READING PASSAGE · LEVEL 3 · ADVANCED

EARTH: A FINELY BALANCED WORLD

A reading passage for advanced readers (Ages 10–12)

Earth is the only planet known to harbour life — a status that is not luck alone, but the result of several finely balanced features working together.

First, Earth lies within the Sun's habitable zone, where temperatures allow water to exist as a liquid. Liquid water is essential to all known life because it dissolves nutrients, transports them, and provides the medium for the chemical reactions of biology. Other planets in our solar system are either too close to the Sun (causing water to boil) or too far (causing it to freeze).

Second, Earth has a thick, protective atmosphere composed primarily of nitrogen (78%) and oxygen (21%), with smaller amounts of argon, carbon dioxide, and water vapour. This atmosphere not only provides air to breathe but also moderates surface temperatures, blocks much harmful ultraviolet radiation, and burns up most incoming meteors before they reach the ground.

Third, Earth's iron core generates a powerful global magnetic field. This magnetosphere extends thousands of kilometres into space and deflects the solar wind — streams of charged particles from the Sun that would otherwise strip away our atmosphere over time, as has happened on Mars.

Fourth, Earth is geologically active. Tectonic plates float on a slowly flowing layer of hot rock called the mantle, and their movement drives volcanoes, recycles minerals, builds mountains, and helps regulate carbon dioxide in the atmosphere over millions of years. This long-term cycling has kept Earth's climate relatively stable. Earth's single Moon also plays a role: its gravity stabilises Earth's axial tilt of 23.5 degrees, preventing it from wobbling wildly over time. Without that steady tilt, our seasons would be far more chaotic, making it harder for complex life to evolve.

★ WORDS TO KNOW 5 TERMS

ultraviolet
A kind of energy from the Sun that can damage skin and eyes.

mantle
The layer of slow-moving hot rock between Earth's crust and its core.

solar wind
A stream of charged particles flowing outward from the Sun.

magnetosphere
The region around a planet protected by its magnetic field.

axial tilt
The angle a planet's spin axis is tipped at compared to its orbit.

★ COMPREHENSION QUESTIONS 6 QUESTIONS

1. Why is liquid water so essential for life as we know it?

2. Describe at least three jobs Earth's atmosphere does for us.

3. What would happen to a planet's atmosphere without a magnetic field, and what real-world example is given in the passage?

4. How do tectonic plates help keep Earth's climate stable?

5. What role does the Moon play in making Earth a stable place for life?

6. Why might Earth's combination of features be considered "finely balanced" rather than just lucky?