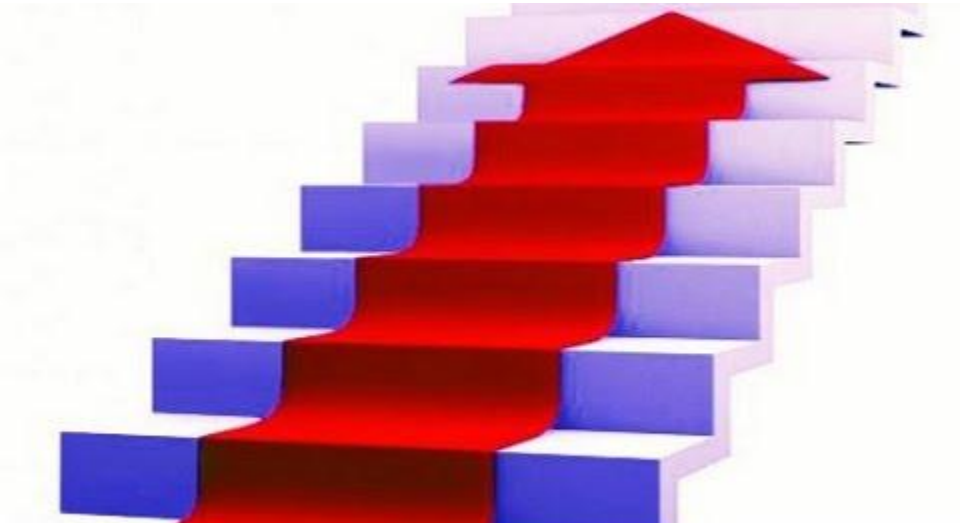
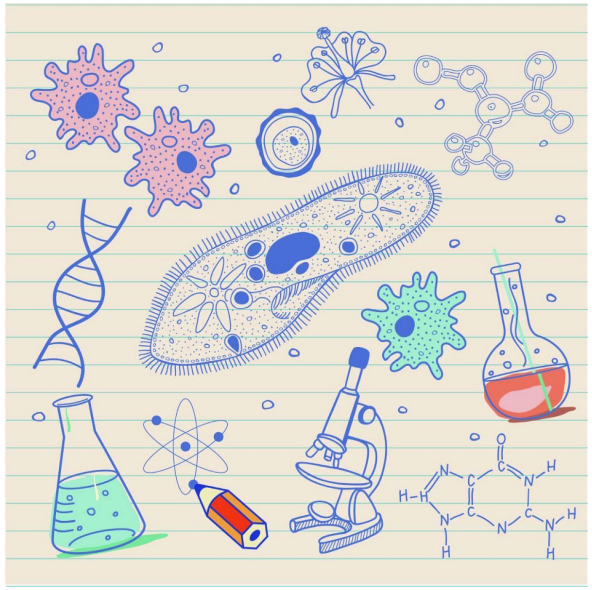
Success in A level Biology



Mrs Grant

Head of KS5 Biology



AQA course structure and exams

Paper 1	Paper 2	Paper 3
What's assessed • Any content from topics 1–4, including relevant practical skills	**What's assessed** • Any content from topics 5–8, including relevant practical skills	**What's assessed** • Any content from topics 1–8, including relevant practical skills
Assessed • written exam: 2 hours • 91 marks • 35% of A-level	**Assessed** • written exam: 2 hours • 91 marks • 35% of A-level	**Assessed** • written exam: 2 hours • 78 marks • 30% of A-level
Questions • 76 marks: a mixture of short and long answer questions • 15 marks: extended response questions	**Questions** • 76 marks: a mixture of short and long answer questions • 15 marks: comprehension question	**Questions** • 38 marks: structured questions, including practical techniques • 15 marks: critical analysis of given experimental data • 25 marks: one essay from a choice of two titles

Practical skills

These are assessed throughout the course and are certificated separately to the A level grade as either **pass** or **fail**.

	Apparatus and techniques
AT a	use appropriate apparatus to record a range of quantitative measurements (to include mass, time, volume, temperature, length and pH)
AT b	use appropriate instrumentation to record quantitative measurements, such as a colorimeter or potometer
AT c	use laboratory glassware apparatus for a variety of experimental techniques to include serial dilutions
AT d	use of light microscope at high power and low power, including use of a graticule
AT e	produce scientific drawing from observation with annotations
AT f	use qualitative reagents to identify biological molecules
AT g	separate biological compounds using thin layer/paper chromatography or electrophoresis
AT h	safely and ethically use organisms to measure: • plant or animal responses • physiological functions
AT i	use microbiological aseptic techniques, including the use of agar plates and broth
AT j	safely use instruments for dissection of an animal organ, or plant organ
AT k	use sampling techniques in fieldwork
AT l	use ICT such as computer modelling, or data logger to collect data, or use software to process data

