

Exam Board:	AQA
Subject:	Biology
Topics:	<u>Paper 1 - 100 marks (1hr 45min)</u> Cell Biology; Organisation; Infection & Response; Bioenergetics <u>Paper 2 - 100 marks (1hr 45min)</u> Homeostasis & Response; Inheritance, Variation & Evolution; Ecology

<u>Exam Information, guidance and hints</u>					
Command words: - Complete - Fill in gaps/add labels - Give - Recall a simple fact - Draw - Draw a symbol, diagram or graph - Name - Only a short answer is required, not an explanation or a description. Often it can be answered with a single word, phrase or sentence. - Describe - Give details about an event, idea or a process - Explain - Give reasons for an event, idea or process (use because/so) - Compare - Identify how things are similar/different - Suggest - Use your own knowledge in an unfamiliar context - Plan - Write a method - Calculate - Use numbers in a formula			Hints/tips: - If you are given the equation, ensure you are using it correctly. - When plotting a graph make sure you are using a pencil & ruler. Be accurate when plotting the points / drawing the bars. Online Resources Cognito past papers Required Practical Videos from Malmesbury Science (Youtube)		
Paper 1 - Foundation Example Papers and Markschemes			Paper 1 - Higher Example Papers and Markschemes		
2018 F Paper	Annotated P1	2018 MS	2018 H paper	Annotated P1	2018 MS
2019 F Paper	Annotated P1	2019 MS	2019 H Paper	Annotated P1	2019 MS
2020 F Paper	Annotated P1	2020 MS	2020 H Paper	Annotated P1	2020 MS
Paper 2 - Foundation Example Papers and Markschemes			Paper 2 - Higher Example Papers and Markschemes		
2018 F Paper	Annotated P2	2018 MS	2018 H paper	Annotated P2	2018 MS
2019 F Paper	Annotated P2	2019 MS	2019 H Paper	Annotated P2	2019 MS
2020 F Paper	Annotated P2	2020 MS	2021 H Paper	Annotated P2	2021 MS

PLC Biology Paper 1

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Cell Biology	Describe the similarities and differences between eukaryotic & prokaryotic cells.	R489	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.02			
Cell Biology	Understand the size and scale of cells and make order of magnitude calculations using standard form.		https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.05			
Cell Biology	Explain how the main sub-cellular structures in animal cells, plant cells and bacterial cells are related to their functions.	R489	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.02			
Cell Biology	<i>Required practical: Use a light microscope to observe, draw and label a selection of animal and plant cells.</i>	R132	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.04 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.19			
Cell Biology	Describe the advantages and disadvantages of using light and electron microscopes to view cells	R878	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.19			
	Calculating magnification (recall the magnification equation)	R585 R132	https://cognitoedu.org/coursesubtopic/b2-gc-se-aqa-h-t_1.06			
Cell Biology	<i>Requires Practical: Describe how to prepare an uncontaminated culture using aseptic technique.</i>	R611	https://cognitoedu.org/coursesubtopic/b2-gc-se-aqa-h-t_1.15			
Cell Biology	Explain how to interpret the results when scientists grow bacteria on an agar plate with paper discs containing different antiseptics placed in the petri dish.	R308	https://cognitoedu.org/coursesubtopic/b2-gc-se-aqa-h-t_1.15			
Cell Biology	Calculate number of bacteria in a population after a given time.	R308	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.14			
Cell Biology	Explain the importance of mitosis in the cell cycle	R368	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.09			

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Cell Biology	Name and describe the 3 main stages in the cell cycle	R368	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.09			
Cell Biology	Describe the properties and functions of stem cells and explain the uses of stem cells.	R478	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.11			
Cell Biology	Evaluate the practical risks and benefits, as well as social and ethical issues, of the use of stem cells in medical research and treatments.	R478	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.12			
Cell Biology	Define and explain the process of osmosis	R949	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.08			
Cell Biology	Compare the processes of diffusion, osmosis and active transport	R534 R949 R786	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.07 https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.08 https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.09			
Cell Biology	Describe and explain the factors which affect the rate of diffusion.	R428 R137	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.07			
Cell Biology	<i>Required Practical: Plan how to investigate the effect of changing the concentration of sugar solution of the mass of carrot pieces.</i>	R110 R685	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.08			
Cell Biology	Explain the expected results when investigating the effect of changing the concentration of sugar solution of the mass of carrot pieces. How would you determine the concentration of sugar inside the carrot cells.	R685	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.08			
Cell Biology	Identify the structures, describe the adaptations and function of the specialised cells within plants.	R451 R318 R419	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.04			
Cell Biology	Identify the structures, describe the adaptations and function of the specialised cells within animals	R220	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_1.1			

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Cell Biology	Explain how cells become specialised for particular roles and give some examples of both plant and animal specialised cells.	R509	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.1			
Organisation	Explain how cells can form tissues, organs and systems.	R948	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_1.18			
Organisation	Describe the features of the digestive system.	R154	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_2.05			
Organisation	Explain how enzymes work.	R667	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.01			
Organisation	Describe the impact of high temperatures and extreme pH's on enzymes.	R800	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.02			
Organisation	Describe the role of enzymes in digestion.	R615 R244	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_2.04			
Organisation	Explain how bile can speed up the digestion of lipids	R154	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_2.04			
Organisation	Explain how lipids, carbohydrates and proteins are broken down in the body (include the names of enzymes required and the products). How would a reduction of each enzyme affect digestion?	R244 R667 R800 R154 R642	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_2.04			
Organisation	Describe the food tests used to show the presence of each of the following: - Complex carbohydrates - Simple carbohydrates - Protein - Lipids Include the chemicals required and the positive results.	R647	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_2.02			
Organisation	<i>Required Practical: Investigate the effect of pH on the rate of reaction of the amylase enzyme.</i>	R642	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.02			

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Organisation	Name the four main components of blood and explain its function.	R673	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_4.03			
Organisation	Explain how the different types of blood vessels are adapted for their functions.	R350	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_4.02			
Organisation	Describe the structure and function of the heart.	R806	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_4.01			
Organisation	Explain the adaptations that allow gaseous exchange to take place between the lungs and the blood.	R652	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_4.05			
Organisation	State that the heart pumps blood around the body in a double circulatory system.	R806	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_4.01			
Organisation	Describe the causes of heart disease.	R583	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.21			
Organisation	Evaluate the advantages and disadvantages of treating cardiovascular diseases by drugs, mechanical devices or transplant	R583	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.21			
Organisation	Explain how heart disease can result in less respiration in the cells.	R583	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.21			
Organisation	Describe and explain the different treatments for Coronary Heart Disease.	R583 R902	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.21			
Organisation	Explain the difference between communicable and non-communicable diseases.	R505	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.01			
Organisation	Explain with examples what is meant by risk factors and causal mechanism.	R902	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.11			
Organisation	Describe what is meant by Health.	R902	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.01			
Organisation	Translate disease incidence information between graphical and numerical forms.					

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Organisation	Discuss the human and financial cost of non-communicable diseases to an individual, a local community, a nation or globally.	R505	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.11			
Organisation	Explain the effect of lifestyle factors including diet, alcohol and smoking on the incidence of non-communicable diseases at local, national and global levels	R505	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.11			
Organisation	Describe the main causes and types of cancer.	R669	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.13			
Organisation	Describe the differences between benign and malignant tumours.	R669	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.13			
Organisation	Explain how the structures of plant tissues are related to their functions	R451 R318	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_6.04			
Organisation	Explain how the structure of root hair cells, xylem and phloem are adapted to their functions.	R318 R419	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_6.04			
Organisation	Describe how water and dissolved sugars are transported throughout plants.	R973 R547	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_6.05			
Organisation	Compare the structures used to move water and dissolved sugars around a plant.	R419 R973 R600	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.05			
Organisation	Explain the effect of changing temperature, humidity, air movement and light intensity on the rate of transpiration. Use simple compound measures such as the rate of transpiration.	R600	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_6.05			
Infection and Response	Describe the four main types of disease causing pathogen (bacteria, virus, fungi, protist)	R329 R417	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.02			
Infection and Response	Describe the symptoms, method of spread, and how the spread of disease can be reduced in Measles, HIV and Tobacco Mosaic Virus.	R366	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.03			

