BIOLOGY YEAR 12 - MODULE 8 - LESSON 2

Temperature Regulation — Endotherm and Ectotherm Homeostatic Adaptations

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

In 2019, a heatwave in Queensland killed an estimated 23,000 flying foxes in a single day — their body temperature exceeded 43°C and their cooling mechanisms were overwhelmed. These animals are endotherms, just like us. Understanding how temperature regulation works, and what happens when it fails, starts here.

- The distinction between endotherms and ectotherms
- Why vasodilation cools and vasoconstriction warms — the blood as a heat carrier

2. Success Criteria

By the end, you should be able to:

- The distinction between endotherms and ectotherms
- The three categories of homeostatic adaptations: physiological, behavioural, structural
- Specific adaptations for both heating and cooling in endotherms

3. Key Terms

Patient A
a 78-year-old man brought in by his neighbour

Patient B
a 22-year-old athlete who collapsed during a 10 km run

These animals
endotherms, just like us

his skin
hot and dry, and his core temperature is 40

She
pale, sweating profusely, and shivering despite the ambient heat

Why ectotherms
vulnerable to rapid environmental temperature change

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "The distinction between endotherms and ectotherms". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The three categories of homeostatic adaptations: physiological, behavioural, structural". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Temperature Regulation — Endotherm and Ectotherm Homeostatic Adaptations: "Specific adaptations for both heating and cooling in endotherms".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Temperature Regulation — Endotherm and Ectotherm Homeostatic Adaptations but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Temperature Regulation — Endotherm and Ectotherm Homeostatic Adaptations?

☐ A. Identify the key concept being tested

☐ B. Write every fact from memory

☐ C. Ignore the command word

☐ D. Skip examples and evidence

2. Which answer would show stronger understanding of Temperature Regulation — Endotherm and Ectotherm Homeostatic Adaptations?

☐ A. An answer with accurate terms and reasoning

☐ B. A copied definition only

☐ C. A single-word response

☐ D. An answer with no example

3. What should you do if a question asks you to explain?

☐ A. Link the idea to a reason or cause

☐ B. List unrelated facts

☐ C. Only draw a diagram

☐ D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: The distinction between endotherms and ectotherms

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The three categories of homeostatic adaptations: physiological, behavioural, structural

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Specific adaptations for both heating and cooling in endotherms

BAND 5 4 MARKS

One thing I still need help with: