

# Topic 1 Statistical Analysis: Knowledge Audit

Name:

## 1 Statistical Analysis - Core

	Assessment statement	OK	Review	Get help
<b>1.1.1</b>	State that error bars are a graphical representation of the variability of data.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1.1.2</b>	Calculate the mean and standard deviation of a set of values.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1.1.3</b>	State that the term standard deviation is used to summarize the spread of values around the mean, and that 68% of the values fall within one standard deviation of the mean.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1.1.4</b>	Explain how the standard deviation is useful for comparing the means and the spread of data between two or more samples.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1.1.5</b>	Deduce the significance of the difference between two sets of data using calculated values for t and the appropriate tables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1.1.6</b>	Explain that the existence of a correlation does not establish that there is a causal relationship between two variables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 2 Cells: Knowledge Audit

Name:

### 2.1 Cell Theory - Core

	Assessment statement	OK	Review	Get help
<b>2.1.1</b>	Outline the cell theory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.2</b>	Discuss the evidence for the cell theory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.3</b>	State that unicellular organisms carry out all the functions of life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.4</b>	Compare the relative sizes of molecules, cell membrane thickness, viruses, bacteria, organelles and cells, using the appropriate SI unit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.5</b>	Calculate the linear magnification of drawings and the actual size of specimens in images of known magnification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.6</b>	Explain the importance of the surface area to volume ratio as a factor limiting cell size.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.7</b>	State that multicellular organisms show emergent properties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.8</b>	Explain that cells in multicellular organisms differentiate to carry out specialized functions by expressing some of their genes but not others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.9</b>	State that stem cells retain the capacity to divide and have the ability to differentiate along different pathways.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.1.10</b>	Outline one therapeutic use of stem cells. See 2.1.9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 2 Cells: Knowledge Audit

Name:

### 2.2 Prokaryotic Cells - Core

	Assessment statement	OK	Review	Get help
<b>2.2.1</b>	Draw and label a diagram of the ultrastructure of Escherichia coli (E. Coli) as an example of a prokaryote.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.2.2</b>	Annotate the diagram from 2.2.1 with the functions of each named structure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.2.3</b>	Identify structures from 2.2.1 in electron micrographs of E. coli.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.2.4</b>	State that prokaryotic cells divide by binary fission.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 2 Cells: Knowledge Audit

Name:

### 2.3 Eukaryotic Cells - Core

	Assessment statement	OK	Review	Get help
<b>2.3.1</b>	Draw and label a diagram of the ultrastructure of a liver cell as an example of an animal cell.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.2</b>	Annotate the diagram from 2.3.1 with the functions of each named structure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.3</b>	Identify structures from 2.3.1 in electron micrographs of liver cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.4</b>	Compare prokaryotic and eukaryotic cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.3</b>	State three differences between plant and animal cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.3.4</b>	Outline two roles of extracellular components.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 2 Cells: Knowledge Audit

Name:

### 2.4 Membranes - Core

	Assessment statement	OK	Review	Get help
<b>2.4.1</b>	Draw and label a diagram of the ultrastructure of a liver cell as an example of an animal cell.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4.2</b>	Explain how the hydrophobic and hydrophilic properties of phospholipids help to maintain the structure of cell membranes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4.3</b>	List the functions of membrane proteins.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4.4</b>	Define diffusion and osmosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4.5</b>	Explain passive transport across membranes by simple diffusion and facilitated diffusion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4.6</b>	Explain the role of protein pumps and ATP in active transport across membranes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4.7</b>	Explain how vesicles are used to transport materials within a cell between the rough endoplasmic reticulum, Golgi apparatus and plasma membrane.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.4.8</b>	Describe how the fluidity of the membrane allows it to change shape, break and reform during endocytosis and exocytosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 2 Ecology and Evolution: Knowledge Audit

Name:

### 2.5 Cell Division - Core

	Assessment statement	OK	Review	Get help
<b>2.5.1</b>	Outline the stages in the cell cycle, including interphase (G1, S, G2), mitosis and cytokinesis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.5.2</b>	State that tumours (cancers) are the result of uncontrolled cell division and that these can occur in any organ or tissue.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.5.3</b>	State that interphase is an active period in the life of a cell when many metabolic reactions occur, including protein synthesis, DNA replication and an increase in the number of mitochondria and/or chloroplasts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.5.4</b>	Describe the events that occur in the four phases of mitosis (prophase, metaphase, anaphase and telophase).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.5.5</b>	Explain how mitosis produces two genetically identical nuclei.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2.5.6</b>	State that growth, embryonic development, tissue repair and asexual reproduction involve mitosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.1 Chemicals Elements and Water - Core

	Assessment statement	OK	Review	Get help
<b>3.1.1</b>	State that the most frequently occurring chemical elements in living things are carbon, hydrogen, oxygen and nitrogen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.1.2</b>	State that a variety of other elements are needed by living organisms, including sulfur, calcium, phosphorus, iron and sodium.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.1.3</b>	State one role for each of the elements mentioned in 3.1.2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.1.4</b>	Draw and label a diagram showing the structure of water molecules to show their polarity and hydrogen bond formation..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.1.5</b>	Outline the thermal, cohesive and solvent properties of water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.1.6</b>	Explain the relationship between the properties of water and its uses in living organisms as a coolant, medium for metabolic reactions and transport medium. See 3.1.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.2 Carbohydrates, Lipids, and Proteins - Core

	Assessment statement	OK	Review	Get help
<b>3.2.1</b>	Distinguish between organic and inorganic compounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.2.2</b>	Identify amino acids, glucose, ribose and fatty acids from diagrams showing their structure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.2.3</b>	List three examples each of monosaccharides, disaccharides and polysaccharides..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.2.4</b>	State one function of glucose, lactose and glycogen in animals, and of fructose, sucrose and cellulose in plants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.2.5</b>	Outline the role of condensation and hydrolysis in the relationships between monosaccharides, disaccharides and polysaccharides; between fatty acids, glycerol and triglycerides; and between amino acids and polypeptides.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.2.6</b>	State three functions of lipids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.2.7</b>	Compare the use of carbohydrates and lipids in energy storage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.3 DNA Structure - Core