Practical skills

Required activity
1. Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction
2. Preparation of stained squashes of cells from plant root tips; set-up and use of an optical microscope to identify the stages of mitosis in these stained squashes and calculation of a mitotic index
3. Production of a dilution series of a solute to produce a calibration curve with which to identify the water potential of plant tissue
4. Investigation into the effect of a named variable on the permeability of cell-surface membranes
5. Dissection of animal or plant gas exchange or mass transport system or of organ within such a system
6. Use of aseptic techniques to investigate the effect of antimicrobial substances on microbial growth
7. Use of chromatography to investigate the pigments isolated from leaves of different plants, eg leaves from shade-tolerant and shade-intolerant plants or leaves of different colours
8. Investigation into the effect of a named factor on the rate of dehydrogenase activity in extracts of chloroplasts
9. Investigation into the effect of a named variable on the rate of respiration of cultures of single-celled organisms
10. Investigation into the effect of an environmental variable on the movement of an animal using either a choice chamber or a maze
11. Production of a dilution series of a glucose solution and use of colorimetric techniques to produce a calibration curve with which to identify the concentration of glucose in an unknown 'urine' sample
12. Investigation into the effect of a named environmental factor on the distribution of a given species

Practical skills are assessed via 12 required practicals.
These practicals are also assessed through exam questions in the written exams

CPAC skills

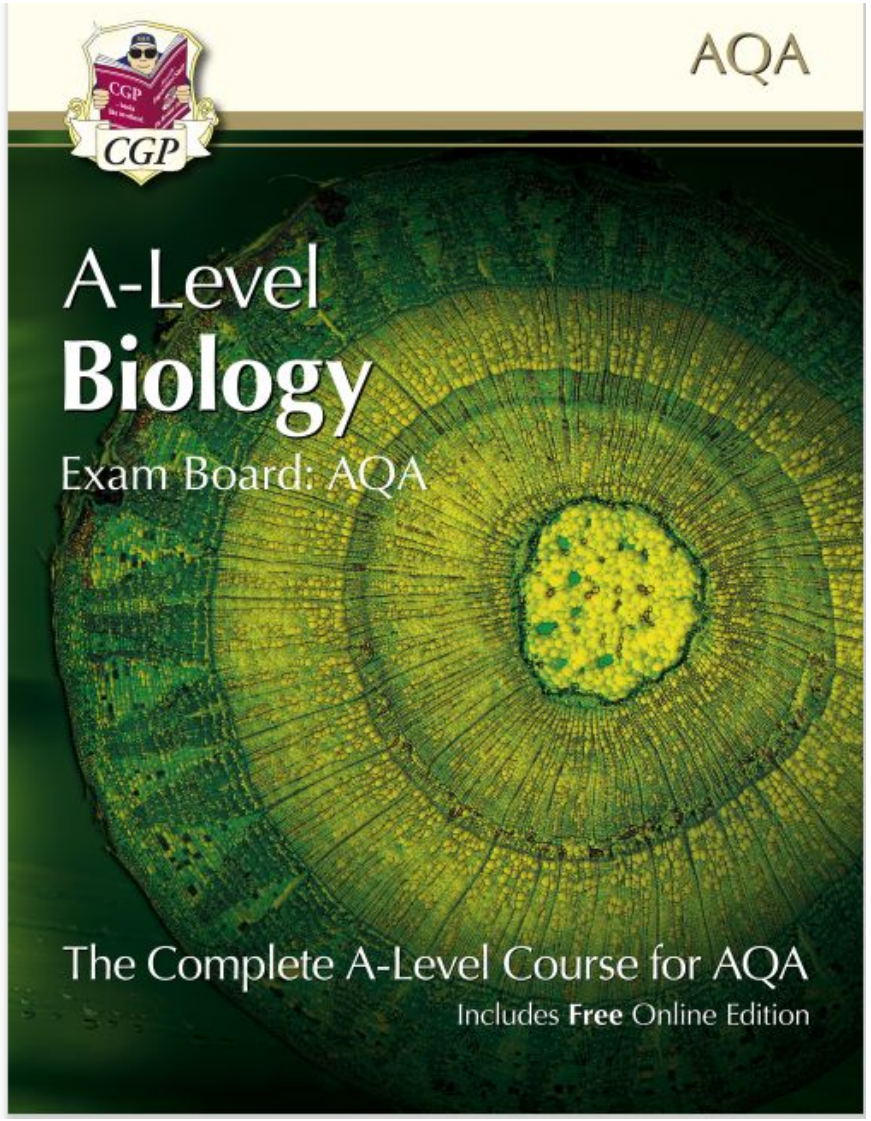
These are competency skills required across all science A levels and across all exam boards.

Competency	Practical mastery
1. Follows written procedures	(a) Correctly follows written instructions to carry out the experimental techniques or procedures.
2. Applies investigative approaches and methods when using instruments and equipment	(a) Correctly uses appropriate instrumentation, apparatus and materials (including ICT) to carry out investigative activities, experimental techniques and procedures with minimal assistance or prompting. (b) Carries out techniques or procedures methodically, in sequence and in combination, identifying practical issues and making adjustments where necessary. (c) Identifies and controls significant quantitative variables where applicable, and plans approaches to take account of variables that cannot readily be controlled. (d) Selects appropriate equipment and measurement strategies in order to ensure suitably accurate results.
3. Safely uses a range of practical equipment and materials	(a) Identifies hazards and assesses risks associated with those hazards, making safety adjustments as necessary, when carrying out experimental techniques and procedures in the lab or field. (b) Uses appropriate safety equipment and approaches to minimise risks with minimal prompting.
4. Makes and records observations	(a) Makes accurate observations relevant to the experimental or investigative procedure. (b) Obtains accurate, precise and sufficient data for experimental and investigative procedures and records this methodically using appropriate units and conventions.
5. Researches, references and reports	(a) Uses appropriate software and/or tools to process data, carry out research and report findings. (b) Cites sources of information demonstrating that research has taken place, supporting planning and conclusions.

