Review B6 Inheritance, variation and evolution

Can you…?	☺	😐	☹
4.6.1 Reproduction			
Describe sexual and asexual reproduction			
Name the sex cells in plants and animals			
Explain meiosis to form gametes			
Recall that gametes join at fertilisation to restore the normal number of chromosomes.			
Explain how cell divide by mitosis.			
List some advantages and disadvantages of sexual reproduction (biology only)			
List some advantages and disadvantages of asexual reproduction (biology only)			
Recall that some organisms reproduce by both methods depending on the circumstances.			
Define a gene			
Define the term genome			
Discuss the importance of understanding the human genome			
Recall the four bases and their complimentary pairing (biology only)			
Explain how the bases code for proteins (biology only)			
Describe the DNA polymer (biology only)			
Explain how a change in DNA structure result in a change in the protein synthesised (Bio HT only)			
Explain how proteins are synthesised on ribosomes, according to a template (Bio HT only)			
Recall that when the protein chain is complete it folds up to form a unique shape. Which enables the proteins to do their job as enzymes, hormones or forming structure (Bio HT only)			
Recall that mutations occur continuously and most do not alter the protein . (Bio HT only)			
(HT only) Not all parts of DNA code for proteins. Non-coding parts of DNA can switch genes on and off, so variations in these areas of DNA may affect how genes are expressed.			
Explain the difference between genotype and phenotype			
Explain dominant and recessive alleles			
Define homozygous and heterozygous.			
Recall that most characteristics are a result of multiple genes interacting.			
Understand family trees			
Use a Punnett square diagram to predict the outcome of a monohybrid cross			
Name an Inherited disorder caused by a dominant allele			
Name an Inherited disorder caused by a recessive allele			
Recall the number of pairs of chromosomes in an ordinary human body			
State the pairs of chromosomes that carries the genes that determine sex.			
Explain single gene inheritance and carry out a genetic cross to show sex inheritance.			
6.2 Variation and evolution			
Describe variation			
Give causes of variation			
Explain how explain how evolution occurs through natural selection			
Describe selective breeding			
Define some chosen characteristics for selective breeding			
Explain the problems with ‘inbreeding’			
Describe genetic engineering			
Give examples of uses of genetic engineering			
Define GM crop and give examples			
State some concerns about GM crops			
Recall the possibility of genetic modification to overcome some inherited diseases.			

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Explain plant cloning tissue culture and cuttings (biology only)			
Explain animal cloning by embryo transplants and adult cell cloning (biology only)			
4.6.3 The development of understanding of genetics and evolution			
Explain theory of evolution by natural selection proposed by Charles Darwin (biology only)			
State reason why the theory of evolution by natural selection was only gradually accepted			
Recall the theory of Jean-Baptiste Lamarck			
Summarise the work of Alfred Russel Wallace into speciation (biology only)			
State some cause for new species to arise (biology only)			
Recall some history of the understanding of genetics including: (biology only) • In the mid-19th century Gregor Mendel carried out breeding experiments on plants. • In the late 19th century behaviour of chromosomes during cell division was observed. • the structure of DNA was determined in the mid-20th century			
Understand why the importance of Mendel's discovery was not recognised until after his death.			
State evidence for evolution by natural selection			
Define fossils and explain how they are formed			
Explain why there are no fossils of many early forms of life			
Recall that we can learn from fossils how much or how organisms have changed			
List some possible causes of extinction			
Explain the emergence of antibiotic resistant bacteria			
Recall that MRSA is resistant to antibiotics.			
Describe how to reduce the rate of development of antibiotic resistant strains			
6.4 Classification of living organisms			
Describe the Linnaeus system to classify living things and name the levels.			
State that organisms are named by the binomial system of genus and species.			
Know that new models of classification have been proposed based on improved analysis			
Define the 'three-domain system' developed by Carl Woese.			
Understand that evolutionary trees are a method used by scientists to show how they believe organisms are related.			