

Blue Pathway								
Purple Pathway								
Orange Pathway								
	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12
AO1 Remember	Recall that cells must divide for an organism to grow & to replace cells.	Explain role of gametes in fertilisation	Recall the number of daughter cells & chromosomes produced during meiosis.	Describe the inheritance of single gene disorders.	Discuss the roles of Watson, Crick and Franklin in discovering DNA structure.	Describe the main steps in genetic engineering	Explain how scientists have separated bacteria & archaeans using chemical evidence	Explain why predicted ratios and actual ratios of offspring may differ
	Describe fertilisation	Describe the structure of nucleotides	Describe selective breeding and genetic engineering	Understand that most diseases are influenced by multiple genes	Explain what an organisms phenotype is dependent on	Explain the need for meiosis in producing gametes	Explain the reasons why the gametes produced by meiosis are genetically unique.	Describe in detail the main stages of genetic engineering
	Recall that some disorders are the result of inheritance of single defective genes	Identify agricultural cloning techniques	Describe natural selection, cuttings & cloning. Describe how genes control formation of proteins.	Understand that only a small percentage of the genome codes for protein synthesis	Define the emergence of new species & the factors leading to its development	Describe how proteins are synthesised on ribosomes. Describe formation of proteins	Explain how genes work by coding and non-coding	Explain how a change in the DNA (template) may result in a change in the protein structure
AO2 Application	Describe the role of DNA, genes and chromosomes in heredity	Identify applications of selective breeding and genetic engineering	Describe how variation contributes to survival	Apply knowledge of genetics to explain role of gene banks	Interpret info on inheritance of single gene disorders.	Interpret diagrams of DNA structure.	Interpret evolutionary trees & use DNA data to determine links	Use models to predict future effects of antibiotic resistance
	Explain how competition can lead to extinction	Describe the importance of the mapping of the human genome.	Explain how variation and environmental pressures lead to evolution	Complete Punnett squares.		Explain how mutations affect protein synthesis	Explain usefulness of genome analysis	
				Describe how a protein's function is related to shape.	Use Punnett squares to predict the outcome of genetic crosses.	Explain in detail the process and application of cell cloning	Explain how several factors interact to lead to evolution	Explain how several base triplets code for the same amino acid & the protein synthesised may not be affected.
AO3 Analyse and Evaluate	Evaluate basic information to develop simple arguments and explanations.	Consistently draw conclusions consistent with the available evidence.	Describe/compare advantages and disadvantages of each type of reproduction	Describe the evidence that led to the theory of evolution	Interpret/evaluate population data linked with the decline of species numbers and extinction	Explain the evidence for evolution and natural selection	Understand the mechanisms of genetic variation	
				Describe features used to develop evolutionary trees	Explain the different methods of reproduction	Explain how fossils and biochemistry lead to modern evolutionary trees	Explain advantages & disadvantages of both types of reproduction	Analyse, interpret & evaluate data on natural selection
	Outline technique used in genetic manipulation	Explain the importance of sampling technique and control variables	Correctly use an appropriate number of decimal places	Explain microbial resistance and measures intended to reduce it	Make more complex and quantitative predictions using scientific knowledge and understanding	Explain risks and benefits of selective breeding and genetic engineering	Explain accuracy, precision, resolution and reliability	Describe in detail the risks and benefits of selective breeding, genetic engineering and cloning
Identify variables in an investigation								