

This is the **Higher Combined** version — includes Higher Tier content. Some Separate-only details are omitted.

Matter cycles continuously through ecosystems — the same atoms are reused again and again.

- Carbon cycle: photosynthesis removes CO<sub>2</sub>; respiration, decomposition and combustion return it
- Decomposers (bacteria and fungi) break down dead matter → release CO<sub>2</sub> and mineral ions
- Water cycle: evaporation → condensation → precipitation → runoff
- ★ **HT** Nitrogen cycle: fixing (N<sub>2</sub>→nitrates), nitrifying (ammonia→nitrates), denitrifying (nitrates→N<sub>2</sub>), decomposing (organic→ammonia)
- Only photosynthesis removes CO<sub>2</sub> from atmosphere — all other processes add CO<sub>2</sub>

### Key Terms

<b>Decomposer</b>	Organism breaking down dead matter — releases nutrients for reuse
<b>Nitrogen fixation</b>	Converting N <sub>2</sub> into ammonia/nitrates — done by bacteria

■ **Exam Tip:** The key fact about carbon cycle: **ONLY** photosynthesis removes CO<sub>2</sub>. All others add it. This comes up in every exam series.