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Infection and Response	Describe the symptoms, method of spread, and how the spread of disease can be reduced in Salmonella, Gonorrhoea.	R421	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.04			
Infection and Response	Describe the symptoms, method of spread, and how the spread of disease can be reduced in Rose Black Spot	R875	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.05			
Infection and Response	Describe the symptoms, method of spread, and how the spread of disease can be reduced in Malaria.	R875	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.05			
Infection and Response	Explain the role of the mosquito in the spread of Malaria	R875	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.05			
Infection and Response	Describe the non-specific defence systems of the human body against pathogens, including the skin, nose, trachea and bronchi, and stomach	R566	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.07			
Infection and Response	Explain the role of the immune system in the defence against disease.	R582	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.07			
Infection and Response	Describe the three ways in which white blood cells defend against pathogens	R582	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.07			
Infection and Response	Explain how vaccination will prevent illness in an individual, and how the spread of pathogens can be reduced through herd immunity.	R938	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.08			
Infection and Response	Describe how a vaccination works in the human body.	R938	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.08			
Infection and Response	Know the difference between painkillers and antibiotics and describe the different uses.	R328	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.14			
Infection and Response	Explain the use of antibiotics in treating disease.	R328	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_5.14			
Infection and Response	Explain why viruses are so difficult to treat. Name examples of viral conditions.	R366 R329	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.03			

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Infection and Response	Name and describe the steps in both preclinical and clinical trials, including what each stage is testing for..	R781	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.15			
Infection and Response	State that traditionally drugs were extracted from plants and microorganisms: - The heart drug digitalis originates from foxgloves. - The painkiller aspirin originates from willow. - Penicillin was discovered by Alexander Fleming from the Penicillium mould.	R781	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.15			
Infection and Response	Describe why double blind trials and placebos are used.	R781	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.15			
Infection and Response	Understand that the results of testing and trials are published only after scrutiny by peer review	R781	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.15			
Infection and Response	HT Only: Describe how monoclonal antibodies are produced.	R691	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.09			
Infection and Response	HT Only: Describe some of the ways in which monoclonal antibodies can be used. - Pregnancy tests - Binding with fluorescent dyes / radioactive substances - To treat some diseases	R486	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.1			
Infection and Response	HT Only: Evaluate the advantages and disadvantages of monoclonal antibodies	R486	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.09			
Infection and Response	HT Only: Describe how plant diseases can be detected and identified.	R914	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.17			
Infection and Response	Describe the causes and symptoms of the following plant diseases - Tobacco Mosaic Virus - Rose Black SPot - Aphids	R914	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.17			

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Infection and Response	Describe the symptoms of ion deficiency diseases - Nitrates - Magnesium	R746 R914	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.17			
Infection and Response	Explain how plants can be damaged by the deficiency of Magnesium and Nitrates ions	R746 R914	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.17			
Infection and Response	Describe the physical and chemical methods that plants use to defend themselves against diseases	R632	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_5.17			
Bioenergetics	Recall the word and balanced symbol equation for photosynthesis	R827	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.01			
Bioenergetics	Describe and explain the process of photosynthesis	R827	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.01			
Bioenergetics	Describe what a limiting factor is and give examples in photosynthesis. Explain the effect of increasing these factors on the rate of photosynthesis.	R979 R248	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.02			
Bioenergetics	<i>Required Practical: Investigating the effect of light intensity on the rate of photosynthesis.</i> - Measure and calculate rate of photosynthesis. - extract and interpret graphs of photosynthesis rate involving limiting factors - plot and draw appropriate graphs selecting appropriate scale for axes	R248	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.02			
Bioenergetics	Describe how the products of photosynthesis are used by plants	R917	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.01			
Bioenergetics	Explain why leaves would not produce starch if they are restricted from obtaining light or carbon dioxide.	R827 R732 R979 R917	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_6.01			
Bioenergetics	Compare the processes of aerobic and anaerobic respiration	R336 R268	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_3.04			

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Bioenergetics	Explain why heart rate and breathing rate increase during exercise to support cell processes.	R545	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.06			
Bioenergetics	Explain how limited oxygen entering the body will impact the human body.	R336 R545	https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_3.04 https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_3.06			
Bioenergetics	Explain why respiration is important in living organisms	R545	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.04			
Bioenergetics	Explain oxygen debt and how the body removes accumulated lactic acid from body cells.	R545	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.06			
Bioenergetics	Describe metabolism and explain its importance in the body.	R434	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.04			

