

## B2: Biology

The headings in this booklet are one way to divide the content that will be tested in the **B2** exam for the **AQA Additional Science** Specification (and in **AQA Biology**). There are many ways in which to revise the material, but most effective methods will use the MORSE ideas:

<b>Mnemonics</b>	rhymes, phrases or acronyms that remind you of key ideas or links eg RoyGBiv or Naughty Elephants Squirt Water
<b>Organisation</b>	make links between ideas, putting them in groups or order, finding opposites Eg concept maps, C words (Concept, Cause, Consequence, Context, Cues)
<b>Rehearsal</b>	use facts more than once, go over ideas several times, ideally varying formats Eg write words/definitions, cover/reproduce, repeat those you struggle with
<b>Simplifying</b>	focus on key points, words not sentences, sentences not paragraphs Eg highlighting/underlining, writing summaries, flash cards
<b>Extension</b>	use what you know in new ways, challenging yourself to show understanding Eg apply to new situation, write a song, justify an argument, record a podcast

The best kinds of activity will produce something written, which you can refer back to. Even a question and answer session with a friend should end up with you adding ticks or crosses to easier or harder work. Use the checklist at the back to decide priorities, making sure that you update it as you become more confident.

However you choose to make notes, you will need some reliable sources of information.

**Don't try to copy out** whole paragraphs; instead choose what is most important and represent the facts with mind maps, key word lists, diagrams or questions and answers.

- Your own lesson notes
- Issued textbook(s)
- BBC Bitesize ([Additional Science](#), Biology) or the more general [S-Cool Biology](#) page
- Revision guide (page references to CGP Additional Science, Higher Tier)

You may also like to use a phone or other mobile device to save slideshows or listen to audio podcasts. You may also be able to use specific applications that let you create flashcards, revision summaries, mind maps or notes. Just make sure you're spending time on the **revision facts**, not playing with the software.

For any idea, you may find it useful to focus on being able to explain the main **concept**, the **causes**, the **consequences**, real world **context** and any linked **cue words**.

## Cells and Organs

Plant cell diagram	Labels	Animal cell diagram

Examples of specialized cells, including bacteria and yeast

How does diffusion work? Why can it be described as a passive process?

How are mitosis and meiosis different (process and result)?

Stem cells: useful but controversial

Cells organised into tissues organised into organs

## Plants and Photosynthesis

Reminders of plant cell characteristics:

Leaf diagram	Labels	Adaptations

The xylem...

The phloem...

Photosynthesis:



Limiting factors      definition:

examples:

Uses of glucose:

- 
- 
- 
- 
-

## Enzymes

...as catalysts

...fussy (include sketch graphs)

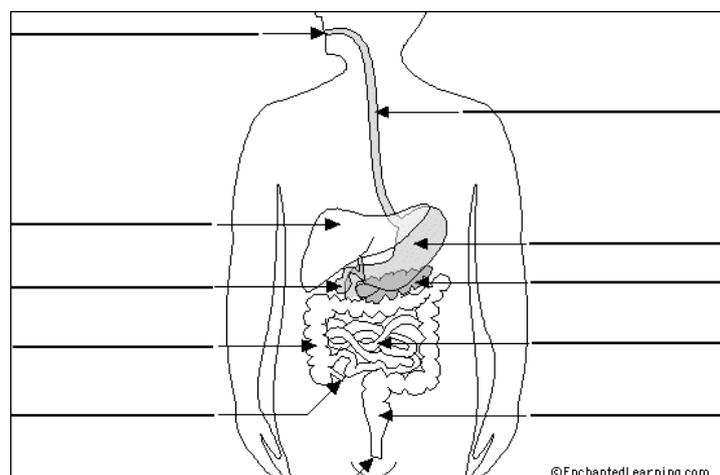
Substrate =

Product =

Lock and key diagram/explanation

Uses of enzymes in industry

Human digestive system (what enzymes, released by which organs, to do what?)



## Respiration

Respiration is a chemical process...

The energy from respiration is used for:

- 
- 
- 
- 

Aerobic respiration



Mitochondria matter because... (good chance to recap cell structure)

Exercise affects the rate of respiration, both aerobic and anaerobic:

The main problem with anaerobic respiration is that...

Anaerobic respiration in the muscles



Yeast also respire without oxygen



We use yeast to make:

## Variation from Mendel onwards

What Mendel did:

Genes are instructions on chromosomes, which are made of DNA, stored in the nucleus

Genotype = combination of alleles

Phenotype = observed characteristic

For alleles, four definitions are important:

- Dominant
- Recessive
- Homozygous
- Heterozygous

Drawing diagrams of genetic crosses

Genetic disorders (be able to draw diagrams, know the ratios)

- Cystic Fibrosis (CF)
  
- Polydactyly

Embryo screening (process and ethical questions)

## Natural Selection and Fossils

What affects how organisms are distributed?

Collecting data with...

...transects

...quadrats

Sample size matters!

Fossils are formed...

The fossil record:

The oldest fossils...

There are gaps because...

We can see...

Causes of extinction

Isolation + variation + selection + inheritance → speciation and (over time) evolution

### Cells and Organs

Parts of a cell	☆☆☆☆☆	p10
Specialized Cells	☆☆☆☆☆	p12
Bacteria and yeast	☆☆☆☆☆	p10
Diffusion	☆☆☆☆☆	p11
Mitosis	☆☆☆☆☆	p28
Meiosis	☆☆☆☆☆	p29
Stem cells (ETHICS)	☆☆☆☆☆	p30
Tissues and organs	☆☆☆☆☆	p13

### Plants and Photosynthesis

Structure of a leaf	☆☆☆☆☆	p14
Xylem and phloem	☆☆☆☆☆	p14
Photosynthesis	☆☆☆☆☆	p15
Limiting factors	☆☆☆☆☆	p15/16
Uses of glucose	☆☆☆☆☆	p17
Organs in a plant	☆☆☆☆☆	p14

### Enzymes

Enzymes as catalysts	☆☆☆☆☆	p21
Temperature and pH	☆☆☆☆☆	p21
'Lock and key' hypothesis	☆☆☆☆☆	p21
Enzymes in industry	☆☆☆☆☆	p26
Digestive system	☆☆☆☆☆	p22/23

### Respiration

Breathing vs respiration	☆☆☆☆☆	p24
Aerobic respiration	☆☆☆☆☆	p24
Mitochondria	☆☆☆☆☆	p10
Effects of exercise	☆☆☆☆☆	p25
Anaerobic (humans)	☆☆☆☆☆	p25
Yeast	☆☆☆☆☆	

### Variation from Mendel onwards

Mendel's work	☆☆☆☆☆	p32
Chromosomes, genes, DNA	☆☆☆☆☆	p27
Dominant/recessive alleles	☆☆☆☆☆	p32/33
Genetic diagrams	☆☆☆☆☆	p31, 33, 35
Disorders	☆☆☆☆☆	p34
Embryo screening (ETHICS)	☆☆☆☆☆	p34

### Natural Selection and Fossils

Distribution of organisms	☆☆☆☆☆	p18/19
Sampling with quadrats	☆☆☆☆☆	p18/19
Fossil formation	☆☆☆☆☆	p36
The fossil record	☆☆☆☆☆	p36
Extinction	☆☆☆☆☆	p37
New species	☆☆☆☆☆	p37

(Mitosis, meiosis and stem cells could also be revised as part of the genetics work if preferred.)