Success tip #1: Get organised

In the summer work pack was a full list of chapters and lesson titles. Organisation really helps with learning and making links between big topics.

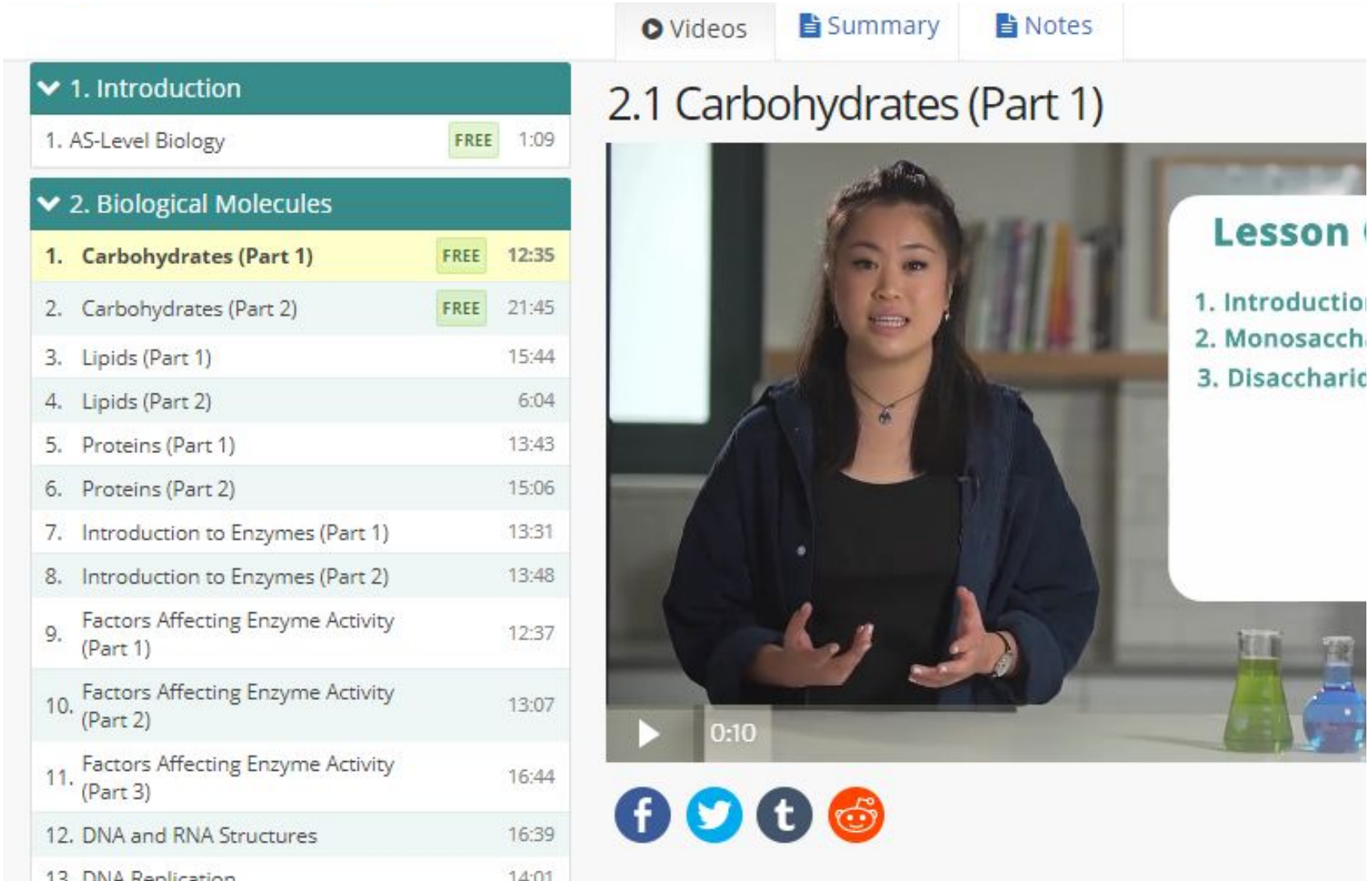
Success tip #2: Resources



Recommended text
https://www.cgpbooks.co.uk/secondary-books/as-and-a-level/science/biology/batb71-a-level-biology-for-aqa-year-1-2-stude

