughout history.
- It has been worshipped as a god in many ancient civilizations.
- Sun deities include Ra (Egypt), Surya (India), and Helios (Greece).
- Sunlight is important for human health.
- It helps the body produce vitamin D.
- But overexposure can lead to sunburn and skin cancer.
- Solar panels convert sunlight into electricity.
- This is a key source of renewable energy.
- Astronomers study the Sun with telescopes and satellites.
- NASA’s Solar Dynamics Observatory observes the Sun constantly.
- The Parker Solar Probe is flying closer to the Sun than any spacecraft.
- It aims to unlock the mysteries of the corona and solar wind.
- Observing the Sun helps us understand other stars too.
- The Sun is considered a "Population I" star.

SUN

- That means it is relatively young and metal-rich.
- Its magnetic field plays a big role in solar activity.
- This field flips every 11 years, completing a 22-year magnetic cycle.
- The Sun rotates on its axis.
- Its equator spins faster than the poles.
- The equator takes about 25 days to rotate.
- The poles take about 35 days.
- This differential rotation contributes to magnetic field tangling.
- The Sun’s sound waves help us study its interior—called helioseismology.
- The Sun is one of over 100 billion stars in the Milky Way.
- It is unusually solitary—many stars are in binary systems.
- From space, the Sun is overwhelmingly bright.
- Space telescopes use special filters to view it.
- Solar eclipses occur when the Moon passes between Earth and the Sun.
- During a total eclipse, the corona becomes visible.
- The next total solar eclipse depends on your location.
- The Sun will outlive humanity by billions of years.
- But understanding it is key to our survival and knowledge.
- The Sun is both ordinary and extraordinary—our essential life-giver and cosmic beacon.

∞THANKS FOR VISITING∞