

**Dual Award pupils need to do ALL of the work on this letter (Section 1 and 2).  
Triple / Separate Science pupils need to do section 2.**

## Section 1

*There are two main routes through Science GCSE's. The first is the 'Double Science', where you complete 2 units for each of the 3 sciences, this leads to 2 GCSE's called 'Science'. Another route is 'Triple Award / Separate Sciences', where 3 units for each Science are completed. This leads to an award of 3 GCSE's, called Biology, Chemistry and Physics.*

*It is often found that people who have done Dual Award Science find A Level harder than people who have done Triple Award. This may be because 'Double Science', does not cover Unit 3 in Biology.*

*To help bridge this gap you should complete the questions below using websites such as those suggested overleaf. Try to provide as much detail as possible.*

1. Define osmosis
2. Define active transport
3. Give 3 biological examples of where osmosis or active transport would take place
4. Define isotonic
5. What 3 features of the lungs make them a good surface for gas exchange?
6. Describe the process of ventilation (including named muscles)
7. Give an example of where each of the following would be used in a plant (a) diffusion (b) osmosis and (c) active transport
8. Why do leaves have stomata which open and close?
9. What feature increases the surface area of the root of a plant?
10. Define transpiration
11. What factors affect the rate of transpiration?
12. Which 2 transport tissues are found in plants and what do they transport?
13. What are the four main blood vessels entering and leaving the heart? Where does each one take blood from and to?
14. Why is the heart referred to as a 'double pump'?
15. What is the function of the valves in the heart?
16. Name 2 main differences for arteries, veins and capillaries?
17. What is atherosclerosis and how can it be treated?
18. What are the four main components of blood and what is the function of each?
19. Describe 3 adaptations of a red blood cell for its function
20. Explain why immunosuppressant drugs are essential for the recipient of an organ donation

## Section 2

A Level Biology is one of the most interesting, but difficult A levels. Some people find making the transition to A Level more difficult than others. They may have cruised through school, not doing much work, but achieving good results nevertheless. This kind of person may struggle to believe the amount of TIME and SELF STUDY necessary to achieve equally high grades at A Level. Others may have worked really hard to get a B grade, and struggle with the difficulty of some of the topics you covered.

Either way, taking an **active** part in making sure you understand and learn the work, as well as putting the time in, are the most effective ways to get the highest grade you can. The work below will help you to develop the independent learning skills and curiosity you will need.

**Write an essay on 'The structure of the heart and heart disease' (approx 1500 words).**

*The following essay plan may help:*

*Section 1: (approx 500 words) Structure of the heart, include diagrams if it helps.*

*Section 2: (approx 800 words) Information on coronary heart disease, atheroma, thrombosis, aneurysm and myocardial infarction.*

*Section 3: (approx 300 words) Discuss some of the risk factors (e.g. smoking) associated with heart disease.*

***Note: your work will be checked to see if it is in your own words so avoid copying directly from your research sources.***

**Deadline: Hand in on your first biology lesson on the first day of term.**

As well as being able to pass the exams, it is important for you to develop as a **biologist**. So you could also be broadening your mind by reading books (Alice Roberts has produced some very readable and relevant books), watching documentaries and researching issues you hear about in the news.

Have a lovely summer; see you in September!

Suggested websites:

[biologymad.com](http://biologymad.com)

[doddlelearn.co.uk](http://doddlelearn.co.uk)

[s-cool.co.uk](http://s-cool.co.uk)

[mrothery.co.uk](http://mrothery.co.uk)

[biology-innovation.co.uk](http://biology-innovation.co.uk)

[youtube.com/user/AmoebaSisters](https://youtube.com/user/AmoebaSisters)