Genetics 101

**You are to create a book/website for grade 8 students. You will need to write a book on Genetics and inheritance. You should have a minimum of eight (8) pages in your book, with a maximum of twelve (12) pages.**

Your content **must** be about Genetics and should cover the following:

* Define genetics and inheritance
* Define gene, chromosome, DNA, traits, allele, genotype, phenotype, homozygous, heterozygous, haploid, diploid, autosome, sex-chromosome, continuous variation and discontinuous variation.
* Explain how traits are passed from one generation to the next
* Identify the difference between dominant and recessive traits
* Demonstrate the Mendelian Law of Segregation
* Demonstrate the Mendelian Law of Independent Assortment
* Explain monohybrid and dihybrid cross using genetic diagram and Punnett square
* Explain and analyze family histories to identify inherited genetic disorders like Haemophilia, Red and green colour blindness, Sickle cell anaemia, Down's syndrome and Cystic fibrosis
* Genetics and ethics - ethical issues that can arise because of the use of genetic testing

Your submission should look like a book/website and include a front and back cover/landing page or last page with the necessary elements, such as title, author and a picture to capture the reader’s attention. Bibliography is a must.

Resources-

<https://www.jeansforgenesday.org/educationalresources#pamelasstory>

<http://www.genetics.edu.au/Publications-and-Resources/Genetics-Fact-Sheets/FactSheetELSI>

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| **Criterion A : Using knowledge** |

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| **Level of achievement** | **Criterion A: Using knowledge** | **Task specific indicators** |
| 0 | The student does not reach a standard described by any of the  descriptors below. | The student does not reach a standard described by any of the  descriptors below. |
| 1-2 | The student is able to:  i. select scientific knowledge  ii. select scientific knowledge and understanding to suggest solutions to problems set in familiar situations  iii. apply information to make judgments, with limited success. | The student has   * few of the questions in the worksheet are answered, details are missing * use of scientific language is limited * has described few genetic disorders |
| 3-4 | The student is able to:  i. recall scientific knowledge  ii. apply scientific knowledge and understanding to suggest  solutions to problems set in familiar situations  iii. apply information to make judgments. | The student has   * some of the questions in the worksheet are answered in detail * scientific language is sometimes clear * has made some relevant connections between genetic disorders and ethics |
| 5-6 | The student is able to:  i. state scientific knowledge  ii. apply scientific knowledge and understanding to solve problems  set in familiar situations  iii. apply information to make scientifically supported judgments. | The student has   * most of the questions in the worksheet are answered in detail * scientific language is usually clear and precise * most of the connections between the genetic disorders and ethical issues involved are correct |
| 7-8 | The student is able to:  i. outline scientific knowledge  ii. apply scientific knowledge and understanding to solve problems  set in familiar situations and suggest solutions to problems set in unfamiliar situations  iii. interpret information to make scientifically supported judgments. | The student has   * all questions in the worksheet are answered in detail * scientific language is consistently clear and precise * all connections between the genetic disorders and ethical issues involved are correct |

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| **Criterion D: Reflecting on the impacts of science** |

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| **Level** | **MYP descriptor - Year 3** | **Demonstrated When** |
| **0** | The student does not reach a standard described by any of the descriptors below. | The student does not reach a standard described by any of the descriptors below. |
| **1-2** | The student is able to:  i. state the ways in which science is used to address a specific problem or issue  ii. state the implications of the use of science to solve a specific problem or issue, interacting with a factor  iii. apply scientific language to communicate understanding but does so with limited success  iv. document sources, with limited success | 1. You define Genetics and **outline** the issue related to it 2. You **outline** the implications of genetic testing and how understanding them can help make suitable choices 3. You **apply** key basic scientific terms some of the time 4. You have attempted to **document** sources using MLA format |
| **3-4** | The student is able to:  i. outline the ways in which science is used to address a specific problem or issue  ii. outline the implications of using science to solve a specific problem or issue, interacting with a factor  iii. sometimes apply scientific language to communicate understanding  iv. sometimes document sources correctly | 1. You state the issue related to genetics 2. You **describe** the implications of genetic testing and how understanding them can help make suitable choices 3. You **apply** relevant key scientific terms correctly on most occasions 4. You have **documented** most sources correctly, but not all are in MLA format |
| **5-6** | The student is able to:  i. summarize the ways in which science is applied and used to address a specific problem or issue ii. describe the implications of using science and its application to solve a specific problem or issue, interacting with a factor  iii. usually apply scientific language to communicate understanding clearly and precisely  iv. usually document sources correctly | 1. You **describe** genetics andthe issue related to it 2. You **discuss** the implications of genetic testing and how understanding them can help make suitable choices 3. You **apply** key scientific terms (words) in clear sentences on most occasions 4. You have **documented** all sources in MLA format with few formatting errors |
| **7-8** | The student is able to:  i. describe the ways in which science is applied and used to address a specific problem or issue ii. discuss and analyze the implications of using science and its application to solve a specific problem or issue, interacting with a factor  iii. consistently apply scientific language to communicate understanding clearly and precisely iv. document sources completely | 1. You **describe** genetics andthe issue related to it 2. You **discuss** and **evaluate** the implications of genetic testing and how understanding them can help make suitable choices 3. You **consistently apply** key terms in clear sentences consistently. 4. You have documentedall sources **completely** in MLA format. |

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