9-12 As the earth and other planets formed, the heavier elements fell to their centers. On planets close to the sun (Mercury, Venus, Earth, and Mars) the lightest elements were mostly blown or boiled away by radiation from the newly formed sun; on the outer Our solar system coalesced out of a giant cloud of gas and debris left in the wake of exploding stars about five billion years ago.

Everything in and on the earth, including living organisms, is made of this material. Stars condensed by gravity out of clouds of molecules of the lightest elements until nuclear fusion of the light elements into light elements into heavier ones began to occur. Fusion released great amounts of energy over millions of years. 6-8 Many chunks of rock orbit the sun. Those that meet the earth glow and disintegrate from friction as they plunge through the The moon's orbit around the earth once in about 28 days changes what part of the moon is lighted by the sun and how much of that part can be seen from the earth--the phases of the moon. atmosphere--and sometimes impact the ground. Other chunks of rock mixed with ice have moon. long, off-center orbits Nine planets of very different size, composition, and surface features move around the sun in nearly circular orbits. Some planets have a variety of moons and even flat rings of rock and ice particles orbiting around them. Some of these planets Telescopes reveal that there are many more stars in the night sky than are evident to the unaided eye, the surface of the moon has many Because every object is moving relative to some other object, no object has a unique claim to be at rest. Therefore, the craters and mountains, the sun has dark spots, and Jupiter and some other planets have their own moons. idea of absolute motion or rest is misleading. The earth is one of several planets that orbit the sun, and the moon orbits around the earth. People cannot determine how the solar system is Planets change their positions against the background of stars. put together just by looking at it. Telescopes magnify the The rotation of the appearance of some distant objects in the earth on its axis every
24 hours produces the
night-and-day cycle. To
people on earth, this
turning of the planet sky, including the moon and the planets. The number of stars that can be seen through makes it seem as though telescopes is dramatically greater the sun, moon, planets, and stars are orbiting than can be seen by the the earth once a day. unaided eye. The patterns of stars in the sky stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons. K-2 There are more stars in the sky than anyone can The moon looks a little Magnifiers help people see things they could not see without them. easily count, but they different every day, but are not scattered looks the same again about every four weeks. evenly, and they are not all the same in brightness or color. The sun can be seen only in the daytime, but the

moon can be seen sometimes at night and sometimes during the day. The sun, moon, and stars all appear to move slowly across the sky.