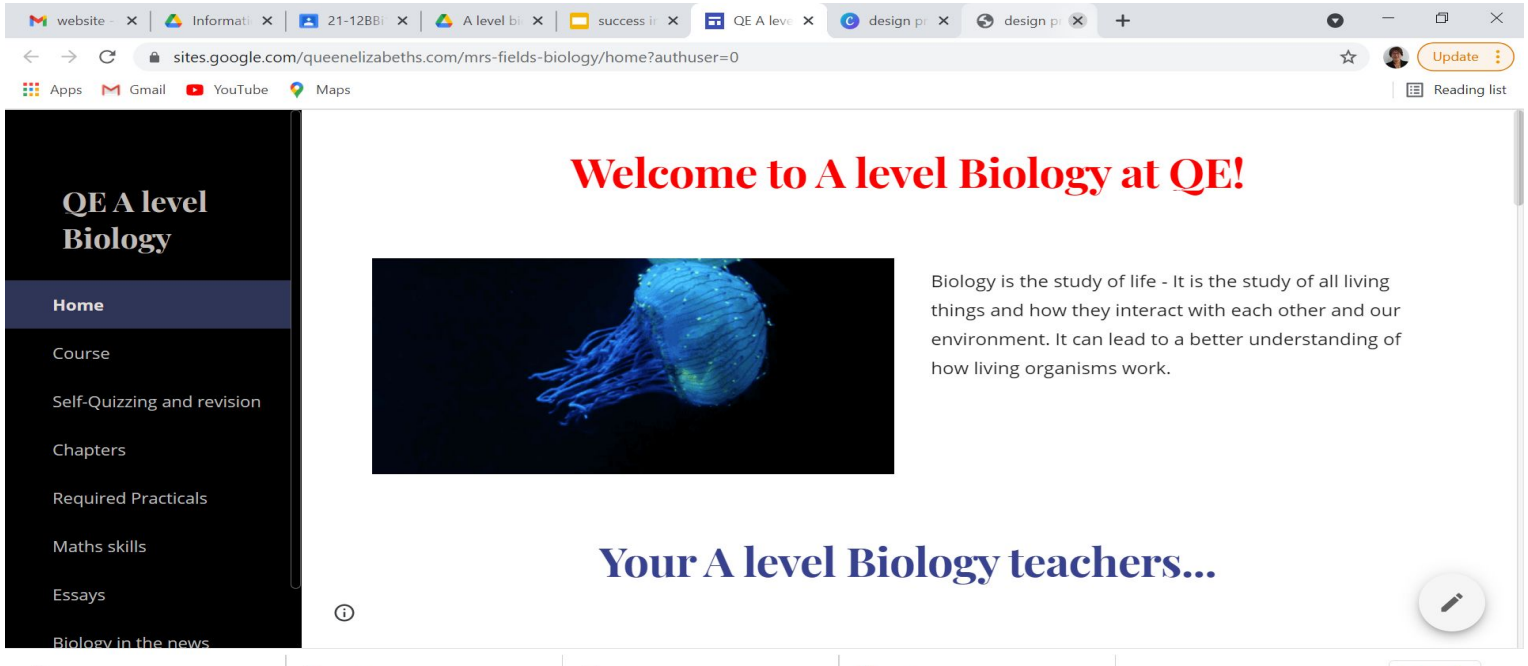
Success tip #2: Resources

https://snaprevise.co.uk/search?qualification=A-level&examboard=AQA



Success tip #2: Resources

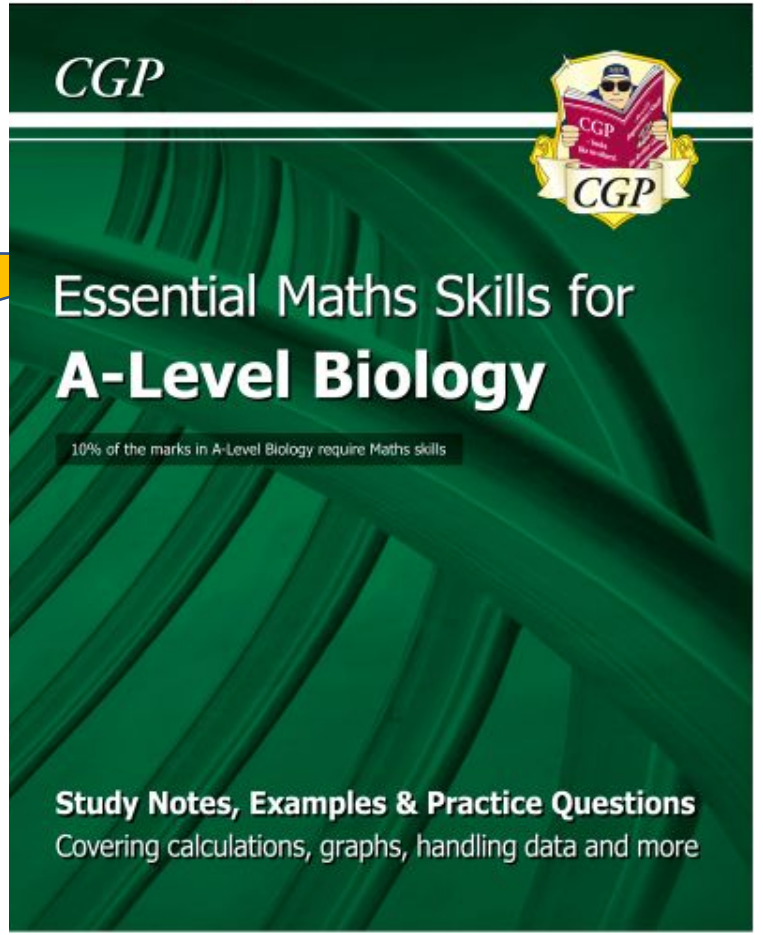
https://sites.google.com/queenelizabeths.com/mrs-fields-biology/home?authuser=0



Powerpoints, exam questions, self-quizzing sheets, knowledge organisers and flash cards are on the website.

