**Vocabulary: Solar System Explorer**



**Vocabulary**

* Astronomical unit – a distance unit equal to the average Earth-Sun distance.
	+ The symbol for astronomical unit is “AU.”
	+ One astronomical unit is approximately equal to 150 million kilometers. (The actual distance is 149,597,871.7 km.)
* Dwarf planet – an object that is orbiting a star and is large enough to be rounded by its own gravity but not large enough to have cleared its neighborhood of other objects.
	+ There are currently five recognized dwarf planets in our solar system: Ceres, Pluto, Haumea, Makemake, and Eris. Other objects, such as Sedna, may eventually be classified as dwarf planets.
* Eccentricity – the degree by which the shape of an orbit differs from a circle.
	+ The eccentricity of an *ellipse* can vary between 0 and 1. An ellipse with an eccentricity of 0 is a circle. An ellipse with an eccentricity of 1 is a line segment.
	+ To measure the eccentricity of an ellipse, divide the distance between the *foci* by the width of the ellipse. (On the diagram below, the foci are labeled F1 and F2.)
* Ellipse – a flattened circle.



* + An ellipse contains two foci, labeled F1 and F2 on the diagram at right.
	+ The sum of the distances from any point on the ellipse to the two foci is constant. On the diagram, *a*1 + *a*2 = *b*1 + *b*2.
	+ The orbits of planets and other objects in the solar system are elliptical, with the Sun at one focus.
* Gas giant – a large planet composed mainly of gas.
* Kepler’s laws – three laws that describe the orbits of planets and other orbiting bodies.
	+ *Kepler’s first law* states that planets orbit in ellipses, with the Sun at one focus.
	+ *Kepler’s second law* states that planets speed up as they get nearer the Sun and slow down as they move farther from the Sun.
	+ *Kepler’s third law* states that the square of a planet’s *period* is proportional to the cube of the planet’s *orbital radius*.
* Orbit – the path of one body around another body in space, such as the path of Earth around the Sun.
* Orbital radius – the average distance from an orbiting object to the object it is orbiting around.
	+ The orbital radius of a planet is the mean distance from the planet to the Sun.
* Period – the amount of time it takes for an object to complete one full orbit.
* Planet – an object orbiting a star that is round, not itself a star, and large enough to have cleared small objects from the area around itself.
	+ There are eight known planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.
	+ This definition of planet was agreed on by the International Astronomical Union in 2006. It remains controversial.
* Solar system – a star and the objects that orbit it.
	+ Our solar system includes the Sun (known to scientists as “Sol”), the eight planets, and their moons.
	+ Our solar system also includes asteroids, comets, dwarf planets, and planetoids.
* Terrestrial planet – a planet having a rocky surface like Earth’s.
	+ Also called “rocky planet.”