PLC Biology Paper 2

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Homeostasis	Explain how receptors, neurones, coordination centres and effectors are involved in homeostasis	R213	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.05			
Homeostasis	HT - Describe and explain the process of IVF to treat infertility.	R493	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.1			
Homeostasis	Define metabolism and describe how it can be increased or decreased.	R434	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_3.04			
Homeostasis	Describe and explain the differences between the nervous and endocrine systems.	R832	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.07			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Homeostasis	Name the glands in the endocrine system and explain their functions. You should be able to locate them on a diagram. (pituitary gland, pancreas, thyroid, adrenal gland, ovary, testes.)	R832	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.07			
Homeostasis	Describe how the body maintains a consistent blood glucose concentration (HIGHER - must include low blood sugar as well as high blood sugar)	R379	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.03			
Homeostasis	HT: Explain the roles of thyroxine and adrenaline in the body	R275	https://www.youtube.com/watch?v=_Mts354VC7A			
Homeostasis	HT: Explain what is meant by negative feedback including examples	R275	https://www.youtube.com/watch?v=_Mts354VC7A			
Homeostasis	Describe how hormones are transported around the body.	R832	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.07			
Homeostasis	Identify the main glands in the body and the hormones that they produce	R832	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.07			
Homeostasis	Describe type 1 and type 2 diabetes (symptoms and causes)	R841	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.04			
Homeostasis	Describe the treatments for the different types of diabetes.	R841	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.04			
Homeostasis	Describe a method for measuring human reaction time. Include control variables to ensure valid, reliable results.	R683	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.05 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_11.08			
Homeostasis	Identify different types of neurones and describe their function	R213				
Homeostasis	Describe the order in which a nervous response occurs.	R213	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.05			

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Homeostasis	Describe how the reflex arc works	R936	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.05			
Homeostasis	Explain why the reflex arc is important	R936	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.05			
Homeostasis	Explain how neurones are adapted for their function.	R841	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.05			
Homeostasis	Describe the role of hormones in human reproduction. (Testosterone, oestrogen, progesterone, LH and FSH)	R651	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.08			
Homeostasis	HT: Describe the interactions between oestrogen, progesterone, LH, FSH and the female reproductive system in controlling the menstrual cycle.	R910	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.08			
Homeostasis	Identify different types of contraception (chemical and barrier) and explain how they work	R679	https://www.youtube.com/watch?v=iXswGsfeHJg			
Homeostasis	Evaluate the use of different contraceptives	R679	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_7.09			
Homeostasis	HT: Explain how hormones are used to treat fertility problems (IVF)	R493	https://www.youtube.com/watch?v=4CxNeiAlCmc			
Homeostasis	HT: Evaluate fertility treatments	R493	https://www.youtube.com/watch?v=4CxNeiAlCmc			
Homeostasis	Identify the main structures in the brain and describe their functions.	R838	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.12			
Homeostasis	HT: Explain the difficulties in investigating brain function and treating brain damage and disease.	R464	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.12			
Homeostasis	HT: Evaluate the benefits and risks of procedures carried out on the brain and nervous system.	R464	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.12			
Homeostasis	Identify the structures of the eye and explain how the structures link to their functions.	R850	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.13			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Homeostasis	Describe the process of accommodation and describe how the eye changes shape.	R369	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.14			
Homeostasis	Explain how myopia and hyperopia affect the eye and their treatments.	R864	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.14			
Homeostasis	Interpret ray diagrams, showing myopia and hyperopia and demonstrate how lenses correct them.	R864	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.14			
Homeostasis	Describe how the body monitors and controls the body's temperature.	R160	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.02			
Homeostasis	HT: Explain how the body monitors and controls the body's temperature.	R160	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_7.02			
Homeostasis	Describe the processes of filtration and selective reabsorption and state which molecules are not filtered, are filtered out completely and which are filtered but then selective reabsorbed.	R445 R591 R570	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.09 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.11			
Homeostasis	HT: Explain how a change in ADH production by the pituitary gland can impact the volume and concentration of urine produced by the kidney's	R141	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.09			
Homeostasis	Describe how kidney dialysis works.	R570	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.11			
Homeostasis	Evaluate the advantages and disadvantages of treating organ failure by mechanical device or transplant.	R570	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.11			
Homeostasis	HT: Describe how amino acids are excreted safely from the body.	R445	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_4.09			
Homeostasis	Explain the effect on cells of osmotic changes in body fluids.	R445				