Success tip #3: Know your maths!

10% of every A level biology exam has a mathematical content



https://www.cgpbooks.co.uk/Student/whoAreYou.book_BMR71

Success tip #4: Independent Study

Chapter 4
CELL STRUCTURE

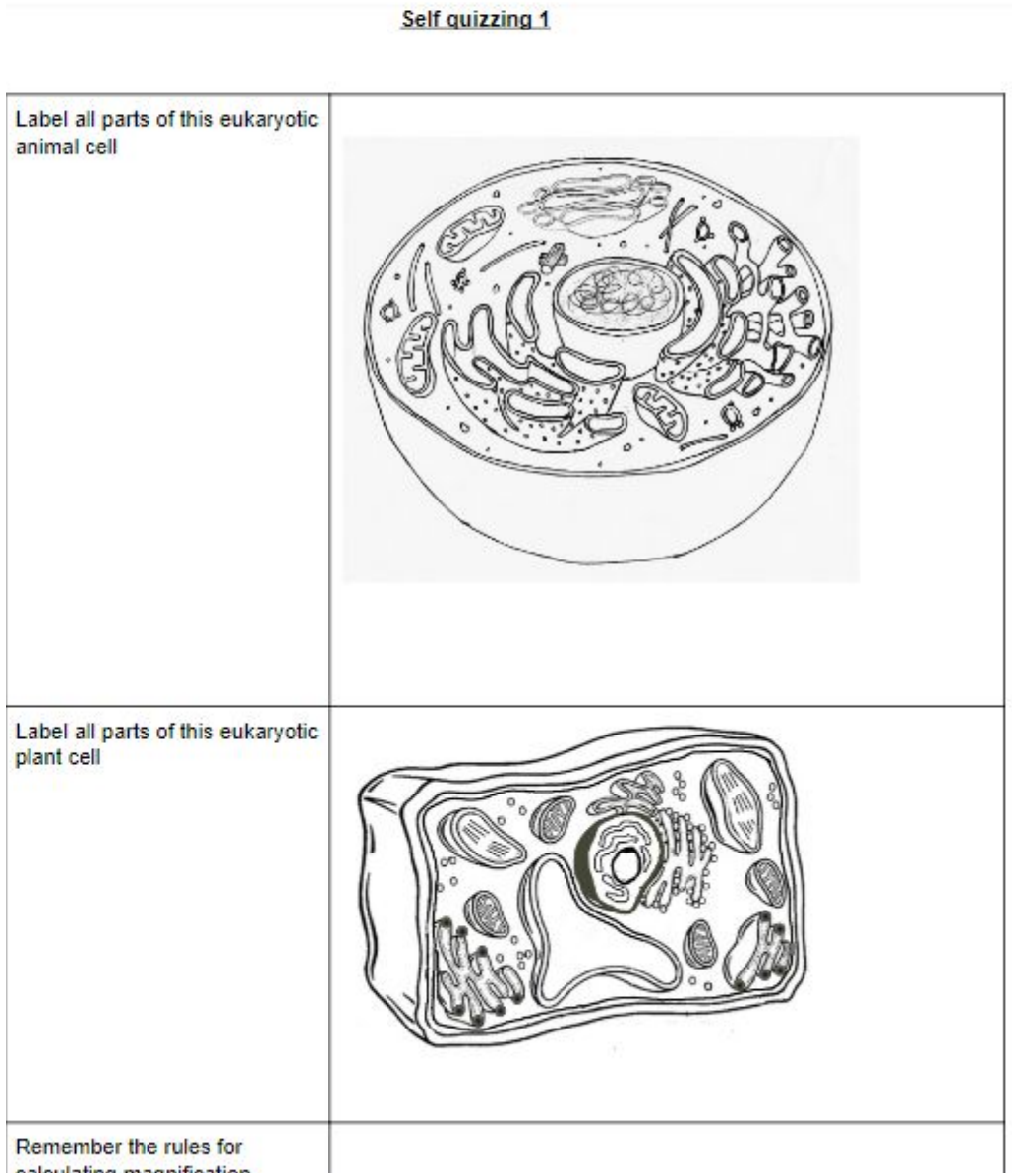
HOMEWORK PACK

Homework

Each chapter has its own homework pack.

Included are the following...

