



**Kings Langley School**  
Unlocking Potential for Life

# **I can do statements**

## **KS4 - Year 10**

### **Biology**



<b>B1 Cell structure and transport</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can describe the difference between magnification and resolution.				
I can describe the advantages and disadvantages of using a light and electron microscope.				
I can use the formula: magnification = size of image/size of real object.				
I can describe the functions of the parts of cells.				
I can compare plant and animal cells.				
I can use a microscope to study plant and algal cells.				
I can compare prokaryotic and eukaryotic cells.				
I can describe the functions of the parts of a prokaryotic cell.				
I can use orders of magnitude to compare sizes of organisms.				
I can explain why animals have specialised cells.				
I can compare the structure of a specialised and generalised animal cell.				
I can write a coherent explanation of how animal cells are adapted.				
I can compare the structure of a specialised and generalised plant cell.				
I can describe the adaptations of specialised plant cells.				
I can draw a scientific drawing of a root hair cell observed using a light microscope.				
I can predict which way substances will move across a cell membrane.				
I can explain why surface area affects the rate of diffusion.				
I can write a hypothesis using scientific knowledge.				
I can state the differences between osmosis and diffusion.				
I can use ideas about osmosis to explain why maintaining constant internal conditions in living organisms is important.				

I can use osmosis to explain the effect of placing plant tissue in salt or sugar solutions.				
I can write a suitable plan to investigate into the effect of salt or sugar solutions on plant tissue.				
I can calculate percentage change and use this to plot a line graph with negative numbers and draw a line of best fit.				
I can explain why active transport is important for living organisms.				
I can explain the differences between diffusion, osmosis, and active transport.				
I can suggest some improvements/ limitations to a representational model that shows active transport.				
I can describe how the effectiveness of exchange surfaces is increased.				
I can use ideas about surface area to volume ratio to describe why multicellular organisms need exchange surfaces.				
I can calculate the surface area to volume ratio of a cylinder.				

<b>B2 Cell division</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can explain why chromosomes in body cells are normally found in pairs.				
I can describe situations where mitosis is occurring.				
I can use the keywords to describe the process of mitosis.				
I can describe the importance of cell differentiation in multicellular organisms.				
I can explain how using tissue culture creates a clone of a plant.				
I can attempt to clone a plant by using the apparatus correctly and following safety rules.				
I can describe differences between embryonic and adult stem cells.				
I can explain why plant clones are produced in the agriculture industry.				
I can communicate effectively how stem cells can be used to help medical conditions.				
I can describe what therapeutic cloning can be used for.				
I can explain the reasons for ethical and religious objections against stem cells.				

<b>B3 Organisation and the digestive system</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can define the terms tissue, organ, and organ system.				
I can describe the function of certain organs and organ systems.				
I can identify tissues that make up organs.				
I can name all of the organs of the digestive system.				
I can describe the functions of the organs of the digestive system.				
I can summarise the process of digestion.				
I can describe the structure of simple sugars, starch, lipids, and proteins.				
I can carry out multiple food tests in an organised manner.				
I can design a results table to clearly record results from food tests.				
I can describe how enzymes are used in digestion.				
I can use the 'lock and key theory' to explain why the shape of the enzyme is vital for it to function.				
I can identify the key variables in a given investigation.				
I can explain why high temperatures and changes in pH prevent enzymes from catalysing reactions.				
I can draw a tangent to a line and calculate the rate of a reaction with guidance.				
I can plot a line graph and use it to draw conclusions about how temperature and pH affects the rate of an enzyme catalysed reaction.				
I can explain why enzymes are needed for digestion.				
I can for each food molecule, name the enzyme that acts on it, where it is produced, and which products are formed.				
I can plan and carry out an investigation in order to gather accurate results.				
I can describe the functions of bile.				
I can calculate the mean rate of an enzyme-catalysed reaction.				
I can analyse data in order to determine if a hypothesis is correct.				

<b>B4 Organising animals and plants</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can summarise the process of blood clotting.				
I can view blood under a light microscope and recognise components.				
I can explain how red blood cells are adapted to their function.				
I can explain how the structure relates to the functions of blood vessels.				
I can comment on how accurate estimations are.				
I can describe the function of the main structures of the human heart.				
I can describe the problems that can develop with blood vessels in the heart and their treatments.				
I can suggest advantages and disadvantages of using stents and statins.				
I can explain why an irregular heartbeat is detrimental to health.				
I can describe why people may have objections to heart transplants.				
I can summarise the advantages and disadvantages different treatments of heart problems.				
I can describe the function of the main structures of the gas exchange system.				
I can describe how alveoli are adapted.				
I can describe the processes of ventilation and gas exchange.				
I can describe how plant organs are involved in the transport system.				
I can use a microscope to identify the different tissues in a cross-section of a leaf.				
I can explain how the structures of tissues in the leaf are related to their functions.				
I can describe why transport in plants is important.				
I can explain how the structure of xylem and phloem are adapted to their functions.				
I can describe how transpiration maintains the movement of water from roots to leaves.				
I can describe how the opening and closing of stomata is controlled by guard cells.				
I can explain why temperature, humidity, light intensity and the amount of air flow affect the rate of transpiration.				