	Assessment statement	OK	Review	Get help
<b>3.3.1</b>	Outline DNA nucleotide structure in terms of sugar (deoxyribose), base and phosphate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.3.2</b>	State the names of the four bases in DNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.3.3</b>	Outline how DNA nucleotides are linked together by covalent bonds into a single strand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.3.4</b>	Explain how a DNA double helix is formed using complementary base pairing and hydrogen bonds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.3.5</b>	Draw and label a simple diagram of the molecular structure of DNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.4 DNA Replication - Core

	Assessment statement	OK	Review	Get help
<b>3.4.1</b>	Explain DNA replication in terms of unwinding the double helix and separation of the strands by helicase, followed by formation of the new complementary strands by DNA polymerase.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.4.2</b>	Explain the significance of complementary base pairing in the conservation of the base sequence of DNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.4.3</b>	State that DNA replication is semiconservative.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.5 Transcription and Translation - Core

	Assessment statement	OK	Review	Get help
<b>3.5.1</b>	Compare the structure of RNA and DNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.5.2</b>	Outline DNA transcription in terms of the formation of an RNA strand complementary to the DNA strand by RNA polymerase.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.5.3</b>	Describe the genetic code in terms of codons composed of triplets of bases.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.5.4</b>	Explain the process of translation, leading to polypeptide formation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.5.5</b>	Discuss the relationship between one gene and one polypeptide.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.6 Enzymes - Core

	Assessment statement	OK	Review	Get help
<b>3.6.1</b>	Define enzyme and active site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.6.2</b>	Explain enzyme–substrate specificity. See 3.6.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.6.3</b>	Explain the effects of temperature, pH and substrate concentration on enzyme activity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.6.4</b>	Define denaturation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.6.5</b>	Explain the use of lactase in the production of lactose-free milk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.7 Cell Respiration - Core

	Assessment statement	OK	Review	Get help
<b>3.7.1</b>	Define cell respiration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.7.2</b>	State that, in cell respiration, glucose in the cytoplasm is broken down by glycolysis into pyruvate, with a small yield of ATP.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.7.3</b>	Explain that, during anaerobic cell respiration, pyruvate can be converted in the cytoplasm into lactate, or ethanol and carbon dioxide, with no further yield of ATP.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.7.4</b>	Explain that, during aerobic cell respiration, pyruvate can be broken down in the mitochondrion into carbon dioxide and water with a large yield of ATP.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 3 The Chemistry of Life: Knowledge Audit

Name:

### 3.8 Photosynthesis - Core

	Assessment statement	OK	Review	Get help
<b>3.8.1</b>	State that photosynthesis involves the conversion of light energy into chemical energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.8.2</b>	State that light from the Sun is composed of a range of wavelengths (colours).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.8.3</b>	State that chlorophyll is the main photosynthetic pigment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.8.4</b>	Outline the differences in absorption of red, blue and green light by chlorophyll.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.8.5</b>	State that light energy is used to produce ATP, and to split water molecules (photolysis) to form oxygen and hydrogen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.8.6</b>	State that ATP and hydrogen (derived from the photolysis of water) are used to fix carbon dioxide to make organic molecules.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.8.7</b>	Explain that the rate of photosynthesis can be measured directly by the production of oxygen or the uptake of carbon dioxide, or indirectly by an increase in biomass.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3.8.8</b>	Outline the effects of temperature, light intensity and carbon dioxide concentration on the rate of photosynthesis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 4 Genetics: Knowledge Audit

Name:

### 4.1 Chromosomes, Genes, Alleles, and Mutations - Core

	Assessment statement	OK	Review	Get help
4.1.1	State that eukaryote chromosomes are made of DNA and proteins.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1.2	Define gene, allele and genome.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3	Define gene mutation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1.4	Explain the consequence of a base substitution mutation in relation to the processes of transcription and translation, using the example of sickle-cell anemia.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 4 Genetics: Knowledge Audit

Name:

### 4.2 Meiosis - Core

	Assessment statement	OK	Review	Get help
<b>4.2.1</b>	State that meiosis is a reduction division of a diploid nucleus to form haploid nuclei.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.2.2</b>	Define homologous chromosomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.2.3</b>	Outline the process of meiosis, including pairing of homologous chromosomes and crossing over, followed by two divisions, which results in four haploid cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.2.4</b>	Explain that non-disjunction can lead to changes in chromosome number, illustrated by reference to Down syndrome (trisomy 21).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.2.5</b>	State that, in karyotyping, chromosomes are arranged in pairs according to their size and structure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.2.6</b>	State that karyotyping is performed using cells collected by chorionic villus sampling or amniocentesis, for pre-natal diagnosis of chromosome abnormalities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.2.7</b>	Analyse a human karyotype to determine gender and whether nondisjunction has occurred.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 4 Genetics: Knowledge Audit

Name:

### 4.3 Theoretical Genetics - Core

	Assessment statement	OK	Review	Get help
<b>4.3.1</b>	Define genotype, phenotype, dominant allele, recessive allele, codominant alleles, locus, homozygous, heterozygous, carrier and test cross.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.2</b>	Determine the genotypes and phenotypes of the offspring of a monohybrid cross using a Punnett grid..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.3</b>	State that some genes have more than two alleles (multiple alleles).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.4</b>	Describe ABO blood groups as an example of codominance and multiple alleles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.5</b>	Explain how the sex chromosomes control gender by referring to the inheritance of X and Y chromosomes in humans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.6</b>	State that some genes are present on the X chromosome and absent from the shorter Y chromosome in humans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.7</b>	Define sex linkage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.8</b>	Describe the inheritance of colour blindness and hemophilia as examples of sex linkage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.9</b>	State that a human female can be homozygous or heterozygous with respect to sex-linked genes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.10</b>	Explain that female carriers are heterozygous for X-linked recessive alleles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.11</b>	Predict the genotypic and phenotypic ratios of offspring of monohybrid crosses involving any of the above patterns of inheritance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.3.12</b>	Deduce the genotypes and phenotypes of individuals in pedigree charts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 4 Genetics: Knowledge Audit

Name:

### 4.4 Genetic Engineering and Biotechnology - Core

	Assessment statement	OK	Review	Get help
<b>4.4.1</b>	Outline the use of polymerase chain reaction (PCR) to copy and amplify minute quantities of DNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.2</b>	State that, in gel electrophoresis, fragments of DNA move in an electric field and are separated according to their size.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.3</b>	State that gel electrophoresis of DNA is used in DNA profiling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.4</b>	Describe the application of DNA profiling to determine paternity and also in forensic investigations. See 4.4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.5</b>	Analyse DNA profiles to draw conclusions about paternity or forensic investigations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.6</b>	Outline three outcomes of the sequencing of the complete human genome.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.7</b>	State that, when genes are transferred between species, the amino acid sequence of polypeptides translated from them is unchanged because the genetic code is universal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.8</b>	Outline a basic technique used for gene transfer involving plasmids, a host cell (bacterium, yeast or other cell), restriction enzymes(endonucleases) and DNA ligase.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.9</b>	State two examples of the current uses of genetically modified crops or animals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.10</b>	Discuss the potential benefits and possible harmful effects of one example of genetic modification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.11</b>	Define clone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.12</b>	Outline a technique for cloning using differentiated animal cells. See 4.4.11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4.4.13</b>	Discuss the ethical issues of therapeutic cloning in humans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 5 Ecology and Ecosystems: Knowledge Audit

Name:

## 5.1 Communities and Ecosystems – Core

	Assessment statement	OK	Review	Get help
<b>5.1.1</b>	Define species, habitat, population, community, ecosystem and ecology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.2</b>	Distinguish between autotroph and heterotroph.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.3</b>	Distinguish between consumers, detritivores and saprotrophs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.4</b>	Describe what is meant by a food chain, giving three examples, each with at least three linkages (four organisms).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.5</b>	Describe what is meant by a food web.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.6</b>	Define trophic level.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.7</b>	Deduce the trophic level of organisms in a food chain and a food web.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.8</b>	Construct a food web containing up to 10 organisms, using appropriate information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.9</b>	State that light is the initial energy source for almost all communities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.10</b>	Explain the energy flow in a food chain.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.11</b>	State that energy transformations are never 100% efficient.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.12</b>	Explain reasons for the shape of pyramids of energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.13</b>	Explain that energy enters and leaves ecosystems, but nutrients must be recycled..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.1.14</b>	State that saprotrophic bacteria and fungi (decomposers) recycle nutrients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 5 Ecology and Ecosystems: Knowledge Audit

Name:

### 5.2 The Greenhouse Effect - Core

	Assessment statement	OK	Review	Get help
<b>5.2.1</b>	Draw and label a diagram of the carbon cycle to show the processes involved.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.2.2</b>	Analyse the changes in concentration of atmospheric CO <sub>2</sub> using historical records.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.2.3</b>	Explain the relationship between rises in concentrations of atmospheric CO <sub>2</sub> , methane and oxides of nitrogen and the enhanced greenhouse effect.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.2.4</b>	Outline the precautionary principle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.2.5</b>	Evaluate the precautionary principle as a justification for strong action in response to the threats posed by the enhanced greenhouse effect.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.2.6</b>	Outline the consequences of a global temperature rise on arctic ecosystems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 5 Ecology and Ecosystems: Knowledge Audit

Name:

### 5.3 Populations - Core

	Assessment statement	OK	Review	Get help
<b>5.3.1</b>	Outline how population size is affected by natality, immigration, mortality and emigration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.3.2</b>	Draw and label a graph showing a sigmoid (S-shaped) population growth curve.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.3.3</b>	Explain the reasons for the exponential growth phase, the plateau phase and the transitional phase between these two phases.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.3.4</b>	List three factors that set limits to population increase.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 5 Ecology and Ecosystems: Knowledge Audit

Name:

## 5.4 Evolution - Core

	Assessment statement	OK	Review	Get help
<b>5.4.1</b>	Define evolution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4.2</b>	Outline the evidence for evolution provided by the fossil record, selective breeding of domesticated animals and homologous structures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4.3</b>	State that populations tend to produce more offspring than the environment can support.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4.4</b>	Explain that the consequence of the potential overproduction of offspring is a struggle for survival.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4.5</b>	State that the members of a species show variation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4.6</b>	Explain how sexual reproduction promotes variation in a species.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4.7</b>	Explain how natural selection leads to evolution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4.8</b>	Explain two examples of evolution in response to environmental change; one must be antibiotic resistance in bacteria.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 5 Ecology and Evolution: Knowledge Audit

Name:

## 5.5 Classification - Core

	Assessment statement	OK	Review	Get help
<b>5.5.1</b>	Outline the binomial system of nomenclature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.5.2</b>	List seven levels in the hierarchy of taxa—kingdom, phylum, class, order, family, genus and species—using an example from two different kingdoms for each level.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.5.3</b>	Distinguish between the following phyla of plants, using simple external recognition features: bryophyta, filicinophyta, coniferophyta and angiospermophyta.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.5.4</b>	Distinguish between the following phyla of animals, using simple external recognition features: porifera, cnidaria, platyhelminthes, annelida, mollusca and arthropoda.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.5.5</b>	Apply and design a key for a group of up to eight organisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 6 Human Health and Physiology: Knowledge Audit

Name:

## 6.1 Digestion - Core

	Assessment statement	OK	Review	Get help
<b>6.1.1</b>	Explain why digestion of large food molecules is essential.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.1.2</b>	Explain the need for enzymes in digestion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.1.3</b>	State the source, substrate, products and optimum pH conditions for one amylase, one protease and one lipase.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.1.4</b>	Draw and label a diagram of the digestive system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.1.5</b>	Outline the function of the stomach, small intestine and large intestine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.1.6</b>	Distinguish between absorption and assimilation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.1.7</b>	Explain how the structure of the villus is related to its role in absorption and transport of the products of digestion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 6 Human Health and Physiology: Knowledge Audit

Name:

### 6.2 The Transport System - Core

	Assessment statement	OK	Review	Get help
<b>6.2.1</b>	Draw and label a diagram of the heart showing the four chambers, associated blood vessels, valves and the route of blood through the heart.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.2.2</b>	State that the coronary arteries supply heart muscle with oxygen and nutrients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.2.3</b>	Explain the action of the heart in terms of collecting blood, pumping blood, and opening and closing of valves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.2.4</b>	Outline the control of the heartbeat in terms of myogenic muscle contraction, the role of the pacemaker, nerves, the medulla of the brain and epinephrine (adrenaline).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.2.5</b>	Explain the relationship between the structure and function of arteries, capillaries and veins.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.2.6</b>	State that blood is composed of plasma, erythrocytes, leucocytes (phagocytes and lymphocytes) and platelets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.2.7</b>	State that the following are transported by the blood: nutrients, oxygen, carbon dioxide, hormones, antibodies, urea and heat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 6 Human Health and Physiology: Knowledge Audit

Name:

### 6.3 Defence against Infectious Disease - Core

	Assessment statement	OK	Review	Get help
<b>6.3.1</b>	Define pathogen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.2</b>	Explain why antibiotics are effective against bacteria but not against viruses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.3</b>	Outline the role of skin and mucous membranes in defence against pathogens.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.4</b>	Outline how phagocytic leucocytes ingest pathogens in the blood and in body tissues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.5</b>	Distinguish between antigens and antibodies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.6</b>	Explain antibody production.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.7</b>	Outline the effects of HIV on the immune system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.3.8</b>	Discuss the cause, transmission and social implications of AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 6 Human Health and Physiology: Knowledge Audit

Name:

### 6.4 Gas Exchange - Core

	Assessment statement	OK	Review	Get help
<b>6.4.1</b>	Distinguish between ventilation, gas exchange and cell respiration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.4.2</b>	Explain the need for a ventilation system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.4.3</b>	Describe the features of alveoli that adapt them to gas exchange.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.4.4</b>	Draw and label a diagram of the ventilation system, including trachea, lungs, bronchi, bronchioles and alveoli.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.4.5</b>	Explain the mechanism of ventilation of the lungs in terms of volume and pressure changes caused by the internal and external intercostal muscles, the diaphragm and abdominal muscles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 6 Human Health and Physiology: Knowledge Audit

Name:

## 6.5 Nerves, Hormones, and Homeostasis - Core

	Assessment statement	OK	Review	Get help
<b>6.5.1</b>	State that the nervous system consists of the central nervous system (CNS) and peripheral nerves, and is composed of cells called neurons that can carry rapid electrical impulses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.2</b>	Draw and label a diagram of the structure of a motor neuron.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.3</b>	State that nerve impulses are conducted from receptors to the CNS by sensory neurons, within the CNS by relay neurons, and from the CNS to effectors by motor neurons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.4</b>	Define resting potential and action potential (depolarization and repolarization).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.5</b>	Explain how a nerve impulse passes along a non-myelinated neuron.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.6</b>	Explain the principles of synaptic transmission.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.7</b>	State that the endocrine system consists of glands that release hormones that are transported in the blood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.8</b>	State that homeostasis involves maintaining the internal environment between limits, including blood pH, carbon dioxide concentration, blood glucose concentration, body temperature and water balance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Assessment statement	OK	Review	Get help
<b>6.5.9</b>	Explain that homeostasis involves monitoring levels of variables and correcting changes in levels by negative feedback mechanisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.10</b>	Explain the control of body temperature, including the transfer of heat in blood, and the roles of the hypothalamus, sweat glands, skin arterioles and shivering.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.11</b>	Explain the control of blood glucose concentration, including the roles of glucagon, insulin and $\alpha$ and $\beta$ cells in the pancreatic islets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.5.12</b>	Distinguish between type I and type II diabetes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 6 Human Health and Physiology: Knowledge Audit

Name:

## 6.6 Reproduction - Core

	Assessment statement	OK	Review	Get help
<b>6.6.1</b>	Draw and label diagrams of the adult male and female reproductive systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.6.2</b>	Outline the role of hormones in the menstrual cycle, including FSH (follicle stimulating hormone), LH (luteinizing hormone), estrogen and progesterone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.6.3</b>	Annotate a graph showing hormone levels in the menstrual cycle, illustrating the relationship between changes in hormone levels and ovulation, menstruation and thickening of the endometrium.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.6.4</b>	List three roles of testosterone in males.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.6.5</b>	Outline the process of in vitro fertilization (IVF).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6.6.6</b>	Discuss the ethical issues associated with IVF.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 7 Nucleic Acids and Proteins: Knowledge Audit

Name:

## 7.1 DNA Structure - HL

	Assessment statement	OK	Review	Get help
<b>7.1.1</b>	Describe the structure of DNA, including the antiparallel strands, 3'–5' linkages and hydrogen bonding between purines and pyrimidines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.1.2</b>	Outline the structure of nucleosomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.1.3</b>	State that nucleosomes help to supercoil chromosomes and help to regulate transcription.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.1.4</b>	Distinguish between unique or single-copy genes and highly repetitive sequences in nuclear DNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.1.5</b>	State that eukaryotic genes can contain exons and introns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 7 Nucleic Acids and Proteins: Knowledge Audit

Name:

### 7.2 DNA Replication - HL

	Assessment statement	OK	Review	Get help
<b>7.2.1</b>	State that DNA replication occurs in a 5' - 3' direction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.2.2</b>	Explain the process of DNA replication in prokaryotes, including the role of enzymes (helicase, DNA polymerase, RNA primase and DNA ligase), Okazaki fragments and deoxynucleoside triphosphates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.2.3</b>	State that DNA replication is initiated at many points in eukaryotic chromosomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 7 Nucleic Acids and Proteins: Knowledge Audit

Name:

### 7.3 Transcription - HL

	Assessment statement	OK	Review	Get help
<b>7.3.1</b>	State that transcription is carried out in a 5' - 3' direction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.3.2</b>	Distinguish between the sense and antisense strands of DNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.3.3</b>	Explain the process of transcription in prokaryotes, including the role of the promoter region, RNA polymerase, nucleoside triphosphates and the terminator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.3.4</b>	State that eukaryotic RNA needs the removal of introns to form mature mRNA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 7 Nucleic Acids and Proteins: Knowledge Audit