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Homeostasis	Describe what a tropism is in plants and name the hormone responsible for the response.	R201	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_6.16 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_11.09			
Homeostasis	Plan an investigation to investigate the effect of directional light of the growth of seedlings.	R730	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_11.09			
Homeostasis	HT - Explain how different plant hormones can be used to control plant growth and fruit ripening.	R782	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_6.16			
Inheritance, variation and evolution	Describe the differences between asexual and sexual reproduction.	R320	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.12			
Inheritance, variation and evolution	Name the classification groups in order of size in Linnaeus's classification system. Describe this classification system	R761	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.22 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_1.01			
Inheritance, variation and evolution	Describe Carl Woese's three domain classification system	R761	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.22			
Inheritance, variation and evolution	Describe the process of mitosis	R761	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.09			
Inheritance, variation and evolution	Describe the process of meiosis including its function	R969	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.1			
Inheritance, variation and evolution	Compare mitosis and meiosis	R969	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.1			
Inheritance, variation and evolution	Describe the differences between body cells and gametes.	R668 R969	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.12			
Inheritance, variation and evolution	Compare the advantages and disadvantages of sexual and asexual reproduction	R320	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.13			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Inheritance, variation and evolution	Describe the structure and function of DNA	R794	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.01 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.02			
Inheritance, variation and evolution	Describe the human genome project (include what it was and what the importance of it was)	R810	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_5.2			
Inheritance, variation and evolution	Explain the risks and benefits of of GM crops and genetic modification in medicine.	R801 R609	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.01			
Inheritance, variation and evolution	Describe genetic engineering (HT also must be able to describe the stages in genetic engineering)	R801 R805 (R609)	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_9.01			
Inheritance, variation and evolution	Define key inheritance vocabulary such as gamete, chromosome, gene, genotype, phenotype, allele, homozygous, heterozygous, dominant and recessive.	R216	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.02			
Inheritance, variation and evolution	Use genetic diagrams to draw and complete a punnett square diagram including showing the probability for a particular genotype or phenotype	R249 R933 R431	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.14			
Inheritance, variation and evolution	Use punnett squares to show how sex is determined from X and Y chromosomes	R431	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.14			
Inheritance, variation and evolution	HT: Describe the process of protein synthesis and explain how the structure of DNA affects the protein made.	R295	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.04			
Inheritance, variation and evolution	HT: Describe how coding and non-coding parts of DNA can affect how genes are expressed.	R909	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.03			
Inheritance, variation and evolution	Describe the four different methods of cloning - Tissue culture - Cuttings - Embryo transplants - Adult cell cloning	R859 R492	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.02 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.03			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Inheritance, variation and evolution	Explain the potential benefits and risks of cloning in agriculture and in medicine	R859 R492	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.02 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.03			
Inheritance, variation and evolution	HT - Describe how a mutation during protein synthesis can result in enzymes that do not function correctly.	R909 R295	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.04 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.05			
Inheritance, variation and evolution	Describe inherited disorders such as cystic fibrosis and polydactyly	R431	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.16			
Inheritance, variation and evolution	Compare the arguments for and against embryonic screening.	R249	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.16			
Inheritance, variation and evolution	Describe the differences between inherited characteristics, environmental characteristics and characteristics controlled by a mixture of both. Include examples of each.	R249	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.06			
Inheritance, variation and evolution	Explain the importance of mutations in genetic variation	R909	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.06			
Inheritance, variation and evolution	Explain how to determine the most recent common ancestor or the most distant relative of a species using an evolutionary tree.	R761	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.22			
Inheritance, variation and evolution	Name the scientists who developed the theory of evolution by natural selection and describe the theory.	R909 R157 R738	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.05 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.07 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.06			
Inheritance, variation and evolution	Describe the theory of evolution by natural selection and use it to explain specific examples of evolution	R738	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.06			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Inheritance, variation and evolution	Describe how the Theory of Evolution developed over time and Compare Lamarck's Theory of evolution to Darwin's Theory of evolution	R157	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.07			
Inheritance, variation and evolution	Describe the work of Darwin and Wallace in the development of the theory of evolution by natural selection and explain the impact of the ideas.	R157	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.07			
Inheritance, variation and evolution	Describe the steps which give rise to new species (speciation).	R733	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.2			
Inheritance, variation and evolution	Describe the experiments and findings of Gregor Mendel and explain how the findings link to our current understanding of inheritance	R189	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.17			
Inheritance, variation and evolution	Explain how the gene theory developed over time	R189	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.17			
Inheritance, variation and evolution	Describe the process of selective breeding	R754	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.18			
Inheritance, variation and evolution	Evaluate the use of selective breeding	R754	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.18			
Inheritance, variation and evolution	State the reasons that a species may become extinct.	R294 R719	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.19			
Inheritance, variation and evolution	Describe how fossil evidence can be used to provide evidence for evolution	R719	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_8.19			
Inheritance, variation and evolution	Explain how fossils form, including why some organisms do not form fossils	R719	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.19			
Inheritance, variation and evolution	Explain why there are gaps in the fossil record	R719	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.19			
Inheritance, variation and evolution	Explain how antibiotic resistant bacteria develop	R175	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.23			

