

Year 10 into 11 Biology Bridging Work

Congratulations on completing Year 10 and entering the final stage of your biology journey! This bridging work will help you review and reinforce key ideas from Year 10, ensuring a supported transition into Year 11.

There are four sections to this booklet. These are:

1. Reviews of each Required Practical you have covered so far in biology with an opportunity to review different aspects of individual practical work;
2. Exam Question Practice – get into the mindset of an examiner! Practice some commonly tested exam questions in biology with top tips from our exam board, AQA.
3. Autumn Term Preparation

Together with this, there will be links to useful videos that directly link to the module/topic in case you need further support. Please also use your CGP and Kerboodle textbooks to support with your revision.

Recommended Websites:

- Savemyexams
- BBC Bitesize
- AHammondBiology
- Thesciencehive

This is the first piece of work you will be assessed in September and will set the tone for the rest of the academic year. It's an opportunity for you to showcase your knowledge, skills, and growth since Year 10. Work hard, stay focused, and demonstrate what you are capable of achieving.

Section 1: Required Practicals

Recommended Videos (remember the practical you do in school vs the one in the exam can vary):

1. Osmosis – measuring mass change of potato discs in different solutions
 - a. [Osmosis - Malmesbury Education](#)
 - b. [Osmosis - Free Science Lessons](#)
2. Enzymes – measuring time taken for amylase to digest starch
 - a. [Enzymes - Malmesbury Education](#)
 - b. [Enzymes - Free Science Lessons](#)
3. Photosynthesis – measuring the rate of photosynthesis in different light intensities
 - a. [Photosynthesis - Malmesbury Education](#)
 - b. [Photosynthesis - Free Science Lessons](#)
4. Distribution – measuring number of plants in different areas (sunny/shaded)
 - a. [Distribution - Malmesbury Education](#)
 - b. [Distribution - Free Science Lessons](#)

For any practical activity can students answer these 10 questions?

1. What is the dependent variable and the independent variable?
2. Therefore, what other factors could affect the results and need to be controlled (control variables)?
3. What will I measure or record?
4. What would an appropriate experimental control be?
5. How could I improve the accuracy of my experiment/investigation?
6. How could I improve the precision of my experiment/investigation?
7. How could I improve the validity of my experiment/investigation?
8. What else could I do with this experiment? What could I change to investigate something else?
9. What is my greatest source error?
10. What pattern or trend do my results show and how do I explain this?

Please note because not all investigations have all these characteristics, not all of these questions can be answered for all Required Practicals.

Required Practical 3: Osmosis

A science class is investigating the effect of sugar solutions on the mass of a potato slice.

The sugar solutions are shown in Table 1:

Mass of Sugar (mg)	Volume of Water (mL)	Concentration (mg/mL)
2.5	5	0.5
4	4	1
10	5	
12	3	4
16	2	8

Table 1

- 1. Fill in the gap in the table.**

The potato pieces were all cut to the same size, and all weighed 1 g. After 1 hour, the potato slices were weighed again and the data recorded.

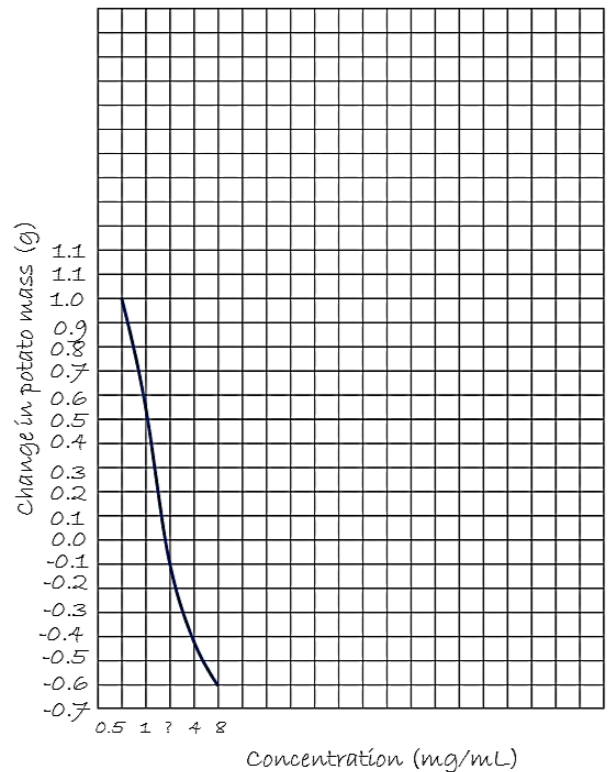
2. What other factors should be controlled during this experiment?

One student plotted the following graph to express the data.

3. How should this graph be changed to make it better?

Samantha performs the experiment again with higher concentrations of sugar in the water.

4. What observation would you expect?



5. Calculate the percentage decrease in the mass of the potato between 0.5 mg/mL and 1.0 mg/mL.

Required Practical 5: Enzymes

A class are testing the effect of pH on how well amylase digests starch. They test the time taken for iodine to stop changing colour.

