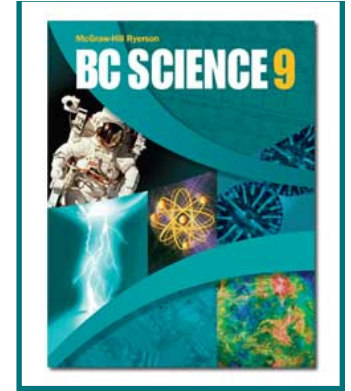


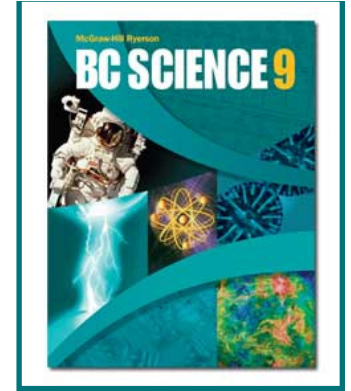
11.2 The Sun and the Planets



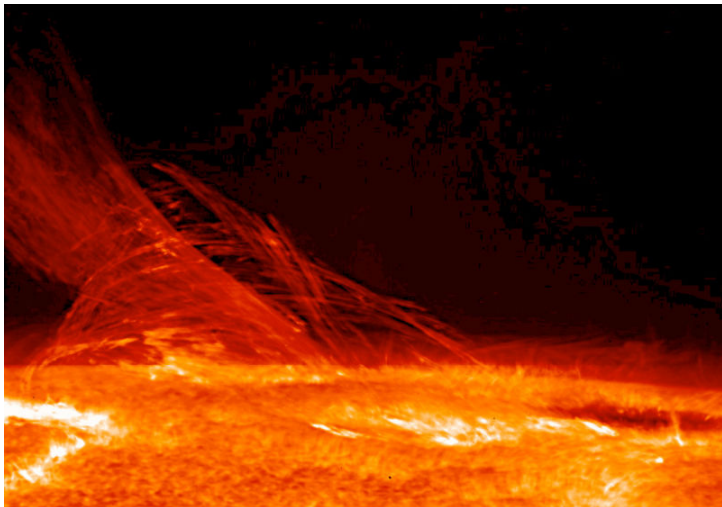
- Our Sun, an average star in the universe, is the center of our solar system.
 - Our solar system is full of planets, moons, asteroids and comets, all of which revolve around the Sun at the center.
 - When a star forms from a nebula, gravity pulls most of the material into the new star, but some may also clump together to form objects in a solar system.
 - A planet is a celestial body that orbits one or more stars.
 - Each planet may also spin on its axis (rotates) while it orbits the Sun (revolves).
 - Our solar system formed approximately 4.5 billion years ago. The four inner, rocky planets in the first 100 million years on the Sun's existence, while the outer, gaseous planets formed later from the remnants of the Sun's original nebula.

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The Sun



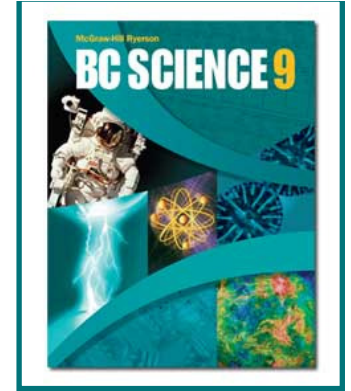
- The Sun contains 99% of all the mass found in our solar system.
 - The Sun has a diameter equal to 110 Earths.
 - The Sun is made up mostly of hydrogen. The hydrogen molecules are forced to join together through massive gravity, forming new helium molecules, and releasing huge quantities of energy as light and heat through the process of thermonuclear fusion.



- The Sun has no solid surface, but has distinctive features such as sun spots, flares and prominences.
- The photosphere is the surface of the Sun. It looks blotchy due to rising and cooling gases.
- The corona is the outer portion of the Sun's atmosphere.

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Solar Winds

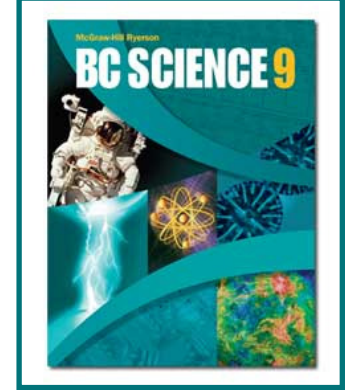


- Sometimes, gases from the Sun's corona erupt outwards like a bursting soap bubble.
 - The resulting solar wind is full of high-energy particles that would kill any life on Earth they struck.
 - Luckily, our magnetic field deflects this solar wind. We can see these particles being deflected when we see the Northern Lights.
 - Large outbursts of solar winds can wreak havoc with satellites as well as Earth-bound energy supplies such as power plants.



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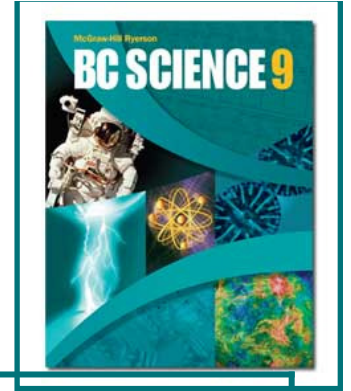
The Planets



- To be considered a planet, a body must orbit one or more stars, be large enough that its own gravity holds it in a spherical shape, and be the only body occupying the orbital path.
 - Distances between planets in the solar system are measured in astronomical units (AU). One AU = the average distance from the Sun to the Earth.
 - The inner planets are relatively close to the center of the solar system - Mars is 1.52 AU from the Sun. The next planet, Jupiter, an outer planet, is 5.27 AU from the Sun. The most distant planet, Neptune, is 30.06 AU from the Sun.

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Compare Planets



Inner, rocky planets		Outer, gaseous planets	
Mercury	Smallest planet	Jupiter	Largest planet
Venus	Earth's sister	Saturn	Rings + many moons
Earth	Only life in universe	Uranus	Methane gas planet
Mars	The red planet	Neptune	Outermost planet

Other Solar System Bodies



- There are also numerous celestial bodies smaller than planets in our solar system.
- Moons are found around all planets except Mercury and Venus.
- Asteroids are found mostly between Mars and Jupiter in the asteroid belt. It is thought these are ‘leftovers’ from the formation of the solar system.
- Comets (sometimes called “dirty snowballs”) are actually rocky travelers, following huge orbits far outside the planets in the Oort Cloud.
- Trans-neptunian objects refer to objects outside Neptune’s orbit, including ex-planet Pluto (now referred to as a dwarf planet). These objects orbit the Sun in a large area known as the Kuiper Belt.
- The Oort Cloud is at the farthest reaches of the Sun’s gravitational pull, almost 25% of the way to the next nearest star, Proxima Centauri.

[Take the Section 11.2 Quiz](#)

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