N5 Biology **MO4** **Variation and Inheritance**  Learning Outcome Checklist

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| Lesson | MC900432651[1] | By the end of the lesson you should know |
| **Variation** |  | * **variation** is the differences between organisms of the same species and can be discrete or continuous
* characteristics that can be put into two or more groups show **discrete** variation
* characteristics that show discrete variation are controlled by different forms of a **single gene**
* data on characteristics that show discrete variation is presented as a bar graph
* examples of discrete variation include: human blood group, fox glove flower colour, tongue rolling ability in humans
* characteristics that cannot be put into groups but vary with values falling between two extremes show **continuous** variation
* characteristics that show continuous variation are controlled by the alleles of **more than one gene** (**polygenic inheritance**)
* data on characteristics that show continuous variation is presented as a histogram
* examples of continuous variation include: milk yield in cattle, body mass in humans, limpet shell diameter
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| **Inheritance** |  | * **gene** is a section of DNA that controls an inherited characteristic (or contributes to the control of a characteristic)
* **allele** is the term for the different forms of a gene
* **phenotype** is the physical characteristic that result from the inherited genes
* **genotype** is the set of genes an organism possesses
* **dominant** is the characteristic that is shown in the phenotype whether there are one or two copies of the allele present
* **recessive** is the characteristic that can be masked by the presence of the dominant allele
* when an organism possesses two of the same allele it has a **homozygous** genotype
* when an organism possesses two different alleles it has a **heterozygous** genotype
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| **Genetic Crosses** |  | * **P, F1** and **F2** are used in genetic crosses to represent the Parent, first and second generations in genetic crosses
* the alleles from each parent are put in a **punnet** **square** so that the possible offspring genotype can be predicted
* predicted phenotype ratios among offspring are not always the same as the actual ratios because the **process of fertilisation is random**
* family trees can be made to trace a particular trait through several generations
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