

A LEVEL BIOLOGY

Summer Preparation Task

Prospective Year 12

Name

Due date

Biology at A Level builds on many ideas from GCSE. You will be expected to explain processes in more detail, use precise scientific vocabulary and apply your knowledge to unfamiliar situations. Complete this task and bring it to your first A Level Biology lesson.

PART 1 GCSE Knowledge Recall

Complete these questions without notes first. Then use your GCSE revision guide, BBC Bitesize, Cognito or Primrose Kitten to improve your answers.

1. What is the function of the nucleus?

2. What is the function of the mitochondria?

3. What is the function of ribosomes?

4. What is the function of the cell membrane?

5. Name two structures found in plant cells but not animal cells.

6. What is the function of chloroplasts?

7. What is the function of the cell wall?

8. What is the difference between a eukaryotic cell and a prokaryotic cell?

9. Give one example of a prokaryotic organism.

10. Why are electron microscopes useful in biology?

PART 2 Biological Molecules Research

A major part of the first A Level Biology unit is biological molecules. Research and complete the table below.

Biological molecule	Elements present	Basic subunit	Main function
Carbohydrates			
Proteins			
Lipids			
DNA			

Key Questions

Answer in full sentences.

1. What is a monomer?

2. What is a polymer?

3. What is a condensation reaction?

4. What is a hydrolysis reaction?

5. What is an enzyme?

6. Why are enzymes described as having a specific active site?

7. What happens to an enzyme when it is denatured?

8. Why does temperature affect enzyme activity?

9. Why does pH affect enzyme activity?

10. Why are proteins important in cells?

PART 3 Maths Skills for Biology

A Level Biology includes a significant amount of maths. Complete the following questions and show your working.

Magnification = image size ÷ actual size

1 mm = 1000 μm

1. A cell has an actual length of 50 μm . In a diagram, it is drawn as 25 mm long. Calculate the magnification.

2. A mitochondrion is 2 μm long. It is shown in an image with a length of 10 mm. Calculate the magnification.

3. A chloroplast is shown as 30 mm long in a diagram. The magnification is $\times 6000$. Calculate the actual length of the chloroplast in μm .

4. A bacterium is 1.5 μm long. It is viewed at $\times 20,000$ magnification. Calculate the image size in mm.

5. A student counts 80 cells. 12 of them are undergoing mitosis. Calculate the percentage of cells undergoing mitosis.

6. The mass of a potato cylinder decreases from 5.0 g to 4.2 g. Calculate the percentage decrease in mass.

7. A population of bacteria increases from 200 to 1500. Calculate the percentage increase.

PART 4 Reading Task

Read or watch one biology-related item from the list below:

- A chapter from a popular science book about biology
- A biology article from BBC Science, New Scientist, Nature News or Science Daily
- A documentary about cells, genetics, disease, evolution or the human body
- A lecture or video from the Royal Institution, TED-Ed, Amoeba Sisters, Cognito or Crash Course Biology

Biology Reading / Watching Review

Title of article / book / video / documentary:

Source:

Main topic:

Three key things I learned:

One question I still have:

How does this link to A Level Biology?

PART 5 Extended Writing Task

Choose one of the following questions and write approximately one side of A4.

Option A: Cells — Explain why cells are considered the basic unit of life. Include cell structures, cell membranes, mitochondria and respiration, ribosomes and protein synthesis, and differences between animal, plant and bacterial cells.

Option B: Enzymes — Explain how enzymes control biological reactions. Include active sites, specificity, lock and key or induced fit model, temperature, pH and denaturation.

Option C: DNA — Explain why DNA is important in living organisms. Include genes, chromosomes, protein synthesis, inheritance and variation.

Chosen option:

PART 6 Key Vocabulary

Learn the definitions of the following words. You may be tested on these in your first few lessons.

Key term	Definition
Organelle	
Eukaryotic	
Prokaryotic	
Magnification	
Resolution	
Enzyme	
Active site	
Denatured	
Monomer	
Polymer	
Condensation reaction	
Hydrolysis reaction	
Carbohydrate	
Protein	
Lipid	

Key term	Definition
DNA	
Gene	
Chromosome	
Mutation	
Diffusion	

PART 7 Preparation for September

Before your first A Level Biology lesson, make sure you have:

- ☐ A folder
- ☐ Dividers
- ☐ Lined paper
- ☐ A calculator
- ☐ Pens, pencils, ruler and highlighters
- ☐ Your completed summer task
- ☐ A positive attitude and willingness to work hard

PART ★ Final Reflection

1. Which part of GCSE Biology do you feel most confident with?

2. Which part of GCSE Biology do you feel least confident with?

3. What do you think will be the biggest challenge of A Level Biology?

4. What are you looking forward to studying in Biology?

5. What will you do if you find a topic difficult?
