Worthing College

Getting Ready For
Biology

Your Name		
A Level Biology	Cytology Assignment	AQA

We are delighted you have chosen to study Biology at Worthing College.

Instructions: This pack will help you make the best possible start to studying this subject.

The tasks in this pack:

- should take you **about 4 hours to complete.**
- should be handed into your teacher when teaching starts
- are also available on the internet – follow the links in the document.

If you need help: The tasks are designed to get a bit more difficult as you work through them as they are preparing you for studying at a higher level and to become an effective independent learner. You should try to get as far as you can working on your own but if you do need help, please email us at gettingreadyfor@worthing.ac.uk, telling us which Getting Ready For pack you are working on and what help you need. Help is available throughout the summer holidays.

Skills Focus for this Getting Ready for Pack
Building on your GCSE knowledge through independent research Handling data

Worthing College

<table>
<tr><th>Task</th><th>Information</th></tr>
<tr><td>1
Research and writing notes</td><td>
<h2>Cells research task</h2>
The first topic you will be studying in September is Cells. Complete the research task below and bring your notes to your first lesson so they can be checked and added to. Use the information on the page ‘Writing notes’ to set up your notes – leave the key points and summary section blank for now.

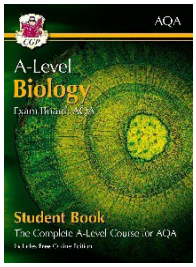
<u>Eukaryotic cells</u>
Draw a labelled animal cell and a labelled plant cell. Add the functions of the following cell structures:
<table>
<tr><td>Smooth endoplasmic reticulum</td><td>Rough endoplasmic reticulum</td><td>Golgi apparatus</td></tr>
<tr><td>Lysosomes</td><td>Centrioles</td><td>Vesicles</td></tr>
</table>

<u>Prokaryotic cells</u>
Draw a diagram of a typical Prokaryotic cell (bacterium) and label. Add the functions of the following structures:
<table>
<tr><td>Genetic material</td><td>Cell wall</td><td>Capsule</td><td>Plasma membrane</td></tr>
<tr><td>Ribosomes</td><td>Flagellum</td><td>Plasmid</td><td></td></tr>
</table>

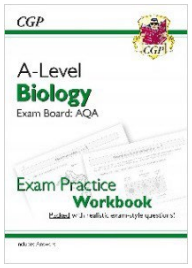
Some useful links:

https://www.khanacademy.org/science/biology/structure-of-a-cell
https://www.youtube.com/watch?v=cj8dDTHGJBY
</td></tr>
<tr><td>2
Building on GCSE knowledge</td><td>
<h2>Transition baseline assessment</h2>
Complete the baseline assessment and bring your answers to your first lesson. This work will be marked, and feedback given.
</td></tr>
<tr><td>3
Research and building on GCSE knowledge</td><td>
<h2>Pre-Knowledge topics</h2>
This is an optional task where you can do some research on some of the topics that we will cover in Year 1. You can complete as many of the tasks as you like, and present your findings as suggested or in your own way. Keep any notes that you make as they will be useful to revisit throughout the year.
</td></tr>
</table>

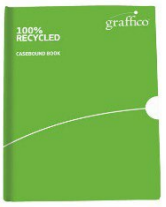
Biology A-Level Textbook Bundle



AQA: Year 1 & 2 Biology Student Book with Online Edition



AQA Biology Year 1 & 2 Exam Practice Workbook - includes Answers



Hardback casebound and 100% recycled A4 Laboratory Notebook

Bundle cost £32

Available to buy from 26th August

RRP £55

Please note if you choose to purchase this bundle it will be given to you in your lessons at the start of the year.

How to purchase?

- Go to the Worthing College website – click on Staff and Student Links, then scroll down to Online Store and click on Find Out More to access the store

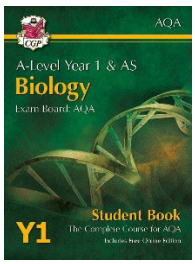
- If you have not used this service before, go to 'My account' and register an account

- When you fill in your details, please enter your student number or student name in the box marked 'student number' in the 'user details' section as this will enable us to track your purchase.