Name:

### 7.4 Translation - HL

	Assessment statement	OK	Review	Get help
<b>7.4.1</b>	Explain that each tRNA molecule is recognized by a tRNA-activating enzyme that binds a specific amino acid to the tRNA, using ATP for energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.4.2</b>	Outline the structure of ribosomes, including protein and RNA composition, large and small subunits, three tRNA binding sites and mRNA binding sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.4.3</b>	State that translation consists of initiation, elongation, translocation and termination.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.4.4</b>	State that translation occurs in a 5' - 3' direction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.4.5</b>	Draw and label a diagram showing the structure of a peptide bond between two amino acids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.4.6</b>	Explain the process of translation, including ribosomes, polysomes, start codons and stop codons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.4.7</b>	State that free ribosomes synthesize proteins for use primarily within the cell, and that bound ribosomes synthesize proteins primarily for secretion or for lysosomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 7 Nucleic Acids and Proteins: Knowledge Audit

Name:

### 7.5 Proteins - HL

	Assessment statement	OK	Review	Get help
<b>7.5.1</b>	Explain the four levels of protein structure, indicating the significance of each level.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.5.2</b>	Outline the difference between fibrous and globular proteins, with reference to two examples of each protein type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.5.3</b>	Explain the significance of polar and non-polar amino acids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.5.4</b>	State four functions of proteins, giving a named example of each.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 7 Nucleic Acids and Proteins: Knowledge Audit

Name:

### 7.6 Enzymes - HL

	Assessment statement	OK	Review	Get help
<b>7.6.1</b>	State that metabolic pathways consist of chains and cycles of enzyme catalysed reactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.6.2</b>	Describe the induced-fit model.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.6.3</b>	Explain that enzymes lower the activation energy of the chemical reactions that they catalyse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.6.4</b>	Explain the difference between competitive and non-competitive inhibition, with reference to one example of each.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.6.5</b>	Explain the control of metabolic pathways by end-product inhibition, including the role of allosteric sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 8 Cell Respiration and Photosynthesis: Knowledge Audit

Name:

## 8.1 Cell Respiration - HL

	Assessment statement	OK	Review	Get help
<b>8.1.1</b>	State that oxidation involves the loss of electrons from an element, whereas reduction involves a gain of electrons; and that oxidation frequently involves gaining $O_2$ or losing H, whereas reduction frequently involves losing $O_2$ or gaining hydrogen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.2</b>	Outline the process of glycolysis, including phosphorylation, lysis, oxidation and ATP formation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.3</b>	Draw and label a diagram showing the structure of a mitochondrion as seen in electron micrographs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.4</b>	Explain aerobic respiration, including the link reaction, the Krebs cycle, the role of $NADH + H^+$ , the electron transport chain and the role of $O_2$ .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.5</b>	Explain oxidative phosphorylation in terms of chemiosmosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8.1.6</b>	Explain the relationship between the structure of the mitochondrion and its function.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 8 Cell Respiration and Photosynthesis: Knowledge Audit

Name:

## 8.2 Photosynthesis - HL

	Assessment statement	OK	Review	Get help
8.2.1	Draw and label a diagram showing the structure of a chloroplast as seen in electron micrographs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2.2	State that photosynthesis consists of light-dependent and light-independent reactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2.3	Explain the light-dependent reactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2.4	Explain photophosphorylation in terms of chemiosmosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2.5	Explain the light-independent reactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2.6	Explain the relationship between the structure of the chloroplast and its function.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2.7	Explain the relationship between the action spectrum and the absorption spectrum of photosynthetic pigments in green plants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2.8	Explain the concept of limiting factors in photosynthesis, with reference to light intensity, temperature and concentration of CO <sub>2</sub> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 9 Plant Science: Knowledge Audit

Name:

## 9.1 Plant Structure and Growth - HL

	Assessment statement	OK	Review	Get help
<b>9.1.1</b>	Draw and label diagrams to show the distribution of tissues in the stem and leaf of a dicotyledonous plant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.1.2</b>	Outline three differences between the structures of dicotyledonous and monocotyledonous plants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.1.3</b>	Explain the relationship between the distribution of tissues in the leaf and the functions of these tissues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.1.4</b>	Identify modifications of roots, stems and leaves for different functions: bulbs, stem tubers, storage roots and tendrils.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.1.5</b>	State that dicotyledonous plants have apical and lateral meristems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.1.6</b>	Compare growth due to apical and lateral meristems in dicotyledonous plants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.1.7</b>	Explain the role of auxin in phototropism as an example of the control of plant growth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 9 Plant Science: Knowledge Audit

Name:

## 9.2 Transport in Angiospermophytes - HL

	Assessment statement	OK	Review	Get help
<b>9.2.1</b>	Outline how the root system provides a large surface area for mineral ion and water uptake by means of branching and root hairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.2</b>	List ways in which mineral ions in the soil move to the root.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.3</b>	Explain the process of mineral ion absorption from the soil into roots by active transport.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.4</b>	State that terrestrial plants support themselves by means of thickened cellulose, cell turgor and lignified xylem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.5</b>	Define transpiration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.6</b>	Explain how water is carried by the transpiration stream, including the structure of xylem vessels, transpiration pull, cohesion, adhesion and evaporation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.7</b>	State that guard cells can regulate transpiration by opening and closing stomata.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.8</b>	State that the plant hormone abscisic acid causes the closing of stomata.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.9</b>	Explain how the abiotic factors light, temperature, wind and humidity, affect the rate of transpiration in a typical terrestrial plant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.10</b>	Outline four adaptations of xerophytes that help to reduce transpiration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.2.11</b>	Outline the role of phloem in active translocation of sugars (sucrose) and amino acids from source (photosynthetic tissue and storage organs) to sink (fruits, seeds, roots).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 9 Plant Science: Knowledge Audit

Name:

