

Genetic variation and change - Unit planner

Describe a gene and an allele . Distinguish between gene and allele	Explain the relationships between genes, alleles and chromosomes .	Explain how mutations are a source of new alleles and how they contribute to variation in a population and genetic change in a population	Explain how mutations are a source of new alleles and how they contribute to variation in a population and genetic change in a population	Describe the process of meiosis; Segregation, independent assortment and crossing over.
Explain how the processes of independent assortment, segregation and crossing over during meiosis produce new combinations of alleles in the gametes and contribute to genetic variation.	Explain how the processes of independent assortment, segregation and crossing over during meiosis produce new combinations of alleles in the gametes and contribute to genetic variation.	Define monohybrid inheritance and list the different types of monohybrid inheritance patterns	Describe complete dominance using the terms, dominant, expressed, recessive, masks (examples required)	Describe, and use real examples to distinguish between co-dominance and incomplete dominance .
Explain what is meant by the term lethal allele . (examples required)	Explain the concept of multiple alleles using at least two examples.	draw and / or interpret a Punnett square for any of the specified monohybrid inheritance patterns and calculate the expected proportions of genotype and phenotype (expressed as a ratio, fraction, percentage, or decimal). Explain the inheritance patterns	Demonstrate an understanding of dihybrid inheritance by drawing and / or interpreting a Punnett square for dihybrid inheritance patterns, and calculate the expected proportions of genotype and phenotype (expressed as a ratio, fraction, percentage, or decimal).	Demonstrate an understanding of dihybrid inheritance by drawing and / or interpreting a Punnett square for dihybrid inheritance patterns, and calculate the expected proportions of genotype and phenotype (expressed as a ratio, fraction, percentage, or decimal).
Explain how a test cross can be used to determine if individuals are pure breeding (examples required)	Explain the effect of linked genes on dihybrid inheritance patterns . (examples required)	Explain the effect of linkage and crossing over on dihybrid inheritance patterns . (examples required)	Explain how independent assortment, crossing over, segregation, monohybrid inheritance patterns, dihybrid inheritance and linkage affect genetic variation in a population	Explain how independent assortment, crossing over, segregation, monohybrid inheritance patterns, dihybrid inheritance and linkage affect genetic variation in a population
Explain the process of natural selection fully. (examples required)	Define the term gene pool and explain what is meant by the term allele frequencies in the context of a gene pool .	Explain the process of genetic drift . (examples required)	Explain how founder effect and genetic bottlenecks can affect population size and the gene pool / genetic variation in a population. (examples required)	Explain how founder effect and genetic bottlenecks can affect population size and the gene pool / genetic variation in a population. (examples required)
Define the term migration . (examples required)	Explain how natural selection, genetic drift and migration lead to changes in allele frequencies within a gene pool . (examples required)	Explain how natural selection, genetic drift and migration lead to changes in allele frequencies within a gene pool . (examples required)		