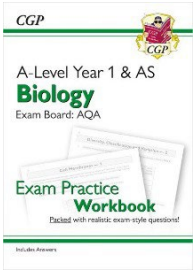
- Once registered in the shop navigate to product catalogue → worthing college →course materials the book bundle should be visible there. Once purchased you will then receive an email confirming your purchase, please retain your email invoice in case of problems. Your purchases will be given to you in your lesson.

- For those that get help with student funding once you have an account set up you will be able to email your receipt along with your name and student number to studentfinance@chigroup.ac.uk and you should be reimbursed.

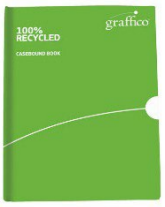
Vis Students Biology AS-Level Textbook Bundle



AQA: Year 1 Biology Student Book with Online Edition



AQA: Year 1 Biology Exam Practice Workbook - includes Answers



Hardback casebound and 100% recycled A4 Laboratory Notebook

Bundle cost £20

Available to buy from 26th August

RRP £28

Please note if you choose to purchase this bundle it will be given to you in your lessons at the start of the year.

How to purchase?

- Go to the Worthing College website – click on Staff and Student Links, then scroll down to Online Store and click on Find Out More to access the store

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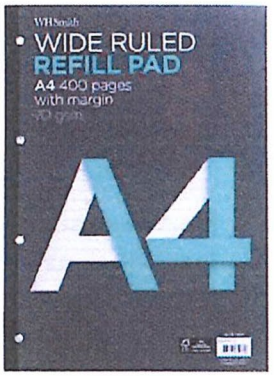
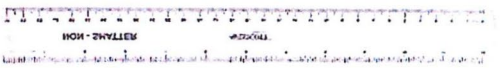
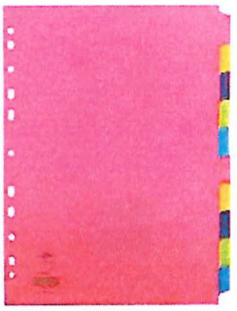
- For those that get help with student funding once you have an account set up you will be able to email your receipt along with your name and student number to studentfinance@chigroup.ac.uk and you should be reimbursed.

Other equipment:

- ✓ Pens, pencils, ruler, highlighter etc...
- ✓ Scientific calculator
  The one you used at GCSE is fine for A-Level Biology.
- ✓ A4 folder
  Most students get a smaller one to bring into college every day and a lever arch one to store notes from past topics at home.
- ✓ A4 paper
  Loose paper is better than a notebook as you will need to file pages in different places and add to your lesson notes during independent study. Bringing a notebook to lesson also means you are unlikely to bring a folder, and you'll need a folder to store handouts, worksheets and topic tests.
- ✓ Dividers
  Useful to separate your notes into topics.
- ✓ Phone / iPad
  We will use online resources in lessons, and you will submit work online so access to the internet in lesson is useful. Please don't worry if you can't, we have laptops that you can use in class if needed.



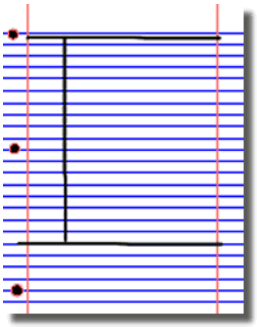




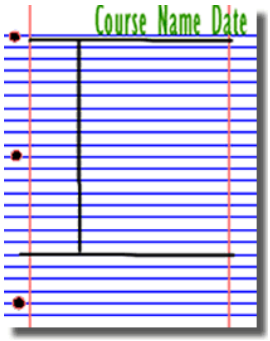
Writing Notes

Research, reading and note making are essential skills for A level Biology study. When you start lessons, you can produce 'Cornell Notes' to summarise learning. You might want to try using Cornell Notes if you complete any of the optional research tasks.