Success tip #4: Independent Study



Self quizzing 1

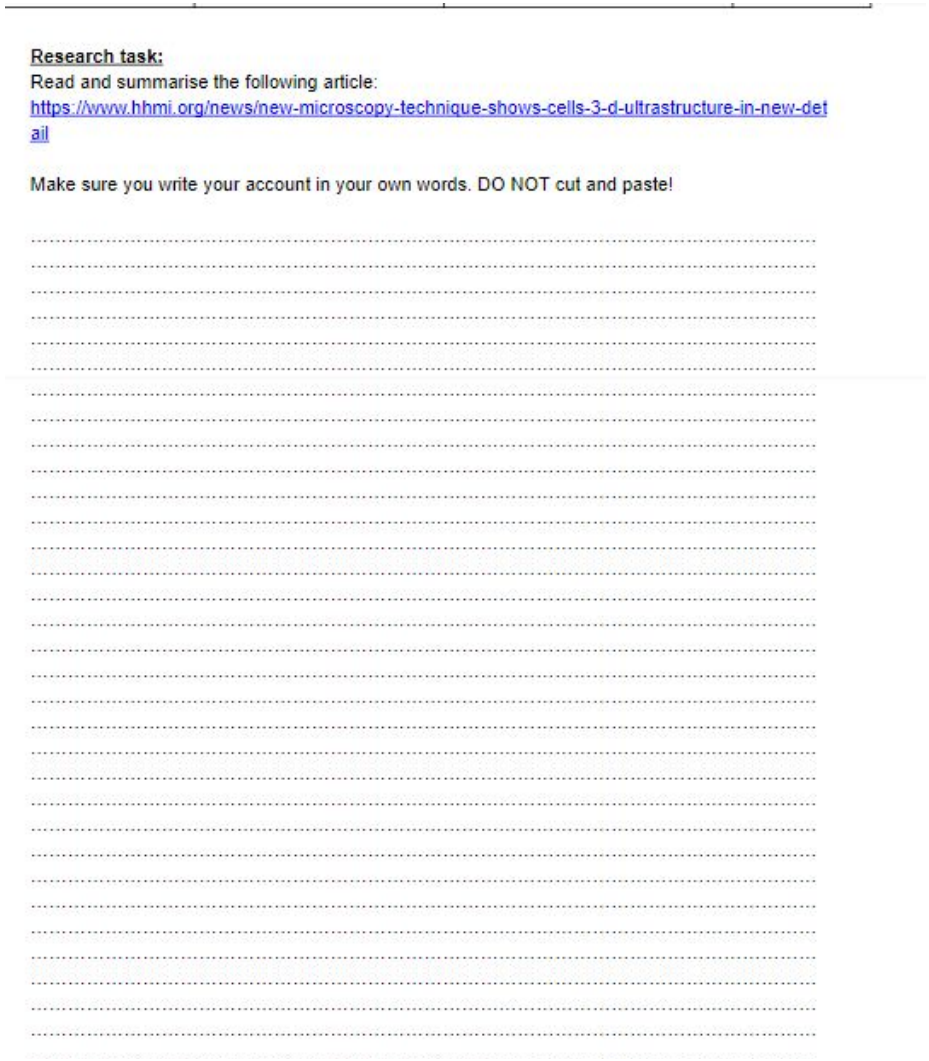
Label all parts of this eukaryotic animal cell	
Label all parts of this eukaryotic plant cell	
Remember the rules for	

Homework

Each chapter has its own homework pack.

Included are Blank set of self quizzing

Success tip #4: Independent Study



Research task:
Read and summarise the following article:
https://www.hhmi.org/news/new-microscopy-technique-shows-cells-3-d-ultrastructure-in-new-detail

Make sure you write your account in your own words. DO NOT cut and paste!

A research task

Success tip #4: Independent Study

Maths task

Rules for magnification questions:

1. Measure in mm only, never cms!
2. Convert to micrometers by x 1000
3. Then add figures to the triangle

$$\text{Actual size} = \frac{\text{Image size}}{\text{Magnification}}$$

$$\text{Magnification} = \frac{\text{Image size}}{\text{Actual size}}$$

× 20 000

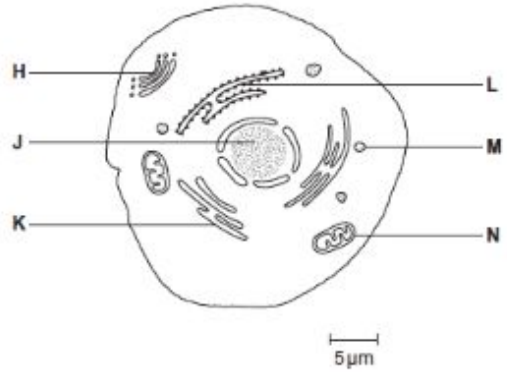
Calculate the maximum width of this organelle

A maths task,

Success tip #4: Independent Study

(3)
(Total 7 marks)

Q3. The diagram shows a eukaryotic cell.



(a) Complete the table by giving the letter labelling the organelle that matches the function.

Function of organelle	Letter
Protein synthesis	
Modifies protein (for example, adds carbohydrate to protein)	
Aerobic respiration	

(3)

(b) Use the scale bar in the diagram above to calculate the magnification of the drawing.
Show your working.

And a load of exam questions!

Success tip #4: Independent Study

All homework will be set using google classrooms. Deadlines will be made clear to students.

Self quizzing, learning the content using the knowledge organiser is a must. There are many ways to test yourself...

"One of the best habits to instill in a learner is **regular self-quizzing.**"

Suggested ways of self-quizzing:

Draw pictures/diagrams

Write keywords and put into sentences

Define key words

Gap fill

Write it in your own words

Look-cover-write

Matching exercise

Rewriting

Post-it notes

Mind mapping

Repetition

Mnemonics

Multiple choice questions

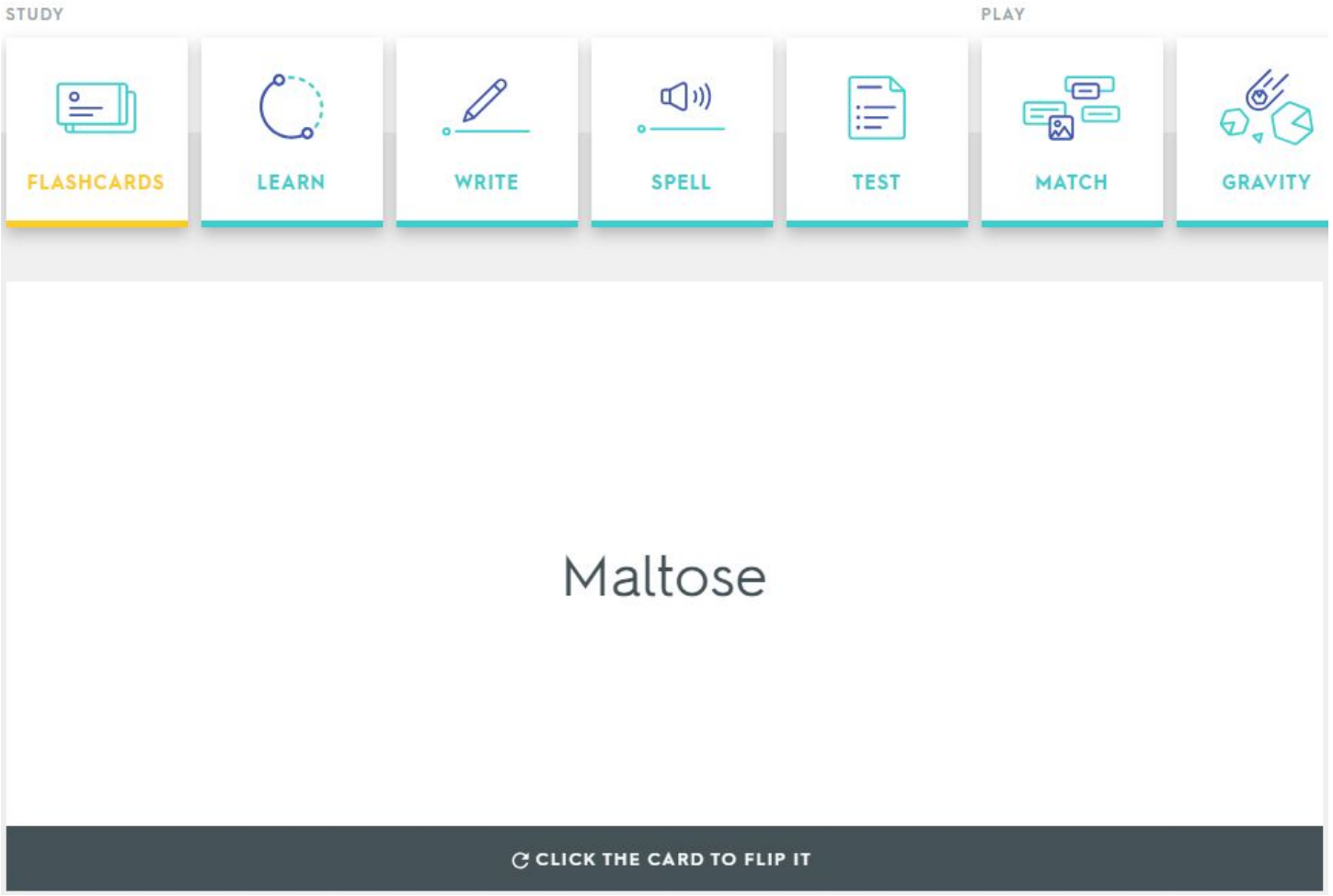
Draw and label diagrams

Work in study pairs/groups

Ask parents/guardians to test you on definitions

Regular Self-Quizzing

https://quizlet.com/317764780/year-12-assessment-1-2018-flash-cards/



Quizlet is a powerful way of self quizzing!

Success tip #5: Read around the subject

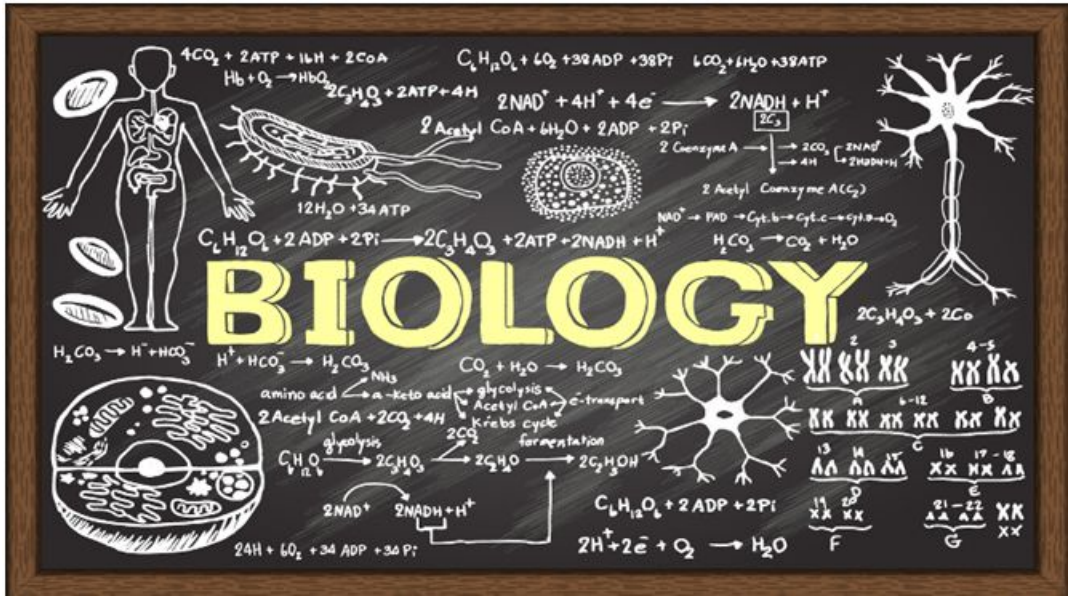
- **University courses**
- **University open days**
- **Biology in the news**

Biology article summary homework tasks within each chapter's homework pack

Essay in paper 3: 25 marks. To get full marks, students have to show evidence of having read around the subject.