### 9.3 Reproduction in Angiospermophytes – HL

	Assessment statement	OK	Review	Get help
<b>9.3.1</b>	Draw and label a diagram showing the structure of a dicotyledonous animal-pollinated flower.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.3.2</b>	Distinguish between pollination, fertilization and seed dispersal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.3.3</b>	Draw and label a diagram showing the external and internal structure of a named dicotyledonous seed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.3.4</b>	Explain the conditions needed for the germination of a typical seed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.3.5</b>	Outline the metabolic processes during germination of a starchy seed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9.3.6</b>	Explain how flowering is controlled in long-day and short-day plants, including the role of phytochrome.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 10 Genetics: Knowledge Audit

Name:

## 10.1 Meiosis – HL

	Assessment statement	OK	Review	Get help
<b>10.1.1</b>	Describe the behaviour of the chromosomes in the phases of meiosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.1.2</b>	Outline the formation of chiasmata in the process of crossing over.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.1.3</b>	Explain how meiosis results in an effectively infinite genetic variety in gametes through crossing over in prophase I and random orientation in metaphase I.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.1.4</b>	State Mendel's law of independent assortment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.1.5</b>	Explain the relationship between Mendel's law of independent assortment and meiosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 10 Genetics: Knowledge Audit

Name:

## 10.2 Dihybrid Crosses and Gene Linkage – HL

	Assessment statement	OK	Review	Get help
<b>10.2.1</b>	Calculate and predict the genotypic and phenotypic ratio of offspring of dihybrid crosses involving unlinked autosomal genes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.2.2</b>	Distinguish between autosomes and sex chromosomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.2.3</b>	Explain how crossing over between non-sister chromatids of a homologous pair in prophase I can result in an exchange of alleles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.2.4</b>	Define linkage group.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.2.5</b>	Explain an example of a cross between two linked genes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.2.6</b>	Identify which of the offspring are recombinants in a dihybrid cross involving linked genes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Topic 10 Genetics: Knowledge Audit

Name:

### 10.3 Polygenic Inheritance – HL

	Assessment statement	OK	Review	Get help
<b>10.3.1</b>	Define polygenic inheritance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.3.2</b>	Explain that polygenic inheritance can contribute to continuous variation using two examples, one of which must be human skin colour.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 11 Human Health and Physiology: Knowledge Audit

Name:

## 11.1 Defence against Infectious Disease – HL

	Assessment statement	OK	Review	Get help
11.1.1	Describe the process of blood clotting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.2	Outline the principle of challenge and response, clonal selection and memory cells as the basis of immunity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.3	Define active and passive immunity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.4	Explain antibody production.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.5	Describe the production of monoclonal antibodies and their use in diagnosis and in treatment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.6	Explain the principle of vaccination.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.7	Discuss the benefits and dangers of vaccination.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 11 Human Health and Physiology: Knowledge Audit

Name:

## 11.2 Muscles and Movement – HL

	Assessment statement	OK	Review	Get help
11.2.1	State the roles of bones, ligaments, muscles, tendons and nerves in human movement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.2	Label a diagram of the human elbow joint, including cartilage, synovial fluid, joint capsule, named bones and antagonistic muscles (biceps and triceps).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.3	Outline the functions of the structures in the human elbow joint named in 11.2.2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.4	Compare the movements of the hip joint and the knee joint.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.5	Describe the structure of striated muscle fibres, including the myofibrils with light and dark bands, mitochondria, the sarcoplasmic reticulum, nuclei and the sarcolemma.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.6	Draw and label a diagram to show the structure of a sarcomere, including Z lines, actin filaments, myosin filaments with heads, and the resultant light and dark bands.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.7	Explain how skeletal muscle contracts, including the release of calcium ions from the sarcoplasmic reticulum, the formation of cross-bridges, the sliding of actin and myosin filaments, and the use of ATP to break cross-bridges and re-set myosin heads.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2.8	Analyse electron micrographs to find the state of contraction of muscle fibres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 11 Human Health and Physiology: Knowledge Audit

Name:

## 11.3 The Kidney – HL

	Assessment statement	OK	Review	Get help
11.3.1	Define excretion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.2	Draw and label a diagram of the kidney.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.3	Annotate a diagram of a glomerulus and associated nephron to show the function of each part.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.4	Explain the process of ultrafiltration, including blood pressure, fenestrated blood capillaries and basement membrane.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.5	Define osmoregulation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.6	Explain the reabsorption of glucose, water and salts in the proximal convoluted tubule, including the roles of microvilli, osmosis and active transport.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.7	Explain the roles of the loop of Henle, medulla, collecting duct and ADH (vasopressin) in maintaining the water balance of the blood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.8	Explain the differences in the concentration of proteins, glucose and urea between blood plasma, glomerular filtrate and urine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.9	Explain the presence of glucose in the urine of untreated diabetic patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Topic 11 Human Health and Physiology: Knowledge Audit

Name:

## 11.4 Reproduction – HL

	Assessment statement	OK	Review	Get help
<b>11.4.1</b>	Annotate a light micrograph of testis tissue to show the location and function of interstitial cells (leydig cells), germinal epithelium cells, developing spermatozoa and Sertoli cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.2</b>	Outline the processes involved in spermatogenesis within the testis, including mitosis, cell growth, the two divisions of meiosis and cell differentiation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.3</b>	State the role of LH, testosterone and FSH in spermatogenesis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.4</b>	Annotate a diagram of the ovary to show the location and function of germinal epithelium, primary follicles, mature follicle and secondary oocyte.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.5</b>	Outline the processes involved in oogenesis within the ovary, including mitosis, cell growth, the two divisions of meiosis, the unequal division of cytoplasm and the degeneration of polar body.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.6</b>	Draw and label a diagram of a mature sperm and egg.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.7</b>	Outline the role of the epididymis, seminal vesicle and prostate gland in the production of semen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Assessment statement	OK	Review	Get help
<b>11.4.8</b>	Compare the processes of spermatogenesis and oogenesis, including the number of gametes and the timing of the formation and release of gametes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.9</b>	Describe the process of fertilization, including the acrosome reaction, penetration of the egg membrane by a sperm and the cortical reaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.10</b>	Outline the role of HCG in early pregnancy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.11</b>	Outline early embryo development up to the implantation of the blastocyst.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.12</b>	Explain how the structure and functions of the placenta, including its hormonal role in secretion of estrogen and progesterone, maintain pregnancy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.13</b>	State that the fetus is supported and protected by the amniotic sac and amniotic fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.14</b>	State that materials are exchanged between the maternal and fetal blood in the placenta.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4.15</b>	Outline the process of birth and its hormonal control, including the changes in progesterone and oxytocin levels and positive feedback.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Option D Evolution: Knowledge Audit