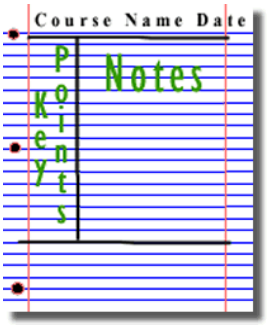
1. Divide your page into three sections like this



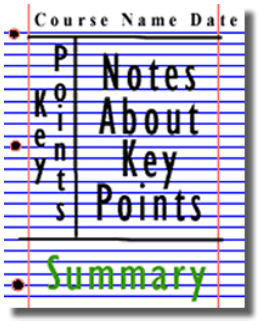
2. Write the name, date and topic at the top of the page



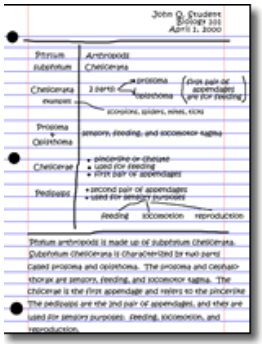
3. Use the large box to make notes. Leave a space between separate idea. Abbreviate where possible.



4. Review and identify the key points in the left hand box



5. Write a summary of the main ideas in the bottom space



Images taken from http://coe.jmu.edu/learningtoolbox/cornellnotes.html

Task 2

A Level Biology Transition Baseline Assessment

The following 40 minute test is designed to test your recall, analysis and evaluative skills and knowledge. Remember to use your exam technique: look at the command words and the number of marks each question is worth.

Your teacher will show you how to submit this task for marking in your first Biology lesson.

1. a) What are the four base pairs found in DNA?

.....

(2)

b) What does DNA code for?

.....

(1)

c) Which organelle in a cell carries out this function?

.....

(1)

2. a) What theory did Charles Darwin propose?

.....

(1)

b) Why did many people not believe Darwin at the time?

.....

(1)

c) Describe how fossils are formed.

.....

.....

.....

(3)

d) The fossil record shows us that there have been some species that have formed and some that have become extinct.

i) What is meant by the term 'species'?

.....

(2)

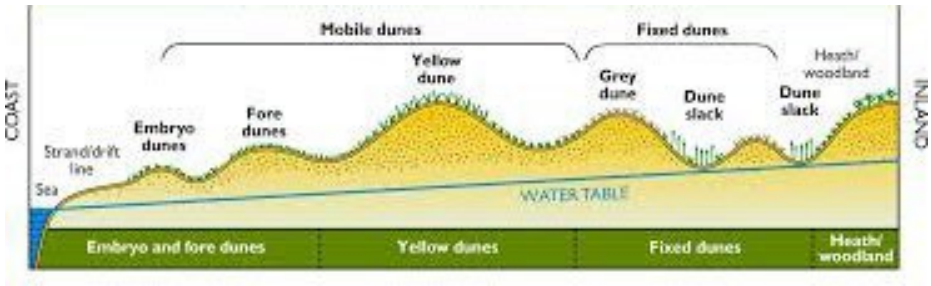
ii) Describe how a new species may arise:

.....

.....

.....(3)

3. Ecologists regularly study habitats to measure the species present and the effect of any changes. One team of ecologists investigated the habitat shown in the picture below:



a) Define the following keywords:

i) Population

……

ii) Community

……

(2)

b) Give an example of one biotic factor and one abiotic factor that would be present in this habitat

Biotic: ……

Abiotic: ……

(2)

c) Describe how the ecologists would go about measuring the species present between the coast and the inland.

……

……

……

……

……

……

(6)

4. Every living organism is made of cells.

a) Label the following parts of the animal cell:

2 .....

5 .....

8 .....

(3)

b) Describe how is the structure of the cell membrane related to its function?

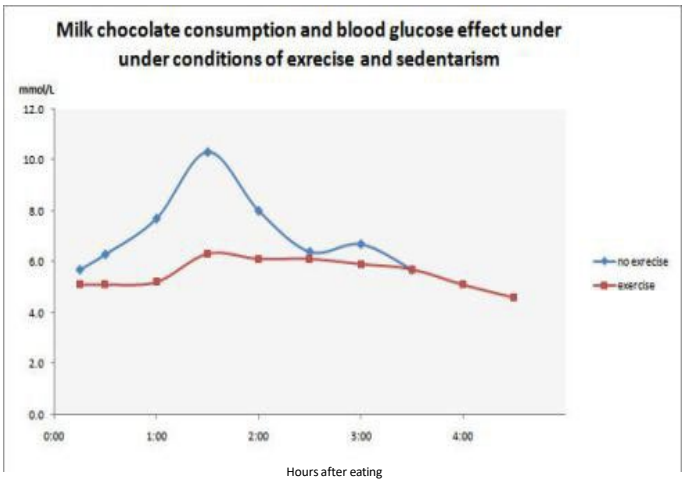
.....