<b>B5 Communicable diseases</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can describe the difference between communicable and non-communicable diseases.				
I can use a scatter diagram to identify a correlation between two variables.				
I can construct and interpret bar charts, frequency tables, frequency diagrams and histograms.				
I can describe how bacteria and viruses cause disease.				
I can explain why communicable diseases spread rapidly following a natural disaster.				
I can describe how the spread of diseases can be reduced or prevented.				
I can communicate to the public about how to stop the spread of a disease.				
I can describe how measles, HIV and tobacco mosaic virus affect the infected organism.				
I can interpret data to describe how the number of people infected with measles in the UK has changed over time.				
I can design a table and use it to summarise information.				
I can describe similarities and differences between salmonella and gonorrhoea.				
I can describe how the spread of salmonella and gonorrhoea is controlled.				
I can describe how rose black spot affects the plant and how it is treated.				
I can link ways of controlling the spread of malaria to specific parts of the protist's life cycle.				
I can state some ways that malaria is controlled				
I can describe how human body defence mechanisms stop the entry of pathogens.				
I can describe the role of white blood cells in the defence against disease.				
I can use a model to explain how the body defends itself against disease.				

<b>B6 Preventing and treating disease</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can explain how vaccination works.				
I can describe what an antibody and antigen are.				
I can describe how antibiotics work.				
I can describe what is meant by antibiotic resistant bacteria.				
I can explain why it is difficult to develop drugs to treat viral infections.				
I can describe how new antibiotics are tested for effectiveness.				
I can discuss the advantages and disadvantages of looking for new drugs from living organisms.				
I can analyse data to draw conclusions on the effectiveness of new antibiotics.				
I can explain why each procedure in drugs testing and trialling is used.				
I can describe how a double blind trial is carried out.				
I can explain why a placebo is used during drug trialling.				

<b>B7 Non-communicable diseases</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can classify diseases as communicable and non-communicable.				
I can draw conclusions from data on risk factors.				
I can decide whether a link is causal.				
I can describe the difference between benign and malignant tumours.				
I can describe why carcinogens and ionising radiation increase the risk of tumours.				
I can analyse data to assess the risks and benefits of chemotherapy.				
I can describe the effects of the harmful substances found in tobacco smoke.				
I can analyse data to describe evidence for the link between smoking and lung disease.				
I can describe causal mechanisms for the link between exercise and health.				
I can suggest measures to prevent a further rise in the number of people with type 2 diabetes.				
I can describe the short- and long-term effects of drinking alcohol.				
I can describe the effects of alcohol on unborn babies.				
I can describe the link between ionising radiation and cancer.				



<b>B8 Photosynthesis</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can describe how the leaf is adapted for photosynthesis.				
I can write the balanced symbol equations for photosynthesis.				
I can describe an experiment to prove that plants carry out photosynthesis when exposed to light.				
I can describe why low temperature, shortage of carbon dioxide, shortage of light and shortage of chlorophyll limit the rate of photosynthesis.				
I can suggest which factor limits the rate of photosynthesis in a given situation.				
I can interpret and explain graphs of photosynthesis rate involving one limiting factor.				
I can describe all the ways in which plants use glucose, including how they make proteins.				
I can evaluate risks involved in the starch test.				
I can describe why greenhouse increase plant growth.				
I can comment on the cost-effectiveness of adding heat, light, or carbon dioxide to greenhouses.				
I can discuss the benefits of using greenhouses and hydroponics.				

<b>B9 Respiration</b>	<b>Check 1</b>	<b>Check 2</b>	<b>Check 3</b>	<b>Check 4</b>
I can write the balanced symbol equation for respiration.				
I can describe respiration as an exothermic reaction.				
I can explain why heart rate, breathing rate, and breath volume change with exercise.				
I can choose the best way to display data and calculate percentage changes.				
I can write the balanced symbol equation for anaerobic respiration in plants and microorganisms.				
I can compare and contrast aerobic and anaerobic respiration.				
I can explain why muscles get tired during exercise.				
I can describe the role of the liver in repaying the oxygen debt.				
I can discuss whether it is possible to increase metabolism.				