



Genetic Variation

AS91157: 4 Credits External

This achievement standard involves demonstrating understanding of genetic variation and change.

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of genetic variation and change.	Demonstrate in-depth understanding of genetic variation and change.	Demonstrate comprehensive understanding of genetic variation and change.

Demonstrate understanding involves defining, using annotated diagrams or models to describe, and describing characteristics of, or providing an account of, genetic variation and change.

Demonstrate in-depth understanding involves providing reasons as to how or why genetic variation and change occurs.

Demonstrate comprehensive understanding involves linking biological ideas about genetic variation and change. The discussion of ideas may involve justifying, relating, evaluating, comparing and contrasting, or analysing.

Genetic variation and change involves the following concepts:

- sources of variation within a gene pool
- factors that cause changes to the allele frequency in a gene pool.

Biological ideas and processes relating to sources of variation within a gene pool are selected from:

- mutation as a source of new alleles
- independent assortment, segregation and crossing over during meiosis
- monohybrid inheritance to show the effect of co-dominance, incomplete dominance, lethal alleles, and multiple alleles
- dihybrid inheritance with complete dominance
- the effect of crossing over and linked genes on dihybrid inheritance.

Biological ideas and processes relating to factors affecting allele frequencies in a gene pool are selected from:

- natural selection
- migration
- genetic drift.

Key words: These are the words that you are expected to understand when used in questions and be able to use in your answers.

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| <input type="checkbox"/> Allele | <input type="checkbox"/> Gene |
| <input type="checkbox"/> Meiosis | <input type="checkbox"/> Mutation |
| <input type="checkbox"/> Variation | <input type="checkbox"/> Adaptation |
| <input type="checkbox"/> Bottle neck effect | <input type="checkbox"/> Evolution |
| <input type="checkbox"/> Founder effect | <input type="checkbox"/> Gene pool |
| <input type="checkbox"/> Gene flow | <input type="checkbox"/> Genetic drift |
| <input type="checkbox"/> Gene frequency | <input type="checkbox"/> Genetic equilibrium |
| <input type="checkbox"/> Immigration | <input type="checkbox"/> Mate selection |
| <input type="checkbox"/> Population | <input type="checkbox"/> Natural selection |
| <input type="checkbox"/> Recombination / crossing over | <input type="checkbox"/> Speciation |
| <input type="checkbox"/> Species | <input type="checkbox"/> Adenine |
| <input type="checkbox"/> Cytosine | <input type="checkbox"/> DNA |
| <input type="checkbox"/> Haploid | <input type="checkbox"/> Diploid |
| <input type="checkbox"/> Double helix | <input type="checkbox"/> Gene |
| <input type="checkbox"/> Mitosis | <input type="checkbox"/> Monohybrid |
| <input type="checkbox"/> Recessive | <input type="checkbox"/> Test cross |
| <input type="checkbox"/> Dominant | <input type="checkbox"/> Sex chromosome |
| <input type="checkbox"/> Thymine | <input type="checkbox"/> Autosome |
| <input type="checkbox"/> Chiasma | <input type="checkbox"/> Chromatid |
| <input type="checkbox"/> Diploid | <input type="checkbox"/> Gametic |
| <input type="checkbox"/> Somatic | <input type="checkbox"/> Selective pressure |
| <input type="checkbox"/> Homologous pair | <input type="checkbox"/> Locus |
| <input type="checkbox"/> Recombination | <input type="checkbox"/> Semi-conservative |
| <input type="checkbox"/> Genotype | <input type="checkbox"/> Phenotype |
| <input type="checkbox"/> Directional selection | <input type="checkbox"/> Disruptive selection |
| <input type="checkbox"/> Stabilising selection | <input type="checkbox"/> Allele frequency |
| <input type="checkbox"/> Heterozygous | <input type="checkbox"/> Homozygous |
| <input type="checkbox"/> Centromere | <input type="checkbox"/> Independent assortment |
| <input type="checkbox"/> Segregation | <input type="checkbox"/> nucleotide |