6.1.2 Patterns of inheritance

(a)	(i) the contribution of both environmental and genetic factors to phenotypic variation	To include examples of both genetic and environmental contributions – environmental examples could include diet in animals and etiolation or chlorosis in plants.
	(ii) how sexual reproduction can lead to genetic variation within a species	Meiosis and the random fusion of gametes at fertilisation.
(b)	(i) genetic diagrams to show patterns of inheritance	To include monogenic inheritance, dihybrid inheritance, multiple alleles, sex linkage and codominance.
	(ii) the use of phenotypic ratios to identify linkage (autosomal and sex linkage) and epistasis	To include explanations of linkage and epistasis. *M0.3, M1.4* HSW2, HSW8
(c)	using the chi-squared (χ2) test to determine the significance of the difference between observed and expected results	The formula for the chi-squared (χ2) test will be provided. M0.3, M1.4, M1.9, M2.1
(d)	the genetic basis of continuous and discontinuous variation	To include reference to the number of genes that influence each type of variation.
(e)	the factors that can affect the evolution of a species	To include stabilising selection and directional selection, genetic drift, genetic bottleneck and founder effect.
(f)	the use of the Hardy–Weinberg principle to calculate allele frequencies in populations	The equations for the Hardy–Weinberg principle will be provided. M0.2, M2.1, M2.2, M2.3
(g)	the role of isolating mechanisms in the evolution of new species	To include geographical mechanisms (allopatric speciation) and reproductive mechanisms (sympatric speciation).
(h)	(i) the principles of artificial selection and its uses	To include examples of selective breeding in plants and animals AND an appreciation of the importance of maintaining a resource of genetic material for use in selective breeding including wild types.
	(ii) the ethical considerations surrounding the use of artificial selection.	To include a consideration of the more extreme examples of the use of artificial selection to 'improve' domestic species e.g. dog breeds. HSW2, HSW8, HSW10, HSW12