C4.2 Transfers of energy and matter

What the Cell · DP Biology · note-taking sheet · SL statements C4.2.1–22

Name _____ **Date** _____

How to use this sheet: go through the slides and videos with it, then close them and write from memory. Use your own words and add page numbers from the book (pp. 578–601) where you want more detail.

Guiding questions. Why can matter be recycled in ecosystems when energy cannot? What makes up for the energy that each group of living things in an ecosystem loses?

C4.2.1–5 Systems, chains and decomposers

Distinguish open from closed systems. Name two ecosystems that do not depend on sunlight, and their energy source.

Draw a food chain of four organisms, with correct arrows. What do decomposers feed on?

C4.2.6–9 Autotrophs and heterotrophs

	Energy source	Carbon source	Example
Photoautotroph			
Chemoautotroph			
Heterotroph			

How do all of these release energy?

C4.2.10–14 Levels and energy

Name the trophic levels. Sketch a pyramid of energy, with units.

Give three reasons for energy loss. Why is heat not reusable? Why are food chains short?

C4.2.15–16 Production

Define primary and secondary production, with units. Why is secondary production lower?

C4.2.17–19 Carbon

Draw a carbon cycle, showing photosynthesis, feeding, respiration and decomposition.

What makes an ecosystem a sink or a source? Where do peat, coal, oil and gas come from?

C4.2.20–22 Keeling curve and recycling

Explain the yearly rhythm and the long-term rise. What links photosynthesis to respiration? Why are decomposers key to recycling?

Before you finish

Tick the ones you can explain without notes. Circle anything to ask about.

- ☐ Open systems
- ☐ Exceptions to sunlight
- ☐ Food webs
- ☐ Chemoautotrophs
- ☐ Trophic levels
- ☐ Energy pyramids
- ☐ Energy losses
- ☐ Production
- ☐ Carbon cycle
- ☐ Sinks and sources
- ☐ Combustion
- ☐ Keeling curve
- ☐ Recycling