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Inheritance, variation and evolution	Describe advice for and from doctors to prevent the spread of antibiotic resistant bacteria	R175	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.23			
Ecology	Draw a food chain and food webs	R618	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.04			
Ecology	Describe the interdependence of organisms in an ecosystem including predator/prey and competition	R226	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.02			
Ecology	Describe how interdependence is linked to food, shelter, seed dispersal and pollination and what would happen if the stable community is disrupted	R226	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.02			
Ecology	Describe biotic factors including examples	R656	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.03			
Ecology	Describe abiotic factors including examples	R173	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.03			
Ecology	Describe how organisms are adapted to their environment	R453	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.03			
Ecology	Define extremophile and give examples	R453	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_8.21			
Ecology	Describe how to calculate a population estimate using quadrats.	R347 R355	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.07 https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_11.1			
Ecology	Describe how to ensure quadrats are placed randomly when estimating population.	R355	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_11.1			
Ecology	Name and describe different types of pollution.	R604	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.13			
Ecology	Describe and explain the effects of climate change	R325	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.17			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Ecology	Define key organisation of an ecosystem vocabulary such as: ecosystem, community, population, producers, consumers, decomposers, prey and predator	R504	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.02			
Ecology	Describe the different ways in which predator species can be important in ecosystem stability.	R226	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.02			
Ecology	Describe the process of eutrophication and explain its impacts on the environment.	R604	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.13			
Ecology	Describe the carbon cycle and explain its importance for life on Earth	R824	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.09			
Ecology	Describe the water cycle and explain its importance for life on Earth	R153	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.09			
Ecology	Explain how temperature, water and availability of oxygen affect the rate of decay of biological material.	R687 R152 R863	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.11			
Ecology	Describe how biogas generators can be used to produce methane gas as a fuel.	R687 R152	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.11			
Ecology	HT: Evaluate the impact of environmental changes (temperature, water availability, composition of atmospheric gases) on the distribution of species in an ecosystem.	R555	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.07			
Ecology	Define biodiversity	R748	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.14			
Ecology	Explain positive and negative ways that humans can impact biodiversity	R124	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.14			
Ecology	Explain the impact of deforestation on ecosystems	R604 R975	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.19			
Ecology	Explain the impact of global warming on ecosystems	R325	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-f-c_10.13			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Ecology	Construct pyramids of biomass.	R305	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.06			
Ecology	Describe the differences between the trophic levels of organisms within an ecosystem and explain the transfer of biomass between the different trophic levels.	R292 R438	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.05			
Ecology	Calculate the efficiency of biomass transfers.	R292	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_10.06			
Ecology	Interpret population and food production statistics to evaluate food security.	R311	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.09			
Ecology	Describe some of the biological factors affecting levels of food security.	R311	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.09			
Ecology	Evaluate the advantages and disadvantages of modern farming techniques.	R177	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.04			
Ecology	Describe how to increase the efficiency of food production.	R311	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.04			
Ecology	Describe how different fishing techniques promote recovery of fish stocks.	R177	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.08			
Ecology	Describe and explain the possible biotechnical and agricultural solutions, to help meet the demands of the growing human population.	R311	https://cognitoedu.org/coursesubtopic/b2-gcs-e-aqa-h-t_9.09			
Scientific Skills	Identify variables in experiments	X	https://www.youtube.com/watch?v=nKbUbfadxRU			
Scientific Skills	Describe relationships shown in graphs	X	https://www.youtube.com/watch?v=OzDUYj6nNCA			
Scientific Skills	Calculate mean, median and mode	X	https://www.youtube.com/watch?v=nYScfgOdz_A			