They produce the graph in Figure 1:

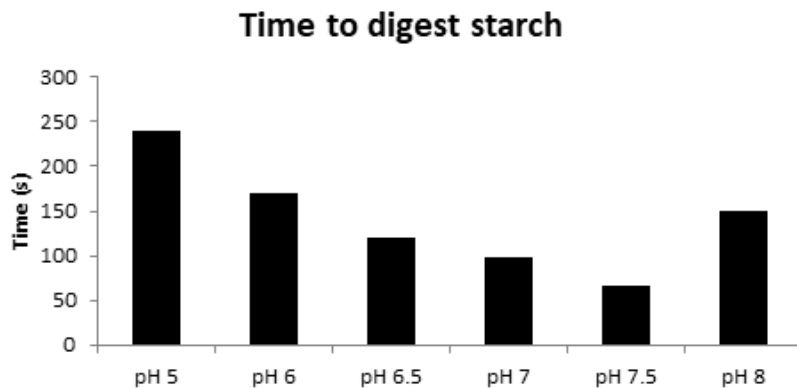


Figure 1

1. What group of chemicals does amylase belong to?
2. Explain how you can use these results to identify the optimal pH for amylase action.
3. How could the class speed the digestion of starch further?

Another class repeated this experiment. They performed the experiment at 42 °C.

4. What would you expect the observations to be during this experiment?

A machine called a 'colorimeter' is able to measure the exact colour of a solution.

5. How could a colorimeter help with this experiment?

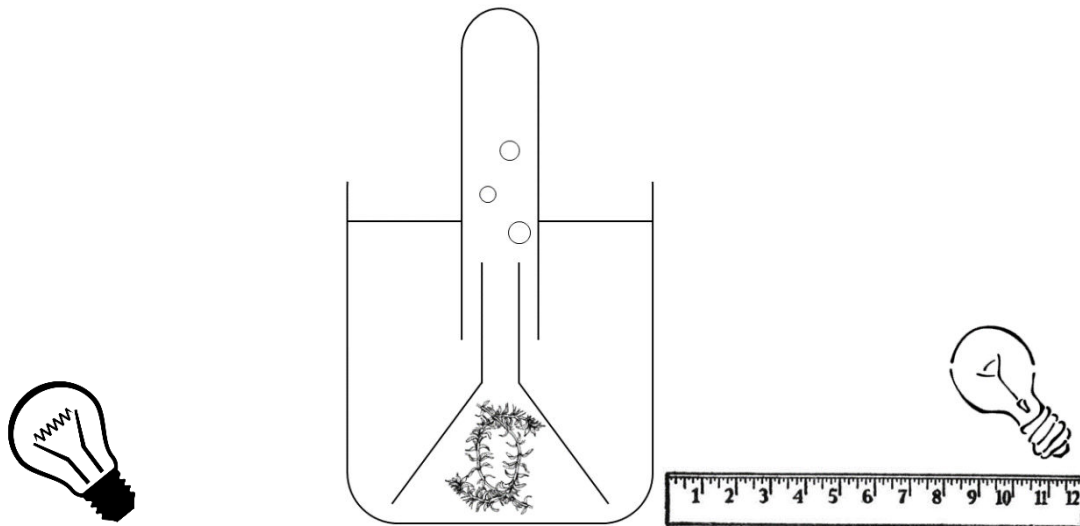
Required Practical 6: Photosynthesis

A class is investigating the effect of light on photosynthesis.

They have some pondweed beneath a tube filled with water, and a light bulb shining on the plant.

Carbon dioxide is kept constant throughout.

The set-up of their experiment is shown in Figure 1.



1. Which gas is represented by the bubbles in the tube?
2. Using the equipment above, devise an experiment to test the effect of light intensity on the rate of photosynthesis. Identify any safety precautions that should be considered.

3. Write a hypothesis for this experiment.

Photosynthesis is also affected by temperature.

4. How could this experiment be adapted to test the effect of temperature on photosynthesis? What safety precautions should be considered?

Section 2: Exam Question Practice

Recommended Video: [Vaccination - Cognito Science](#)

Vaccination can be used to prevent an illness in a person.

Explain how a vaccination can prevent an illness.

Recommended Video: [Reflex Arc - Cognito Science](#)

A woman's hand accidentally touches a hot object.

The woman moves her hand away rapidly.

Describe how the woman's nervous system coordinates the reflex action.

(6)

Recommended Video: [Endocrine System - Cognito Science](#)

The endocrine system coordinates many internal functions of the body.

Give three ways coordination by the endocrine system is different from coordination by the nervous system.

1

2

3

(3)

Recommended Video: [Menstrual Cycle - Cognito Science](#)

Describe how hormones control the menstrual cycle.

(5)

Section 3: Autumn Term Preparation

You will have a baseline exam in September. Please use your Year 10 mock QLA as well as this work to support with you prioritising and focusing your revision so you continue to make progress.

You first topics coming back in will be:

- Sexual vs Asexual reproduction (plus meiosis vs mitosis)
- Inheritance
- DNA and the genome

Please read ahead on these topics and bring in any revision to your first lesson to show to your teacher.

Go Further Research Task

Year 11 biology has a huge focus on genetics, from chromosomes to gene editing. Recently, technology called CRISPR Gene Editing has been all over the media. Your challenge? Watch the 2 suggested documentaries and identify as many pros and cons to using gene editing tools such as CRISPR.

Documentary 1: Explained (Season 1): Designer DNA (18m)

Documentary 2: Unnatural selection (4x 70m episodes)

Note: the 2 suggested documentaries are rated 15+. This means you should seek parental consent on watching if you are not 15. Despite their age rating, these documentaries are extremely informative and will better your understanding and interest in genetics going forward.