Name:

### D.1 Origin of Life on Earth - Core

	Assessment statement	OK	Review	Get help
<b>D.1.1</b>	Describe four processes needed for the spontaneous origin of life on Earth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.1.2</b>	Outline the experiments of Miller and Urey into the origin of organic compounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.1.3</b>	State that comets may have delivered organic compounds to Earth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.1.4</b>	Discuss possible locations where conditions would have allowed the synthesis of organic compounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.1.5</b>	Outline two properties of RNA that would have allowed it to play a role in the origin of life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.1.6</b>	State that living cells may have been preceded by protobionts, with an internal chemical environment different from their surroundings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.1.7</b>	Outline the contribution of prokaryotes to the creation of an oxygen-rich atmosphere.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.1.8</b>	Discuss the endosymbiotic theory for the origin of eukaryotes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Option D Evolution: Knowledge Audit

Name:

### D.2 Species and Speciation - Core

	Assessment statement	OK	Review	Get help
<b>D.2.1</b>	Define allele frequency and gene pool.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.2</b>	State that evolution involves a change in allele frequency in a population's gene pool over a number of generations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.3</b>	Discuss the definition of the term species.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.4</b>	Describe three examples of barriers between gene pools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.5</b>	Explain how polyploidy can contribute to speciation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.6</b>	Compare allopatric and sympatric speciation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.7</b>	Outline the process of adaptive radiation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.8</b>	Compare convergent and divergent evolution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.9</b>	Discuss ideas on the pace of evolution, including gradualism and punctuated equilibrium.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.10</b>	Describe one example of transient polymorphism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.2.11</b>	Describe sickle-cell anemia as an example of balanced polymorphism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Option D Evolution: Knowledge Audit

Name:

### D.3 Human Evolution - Core

	Assessment statement	OK	Review	Get help
<b>D.3.1</b>	Outline the method for dating rocks and fossils using radioisotopes, with reference to $^{14}\text{C}$ and $^{40}\text{K}$ .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.2</b>	Define half-life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.3</b>	Deduce the approximate age of materials based on a simple decay curve for a radioisotope.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.4</b>	Describe the major anatomical features that define humans as primates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.5</b>	Outline the trends illustrated by the fossils of <i>Ardipithecus ramidus</i> , <i>Australopithecus</i> including <i>A. afarensis</i> and <i>A. africanus</i> , and <i>Homo</i> including <i>H. habilis</i> , <i>H. Erectus</i> , <i>H. neanderthalensis</i> and <i>H. sapiens</i> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.6</b>	State that, at various stages in hominid evolution, several species may have coexisted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.7</b>	Discuss the incompleteness of the fossil record and the resulting uncertainties about human evolution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.8</b>	Discuss the correlation between the change in diet and increase in brain size during hominid evolution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.9</b>	Distinguish between genetic and cultural evolution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.3.10</b>	Discuss the relative importance of genetic and cultural evolution in the recent evolution of humans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Option D Evolution: Knowledge Audit

Name:

### D.4 Human Evolution – HL

	Assessment statement	OK	Review	Get help
<b>D.4.1</b>	Explain how the Hardy–Weinberg equation is derived.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.4.2</b>	Calculate allele, genotype and phenotype frequencies for two alleles of a gene, using the Hardy–Weinberg equation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.4.3</b>	State the assumptions made when the Hardy–Weinberg equation is used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Option D Evolution: Knowledge Audit

Name:

### D.5 Phylogeny and Systematics – HL

	Assessment statement	OK	Review	Get help
<b>D.5.1</b>	Outline the value of classifying organisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.2</b>	Explain the biochemical evidence provided by the universality of DNA and protein structures for the common ancestry of living organisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.3</b>	Explain how variations in specific molecules can indicate phylogeny.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.4</b>	Discuss how biochemical variations can be used as an evolutionary clock.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.5</b>	Define clade and cladistics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.6</b>	Distinguish, with examples, between analogous and homologous characteristics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.7</b>	Outline the methods used to construct cladograms and the conclusions that can be drawn from them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.8</b>	Construct a simple cladogram.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.9</b>	Analyse cladograms in terms of phylogenetic relationships.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D.5.10</b>	Discuss the relationship between cladograms and the classification of living organisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option G Ecology and Conservation: Knowledge Audit

Name:

## G.1 Community and Ecology – Only SL

	Assessment statement	OK	Review	Get help
<b>G.1.1</b>	Outline the factors that affect the distribution of plant species, including temperature, water, light, soil pH, salinity and mineral nutrients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.2</b>	Explain the factors that affect the distribution of animal species, including temperature, water, breeding sites, food supply and territory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.3</b>	Describe one method of random sampling, based on quadrat methods, that is used to compare the population size of two plant or two animal species.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.4</b>	Outline the use of a transect to correlate the distribution of plant or animal species with an abiotic variable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.5</b>	Explain what is meant by the niche concept, including an organism's spatial habitat, its feeding activities and its interactions with other species.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.6</b>	Outline the following interactions between species, giving two examples of each: competition, herbivory, predation, parasitism and mutualism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.7</b>	Explain the principle of competitive exclusion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.8</b>	Distinguish between fundamental and realized niches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.9</b>	Define biomass.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.1.10</b>	Describe one method for the measurement of biomass of different trophic levels in an ecosystem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option G Ecology and Conservation: Knowledge Audit

Name:

## G.2 Ecosystem and Biomes – Only SL

	Assessment statement	OK	Review	Get help
<b>G.2.1</b>	Define gross production, net production and biomass.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.2</b>	Calculate values for gross production and net production using the equation: gross production – respiration = net production.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.3</b>	Discuss the difficulties of classifying organisms into trophic levels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.4</b>	Explain the small biomass and low numbers of organisms in higher trophic levels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.5</b>	Construct a pyramid of energy, given appropriate information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.6</b>	Distinguish between primary and secondary succession, using an example of each.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.7</b>	Outline the changes in species diversity and production during primary succession.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.8</b>	Explain the effects of living organisms on the abiotic environment, with reference to the changes occurring during primary succession.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.9</b>	Distinguish between biome and biosphere.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.10</b>	Explain how rainfall and temperature affect the distribution of biomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.2.11</b>	Outline the characteristics of six major biomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option G Ecology and Conservation: Knowledge Audit

