

The Solar System ▪ *Enrich*

Planets for Human Settlement - *Must be typed*

No one knows whether life exists on other planets, but one fact is clear. Humans have traveled through space. Will it ever be possible for humans to travel to other solar systems? Most people might not want to make such a difficult, expensive trip unless it ended at an Earthlike planet on which humans could easily live. What must such a planet be like?

Humans need several things, such as water, oxygen, light, and comfortable temperatures to support life. Whether a planet can supply what we need to live depends on many factors. Let's look at two important factors.

- **A planet's rotation rate** A planet with a slow rotation rate has a long day, which would be harmful to humans. It gets hot in the afternoon and cold at night. What if day and night were each a week long? Even on Earth, we would roast and freeze in turns. Humans probably could not live comfortably on a planet whose day was more than four times as long as Earth's.
- **A planet's mass** Mass determines many of planet's other characteristics. Larger planets have stronger gravity. Humans cannot stand gravity greater than 1.5 times Earth's gravity for very long. Also, a planet's surface water and atmosphere originally come from beneath its surface. For this reason, a planet must be massive enough to have a large volume compared to its surface area. A planet smaller than 0.4 times Earth's mass would probably not have enough air or water to support human life.

The following table gives information about the mass, gravity, and day length of Earth, Venus, Mars, and three imaginary planets.

	Earth	Venus	Mars	Planet A	Planet B	Planet C
Mass (Earth mass = 1)	1	0.815	0.107	2.5	0.7	1
Surface gravity (Earth gravity = 1)	1	0.903	0.38	1.65	0.87	1
Length of day (hours)	24	5832.24	24.62	30	60	255

Answer the questions below on a separate sheet of paper. *Must be typed*

1. Planets A, B, and C revolve around stars exactly like the sun in orbits just like that of Earth. Could planet A possibly support human life? Explain.
2. Could planet B possibly support human life? Explain.
3. Could planet C possibly support human life? Explain.
4. If it were located in Earth's orbit, could Venus support human life? Explain.
5. If it were located in Earth's orbit, could Mars support human life? Explain.