

Photosphere	<p>photosphere the visible surface of the sun</p> <ul style="list-style-type: none"> ■ <i>Photosphere</i> means “sphere of light.” The photosphere of the sun is the innermost layer of the sun's atmosphere. ■ The photosphere is made of gases that have risen from the convective zone. The temperature in the photosphere is about 6,000°C. ■ Much of the energy given off from the photosphere is in the form of visible light.
Chromosphere	<p>chromosphere the thin layer of the sun that is just above the photosphere and that glows a reddish color during eclipses</p> <ul style="list-style-type: none"> ■ The chromosphere lies just above the photosphere. The chromosphere's temperature ranges from 4,000°C to 5 0,000 °C.
Corona	<p>corona the outermost layer of the sun's atmosphere</p> <ul style="list-style-type: none"> ■ The corona is a huge region of gas that has a temperature above 1,000,000°C. ■ As the corona expands, electrons and electrically charged particles called <i>ions</i> stream out into space. ■ These particles make up <i>solar wind</i>, which flows outward from the sun to the rest of the solar system.

	<p>28.3 Formation of the Solar System</p> <ul style="list-style-type: none"> ● Most scientists in the 1600's & 1700's thought the sun formed first and threw off materials that later formed the planets. ● 1796, a French mathematician Marquis Pierre Simon de Laplace stated that the sun and planets formed out of the same spinning nebula. ■ Laplace also stated that our entire solar system formed at approximately the same time. ■ This hypothesis developed into what we call the nebular theory. <hr/> <p>Formation of the Sun</p> <ul style="list-style-type: none"> ■ The Big Bang scattered matter and energy throughout the universe. ■ Some of this material gathered into clouds of gas and dust, forming the solar nebula. ■ A star – our sun – began to form in the center. ■ 99% of all matter in the solar nebula became part of the sun. <hr/> <p>Formation of the Planets</p> <ul style="list-style-type: none"> ■ While the sun was forming in the center, planets were forming in the outer regions of the solar nebula. ■ Small bodies are called planetesimals. ■ Planetesimals joined together through collisions and the force of gravity to form larger bodies called protoplanets. ■ Protoplanets condensed and became the planets and moons. ■ Planets and moons are smaller and denser than protoplanets. ■ The 4 protoplanets closest to the sun became Mercury, Venus, Earth and Mars. ■ These planets contained large amounts of heavier elements, such as iron. ■ The next 4 protoplanets became Jupiter, Saturn, Uranus and Neptune. ■ The outer planets formed in the cold outer regions of the solar nebula. ■ The icy material of the outer protoplanets consisted of helium and hydrogen. ■ Also frozen gases; water, methane, and ammonia. ■ Because they were so far from the heat of the sun, the outer protoplanets developed into huge planets. ■ Thick layers of ice surrounded small cores of heavy elements. ■ Inner planets are called <i>terrestrial planets</i>. ■ Outer planets are called <i>gas giants</i> or Jovian planets. <hr/> <p>The Solid Earth</p> <ul style="list-style-type: none"> ■ Temperature on young earth was enough to melt iron.(2800°F,1500°C) ■ Melted iron sank to the center of the planet. ■ As earth cooled, layers separated by density. Heavier elements sank, lighter elements rose. ■ <u>3 distinct layers</u> —Core: mostly iron and nickel. —Mantle: middle layer, very thick. —Crust: surface layer of less-dense solids.
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<p>The Atmosphere</p>	<ul style="list-style-type: none"> ■ As the Earth protoplanet grew large enough, its gravity captured some of the hydrogen and helium from the solar nebula. (1st atmosphere) ■ Where do you find these 2 elements today? In the upper atmosphere. ■ Solar wind and explosions probably blasted away most of Earth's first atmosphere. ■ 2nd atmosphere resulted from volcanic eruptions. ■ Volcanoes released large amounts of carbon dioxide and water vapor (and other gases). ■ Cyanobacteria and early plants converted carbon dioxide into oxygen during photosynthesis. ■ Oxygen levels slowly increased to current levels.
<p>The Oceans</p>	<ul style="list-style-type: none"> ■ As the atmosphere was forming, the Earth cooled enough for liquid water to form. ■ Previously, the heat of the planet kept water as a gas. ■ Between 3 billion and 3.5 billion years ago, water vapor began to condense. ■ Water fell to Earth as rain and formed oceans in the lower surface areas. ■ Scientists also think much of Earth's water came from comets bombarding the planet for 30,000 years. ■ Ocean water absorbed carbon dioxide from the air. ■ By 1.5 billion years ago, the atmosphere was similar to today.