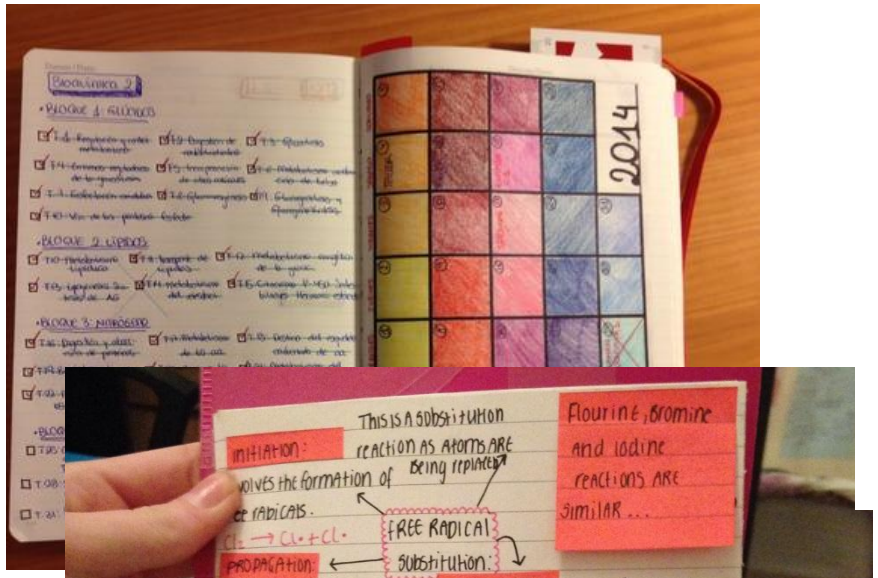
uccess tip #6: Attend help sessions

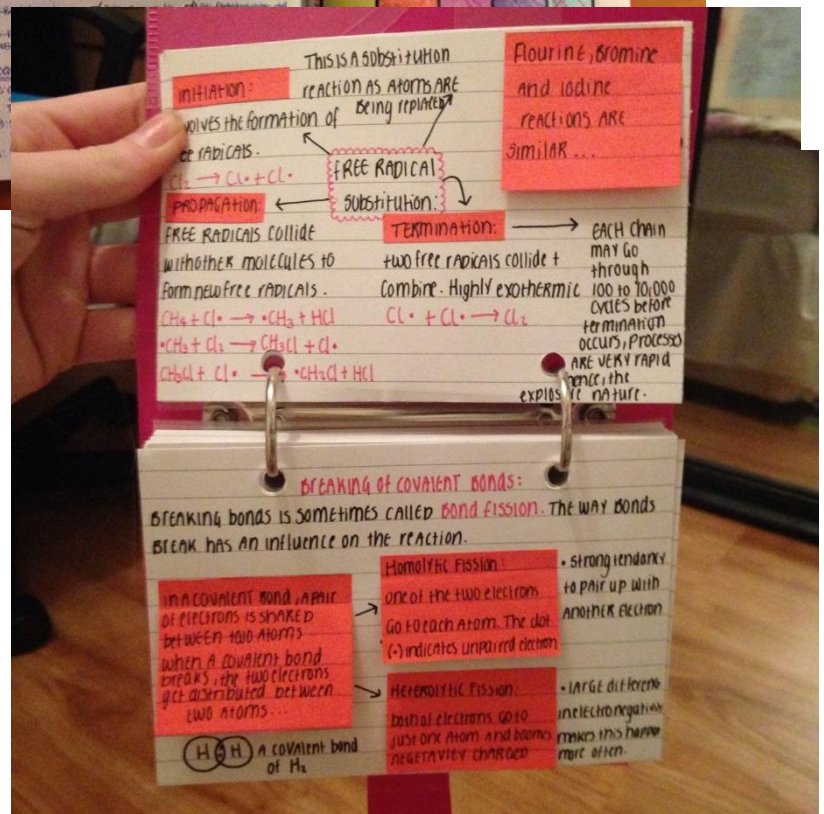
Year 12 - Friday lunchtime E204
Year 13 - Thursday after school



- **NO SUCH THING AS A SILLY QUESTION.**
- **Nothing wrong with asking the same question over and over again until you “get it”**

Success tip #7: Stick to a Revision





Start with weaker topics

PLAN

Reduce notes

Convert notes "Dual Coding"

EXAM questions with Model answers


#1
Get
organised
#2
Resources
#3
Maths
#4
Independent
study
#5
Read
around
#6
Get help!
#7
Revision
7 steps
to
success