



# SIXTH FORM INDUCTION TASKS





Dear student,

Congratulations on your enrolment for the Sixth Form at The Heathland School.

The leap from GCSE to Post 16 study is significant and it is essential that you make a strong and committed start to your courses in September.

In order to help you do this, we have asked departments to prepare some preliminary work for you to start before your first lessons begin. There are tasks to complete for each A Level or BTEC subject you are going to study in Year 12. Teachers will refer to these tasks during the first two weeks of study.

I would also ask you to view the specification for each subject by viewing the curriculum section on the school website.

The best of luck with your Sixth Form studies – we look forward to seeing you make good progress during Year 12 and beyond.

## Personalised Checklists (PLCS)

A PLC is a Personalised Learning Checklist. It is an organised list of topics that you will study in your chosen subjects taken from the syllabus. It also provides an opportunity for you to reflect on your progress in your subjects.

MyPLC (<https://www.my-plc.co.uk/register/>) has a large bank of subject and exam board specific information. Sign up as a student and join the Sixth Form Students class by entering the code **ab4870**.

You will then have access to all the available PLC's for your subject and exam board. This will:

1. Show you all the topics you will be studying for your subjects
2. Allow you to rate your level of understanding for each topic as you study them
3. Help you direct your revision to make it specific, focused and individual to you; ensuring your revision is an effective use of time and energy

Previous students have said:

“PLC's help me see in advance what we will be learning so I can do some additional reading before the lesson”

“Using the PLC has helped me to focus my revision on areas I need to improve”

“It has been really helpful when Topic tests come up. I know specifically what to revise”



# BIOLOGY

Use your online searching abilities to see if you can find out as much about the topic as you can.

**Activity 1: Produce a detailed information sheet containing the following information using Cornell notes:**

<http://coe.jmu.edu/learningtoolbox/cornellnotes.html>

## **Microscopes**

- Images of light and electron microscopes
- The difference between magnification & resolution
- The 2 types of electron microscope, how they work and the images they produce
- The maximum resolution & magnification that can be achieved with a) light microscopes b) electron microscopes (TEM & SEM)
- The purpose of staining samples in light & electron microscopy
- Advantages & limitations of using a) light microscopes b) electron microscopes

**Activity 2 – Task: Choose one of the following topics.**

**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:**

## **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 these websites (you could make more Cornell notes if you wish):

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

<http://www.s-cool.co.uk/a-level/biology/dna-and-genetic-code>

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>

## **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

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/gas-exchange>

<http://www.s-cool.co.uk/a-level/biology/nutrition-and-digestion/revise-it/human-digestive-system>

And 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>

### **Activity 3 - Scientific and Investigative Skills**

As part of your A level you will complete a practical assessment. This will require you to carry out a series of practical activities as well as planning how to do them, analysing the results and evaluating the methods. This will require you to: use appropriate apparatus to record a range of quantitative measurements (to include mass, time, volume, temperature, length and pH), use appropriate instrumentation to record quantitative measurements, such as a colorimeter or photometer, use laboratory glassware apparatus for a variety of experimental techniques to include serial dilutions, use of light microscope at high power and low power, including use of a graticule, produce scientific drawing from observation with annotations, use qualitative reagents to identify biological molecules, separate biological compounds using thin layer/paper chromatography or electrophoresis, safely and ethically use organisms, use microbiological aseptic techniques, including the use of agar plates and broth, safely use instruments for dissection of an animal organ, or plant organ, use sampling techniques in fieldwork.

#### **Produce a glossary for the following key words:**

accuracy, anomaly, calibration, causal link, chance, confounding variable, control experiment, control group, control variable, correlation, dependent variable, errors, evidence, fair test, hypothesis, independent, null hypothesis, precision, probability, protocol, random distribution, random error, raw data, reliability, systematic error, true value, validity, zero error.