Name:

## G.3 Impacts of Humans on Ecosystems – Only SL

	Assessment statement	OK	Review	Get help
<b>G.3.1</b>	Calculate the Simpson diversity index for two local communities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.2</b>	Analyse the biodiversity of the two local communities using the Simpson index.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.3</b>	Discuss reasons for the conservation of biodiversity using rainforests as an example.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.4</b>	List three examples of the introduction of alien species that have had significant impacts on ecosystems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.5</b>	Discuss the impacts of alien species on ecosystems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.6</b>	Outline one example of biological control of invasive species.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.7</b>	Define biomagnification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.8</b>	Explain the cause and consequences of biomagnification, using a named example.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.9</b>	Outline the effects of ultraviolet (UV) radiation on living tissues and biological productivity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.10</b>	Outline the effect of chlorofluorocarbons (CFCs) on the ozone layer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G.3.11</b>	State that ozone in the stratosphere absorbs UV radiation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option H Further Human Physiology: Knowledge Audit

Name:

## H.1 Hormonal Control – Only HL

	Assessment statement	OK	Review	Get help
<b>H.1.1</b>	State that hormones are chemical messengers secreted by endocrine glands into the blood and transported to specific target cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.1.2</b>	State that hormones can be steroids, proteins and tyrosine derivatives, with one example of each.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.1.3</b>	Distinguish between the mode of action of steroid hormones and protein hormones.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.1.4</b>	Outline the relationship between the hypothalamus and the pituitary gland.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.1.5</b>	Explain the control of ADH (vasopressin) secretion by negative feedback.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option H Further Human Physiology: Knowledge Audit

Name:

## H.2 Digestion – Only HL

	Assessment statement	OK	Review	Get help
<b>H.2.1</b>	State that digestive juices are secreted into the alimentary canal by glands, including salivary glands, gastric glands in the stomach wall, the pancreas and the wall of the small intestine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.2</b>	Explain the structural features of exocrine gland cells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.3</b>	Compare the composition of saliva, gastric juice and pancreatic juice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.4</b>	Outline the control of digestive juice secretion by nerves and hormones, using the example of secretion of gastric juice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.5</b>	Outline the role of membrane bound enzymes on the surface of epithelial cells in the small intestine in digestion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.6</b>	Outline the reasons for cellulose not being digested in the alimentary canal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.7</b>	Explain why pepsin and trypsin are initially synthesized as inactive precursors and how they are subsequently activated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.8</b>	Discuss the roles of gastric acid and <i>Helicobacter pylori</i> in the development of stomach ulcers and stomach cancers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.2.9</b>	Explain the problem of lipid digestion in a hydrophilic medium and the role of bile in overcoming this.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Option H Further Human Physiology: Knowledge Audit

Name:

### H.3 Absorption of Digested Food – Only HL

	Assessment statement	OK	Review	Get help
<b>H.3.1</b>	Draw and label a diagram showing a transverse section of the ileum as seen under a light microscope.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.3.2</b>	Explain the structural features of an epithelial cell of a villus as seen in electron micrographs, including microvilli, mitochondria, pinocytotic vesicles and tight junctions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.3.3</b>	Explain the mechanisms used by the ileum to absorb and transport food, including facilitated diffusion, active transport and endocytosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option H Further Human Physiology: Knowledge Audit

Name:

## H.4 The Functions of the Liver – Only HL

	Assessment statement	OK	Review	Get help
<b>H.4.1</b>	List the materials that are not absorbed and are egested.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.4.2</b>	Outline the circulation of blood through liver tissue, including the hepatic artery, hepatic portal vein, sinusoids and hepatic vein.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.4.3</b>	Explain the role of the liver in regulating levels of nutrients in the blood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.4.4</b>	Outline the role of the liver in the storage of nutrients, including carbohydrate, iron, vitamin A and vitamin D.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.4.5</b>	State that the liver synthesizes plasma proteins and cholesterol.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.4.6</b>	State that the liver has a role in detoxification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.4.7</b>	Describe the process of erythrocyte and hemoglobin breakdown in the liver, including phagocytosis, digestion of globin and bile pigment formation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.4.8</b>	Explain the liver damage caused by excessive alcohol consumption.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option H Further Human Physiology: Knowledge Audit

Name:

## H.5 The Transport System – Only HL

	Assessment statement	OK	Review	Get help
<b>H.5.1</b>	Explain the events of the cardiac cycle, including atrial and ventricular systole and diastole, and heart sounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.5.2</b>	Analyse data showing pressure and volume changes in the left atrium, left ventricle and the aorta, during the cardiac cycle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.5.3</b>	Outline the mechanisms that control the heartbeat, including the roles of the SA (sinoatrial) node, AV (atrioventricular) node and conducting fibres in the ventricular walls.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.5.4</b>	Outline atherosclerosis and the causes of coronary thrombosis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.5.5</b>	Discuss factors that affect the incidence of coronary heart disease.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Option H Further Human Physiology: Knowledge Audit

Name:

## H.6 Gas Exchange – Only HL

	Assessment statement	OK	Review	Get help
<b>H.6.1</b>	Define partial pressure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.6.2</b>	Explain the oxygen dissociation curves of adult hemoglobin, fetal hemoglobin and myoglobin.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.6.3</b>	Describe how carbon dioxide is carried by the blood, including the action of carbonic anhydrase, the chloride shift and buffering by plasma proteins.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.6.4</b>	Explain the role of the Bohr shift in the supply of oxygen to respiring tissues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.6.5</b>	Explain how and why ventilation rate varies with exercise.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.6.6</b>	Outline the possible causes of asthma and its effects on the gas exchange system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H.6.7</b>	Explain the problem of gas exchange at high altitudes and the way the body acclimatizes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>