AQA GCSE Trilogy Topic Checklists **4.6**
Inheritance, Variation and Evolution

4.6.1 Reproduction				
Topic	**Success Criteria**	**Progress**		
Sexual and Asexual Reproduction	I can name the male and female gametes in animals.			
	I can name the male and female gametes in flowering plants.			
	I can name the type of cell division involved in the formation of gametes.			
	I can explain how sexual reproduction leads to variety in the offspring.			
	I can name the type of cell division involved in asexual reproduction.			
	I can explain how asexual reproduction leads to genetically identical offspring (clones).			
Meiosis	I can describe what happens when a cell divides to form gametes.			
	I can explain how the number of chromosomes changes when gametes are formed.			
	I can explain how fertilisation restores the normal number of chromosomes.			
DNA and the Genome	I can state what DNA is and describe the shape formed by a DNA molecule.			
	I can describe how DNA is stored in cells.			
	I can describe the function of a gene.			
	I can give a definition for the term 'genome'.			
	I can explain the importance of understanding the human genome.			

Topic	Success Criteria	Progress		
Genetic Inheritance	I can explain the terms gamete, chromosome, gene, allele, dominant, recessive, homozygous, heterozygous, genotype and phenotype.			
	I can explain when dominant and recessive alleles are expressed.			
	I can explain that most characteristics are a result of the interaction of multiple genes.			
	I can predict the probability of a particular outcome as a result of a single gene cross.			
	I can use direct proportion and simple ratios to express the outcome of a genetic cross.			
	I can complete a Punnett square diagram and extract and interpret information from genetic crosses and family trees.			
	(HT only) I can construct a genetic cross by Punnet square diagram and use it to make predictions using the theory of probability.			
Inherited Disorders	I can give some examples of disorders caused by the inheritance of a dominant or recessive allele.			
	I can discuss the economic, social and ethical issues concerning embryo screening, given appropriate information.			
Sex Determination	I can recall the number of chromosomes in an ordinary human body cell.			
	I can recall the sex chromosomes found in the cells of biological females.			
	I can recall the sex chromosomes found in the cells of biological males.			
	I can carry out a genetic cross to show sex inheritance.			

4.6.2 Variation and Evolution				
Topic	**Success Criteria**	**Progress**		
Variation	I can describe how the genome and its interaction with the environment influence the phenotype of an organism.			
	I can give a definition for the term 'variation'.			
	I can describe the factors that may lead to variation.			
	I can state that there is usually extensive genetic variation within a population of a species.			
	I can recall that all variants arise from mutations and describe the effect these have on the phenotype.			
	I can explain what can happen if a new phenotype is suited to an environmental change.			
Evolution	I can describe what is meant by the term 'evolution'.			
	I can explain how evolution occurs through natural selection of variants that give rise to phenotypes best suited to their environment.			
	I can explain how new species may be formed by natural selection.			
Selective Breeding	I can describe the process of selective breeding.			
	I can suggest some characteristics that are chosen for selective breeding.			
	I can explain the impact of selective breeding of food plants and domesticated animals.			
	I can explain the benefits and risks of selective breeding given appropriate information.			
	I can consider ethical issues related to selective breeding.			

Topic	Success Criteria	Progress		
Genetic Engineering	I can describe the process of genetic engineering.			
	I can explain some reasons that plant crops may be genetically engineered.			
	I can explain some reasons that bacterial cells may be genetically engineered.			
	I can explain the potential benefits and risks of genetic engineering in agriculture and in medicine.			
	I can suggest why some people have objections to genetic engineering.			
	(HT only) I can describe the main steps in the process of genetic engineering, including the use of enzymes and vectors.			
	(HT only) I can interpret information about genetic engineering techniques to make informed judgements about issues concerning cloning and genetic engineering, including GM crops.			

4.6.3 The Development of Understanding of Genetics and Evolution				
Topic	**Success Criteria**	**Progress**		
Evidence for Evolution	I can describe some examples of evidence for Darwin's theory of evolution.			
Fossils	I can give a definition for the term 'fossil'.			
	I can describe how fossils may be formed.			
	I can explain why scientists cannot be certain how life began on Earth.			
	I can explain how fossils can tell us how different organisms have changed as life developed on Earth.			
	I can extract and interpret information from charts, graphs and tables such as evolutionary trees.			
Extinction	I can give a definition for the term 'extinction'.			
	I can describe factors which may contribute to the extinction of a species.			
Resistant Bacteria	I can explain why bacteria are able to evolve rapidly.			
	I can describe how antibiotic resistant strains of bacteria arise.			
	I can explain how the rate of development of antibiotic resistant strains of bacteria can be reduced.			
	I can explain why the development of new antibiotics is unlikely to keep up with the emergence of new resistant strains.			

4.6.4 Classification of Living Organisms

Topic	Success Criteria	Progress		
Classification of Living Organisms	I can describe how organisms are classified in the system developed by Carl Linnaeus.			
	I can explain the binomial system of naming organisms.			
	I can describe the impact of developments in biology on classification systems.			
	I can describe the 'three-domain system' developed by Carl Woese.			
	I can explain how evolutionary trees can be used to show how organisms are related.			
	I can extract and interpret information about how organisms are related from evolutionary trees.			