.....

.....

(3)

5. A medical research team investigated how quickly the body deals with glucose after a meal. They studied the blood glucose concentration of people who exercised versus those who did not.
Here are their results:



a) What organ in the body regulates blood glucose concentration?

.....

(1)

b) Explain how the stages that would bring about a return to normal blood glucose concentrations.

.....

.....

.....

.....

(4)

c) Name one variable the researchers will have controlled.

.....

(1)

d) The researchers made the following conclusion:

"Blood glucose returns to normal values for all people after 4 hours"

To what extent do you agree with this conclusion.

.....

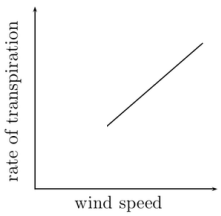
.....

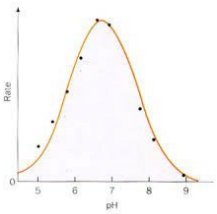
.....

.....

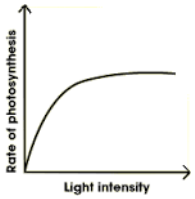
(3)

6. Scientists need to be able to interpret data in graphs to decide if there are trends in the results. For each graph below, describe the trend.





....



....(4)

Task 3
Pre-Knowledge Topics - Optional

A level Biology will use your knowledge from GCSE and build on this to help you understand new and more demanding ideas. Complete the following tasks to make sure your knowledge is up to date and you are ready to start studying:

DNA and the Genetic Code

In living organisms nucleic acids (DNA and RNA have important roles and functions related to their properties. The sequence of bases in the DNA molecule determines the structure of proteins, including enzymes.

The double helix and its four bases store the information that is passed from generation to generation. The sequence of the base pairs adenine, thymine, cytosine and guanine tell ribosomes in the cytoplasm how to construct amino acids into polypeptides and produce every characteristic we see. DNA can mutate leading to diseases including cancer and sometimes anomalies in the genetic code are passed from parents to babies in disease such as cystic fibrosis, or can be developed in unborn foetuses such as Downs Syndrome.

Read the information on this website (you could make more Cornell notes if you wish):

http://www.bbc.co.uk/education/guides/z36mmp3/revision

And take a look at these videos:

http://ed.ted.com/lessons/the-twisting-tale-of-dna-judith-hauck

http://ed.ted.com/lessons/where-do-genes-come-from-carl-zimmer

Task:

Produce a wall display to put up in your classroom in September. You might make a poster or do this using PowerPoint or similar Your display should use images, keywords and simple explanations to:

Define gene, chromosome, DNA and base pair

Describe the structure and function of DNA and RNA

Explain how DNA is copied in the body

Outline some of the problems that occur with DNA replication and what the consequences of this might be.

Evolution

Transfer of genetic information from one generation to the next can ensure continuity of species or lead to variation within a species and possible formation of new species. Reproductive isolation can lead to accumulation of different genetic information in populations potentially leading to formation of new species (speciation). Sequencing projects have read the genomes of organisms ranging from microbes and plants to humans. This allows the sequences of the proteins that derive from the genetic code to be predicted. Gene technologies allow study and alteration of gene function in order to better understand organism function and to design new industrial and medical processes.

Take a look at these videos:

http://ed.ted.com/lessons/how-to-sequence-the-human-genome-mark-j-kiel

http://ed.ted.com/lessons/the-race-to-sequence-the-human-genome-tien-nguyen

Task:

Produce a one page revision guide for an AS Biology student that recaps the key words and concepts in this topic. Your revision guide should:

Describe speciation

Explain what a genome is

Give examples of how this information has already been used to develop new treatments and technologies.

Cells

The cell is a unifying concept in biology, you will come across it many times during your two years of A level study. Prokaryotic and eukaryotic cells can be distinguished on the basis of their structure and ultrastructure. In complex multicellular organisms cells are organised into tissues, tissues into organs and organs into systems. During the cell cycle genetic information is copied and passed to daughter cells. Daughter cells formed during mitosis have identical copies of genes while cells formed during meiosis are not genetically identical

Take a look at these videos:
https://www.youtube.com/watch?v=gcTuQpuJyD8
https://www.youtube.com/watch?v=L0k-enzoeOM
https://www.youtube.com/watch?v=qCLmR9-YY7o

Task:

Produce a one page revision guide to share with your class in September summarising one of the following topics: Cells and Cell Ultrastructure, Prokaryotes and Eukaryotes, or Mitosis and Meiosis.

Whichever topic you choose, your revision guide should include:
Key words and definitions
Clearly labelled diagrams
Short explanations of key ideas or processes.

Biological Molecules

Biological molecules are often polymers and are based on a small number of chemical elements. In living organisms carbohydrates, proteins, lipids, inorganic ions and water all have important roles and functions related to their properties. DNA determines the structure of proteins, including enzymes. Enzymes catalyse the reactions that determine structures and functions from cellular to whole-organism level. Enzymes are proteins with a mechanism of action and other properties determined by their tertiary structure. ATP provides the immediate source of energy for biological processes.

Take a look at these videos:
https://www.youtube.com/watch?v=H8WJ2KENlK0
http://ed.ted.com/lessons/activation-energy-kickstarting-chemical-reactions-vance-kite

Task:

Krabbe disease occurs when a person doesn't have a certain enzyme in their body. The disease effects the nervous system. Write a letter to a GP or a sufferer to explain what an enzyme is.

Your poster should:
Describe the structure of an enzyme
Explain what enzymes do inside the body

Biodiversity

The variety of life, both past and present, is extensive, but the biochemical basis of life is similar for all living things. Biodiversity refers to the variety and complexity of life and may be considered at different levels. Biodiversity can be measured, for example within a habitat or at the genetic level. Classification is a means of organising the variety of life based on relationships between organisms and is built around the concept of species. Originally classification systems were based on observable features but more recent approaches draw on a wider range of evidence to clarify relationships between organisms. Adaptations of organisms to their environments can be behavioural, physiological and anatomical. Adaptation and selection are major factors in evolution and make a significant contribution to the diversity of living organisms.

Take a look at these videos:
http://ed.ted.com/lessons/why-is-biodiversity-so-important-kim-preshoff
http://ed.ted.com/lessons/can-wildlife-adapt-to-climate-change-erin-eastwood

Task:
Write a persuasive letter to an MP, organisation or pressure group promoting conservation to maintain biodiversity.
Your letter should:
Define what is meant by species and classification
Describe how species are classified
Explain one way scientists can collect data about a habitat, giving an example
Explain adaptation and how habitat change may pose a threat to niche species

Exchange and Transport

Organisms need to exchange substances selectively with their environment and this takes place at exchange surfaces. Factors such as size or metabolic rate affect the requirements of organisms and this gives rise to adaptations such as specialised exchange surfaces and mass transport systems. Substances are exchanged by passive or active transport across exchange surfaces. The structure of the plasma membrane enables control of the passage of substances into and out of cells

Take a look at these videos:
http://ed.ted.com/lessons/insights-into-cell-membranes-via-dish-detergent-ethan-perlstein
http://ed.ted.com/lessons/what-do-the-lungs-do-emma-bryce

Task:
Create a poster or display to go in your classroom in September. Your poster should either: compare exchange surfaces in mammals and fish or compare exchange surfaces in the lungs and the intestines. You could use a Venn diagram to do this. Your poster should:
Describe diffusion, osmosis and active transport
Explain why oxygen and glucose need to be absorbed and waste products removed
Compare and contrast your chosen focus.

Work Experience week

All year 1 students are required to participate in a week-long work placement during their first year of study. You will be expected to locate one week's worth of work placement and submit your work experience form before October half term.

Placement Dates:

L2/L3 students on double /triple qualifications:	1 week course-specific placement, expected placement dates will be confirmed by the course leaders at the beginning of September.
Students with 2 or more single subjects:	1 week placement during the Easter holidays or w/c 23 June 2025

You can find the work experience form HERE
More information and guidance can be found HERE