

Growth and Division Unit

Essential

GE.1 - Use a model to explain the role of cellular division and differentiation in producing and maintaining organisms.

Level 3 Description	<p>Describes that mitosis and cytokinesis are the process of cell division where two new cells are produced that are exact copies of the original cell.</p> <p>Describe the role of cell division and differentiation produces cells/tissues that work together to meet the needs of the whole organism.</p> <p>Describes that genes are carried on chromosomes.</p> <p>Draws and describes the main steps(prophase, metaphase, anaphase, and telophase) of mitosis</p>
Level 4 Description	<p>Describes that mitosis and cytokinesis are the process of cell division where two new cells are produced that are exact copies of the original cell and the importance.</p> <p>In multicellular organisms, individual cells grow and then divide through mitosis allowing the organism to grow and the process of differentiation produces the types of cells that carry out specific functions for maintaining complex organisms..</p> <p>The process produces genetically identical cells.</p> <p>Describes that genes are sections of chromosomes and made of DNA with associated proteins which carries information to produce proteins.</p> <p>Draws and describes the steps of interphase, mitosis(prophase, metaphase, anaphase, and telophase) and cytokinesis with details about each process.</p>

GE.2 - Differentiate between sexual and asexual reproduction and explain how genetic variation is achieved through the process of meiosis.

Level 3 Description	<p>Defines sexual and asexual reproduction and describes an advantage and a disadvantage of each.</p> <p>Recognize or recall specific terminology such as: diploid, haploid, gamete cell, fertilization, meiosis</p> <p>Describes gametes are formed through meiosis and that differences in the gametes leads to genetic variation.</p> <p>Describes that meiosis produces egg or sperm cells that are haploid.</p>
Level 4 Description	<p>Defines sexual and asexual reproduction, differentiates between the two processes and describes advantages and disadvantages of each.</p> <p>Recognize or recall specific terminology such as: somatic cell, zygote</p> <p>Describes the process of meiosis to produce gametes including mechanisms that lead to genetic variation.</p> <p>Describes that meiosis produces sperm or egg cells that are haploid and the importance of the process.</p>

Supporting

GS.1 - Describe that fertilization restores chromosome number and causes unique gene combinations and the differences in offspring.

<p>Level 3 Description</p>	<p>Describes that unique combinations of genetic material causes differences between offspring. Describes that the chromosome number is restored when two haploid cells forms one diploid cell during fertilization. Given a set of information, student can pose a question to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Explain the sources of genetic variation in sexual reproducers, such as crossing over, independent assortment, or random fertilization. Describe that errors can occur in fertilization resulting in offspring with a different number of chromosomes and the exemplifies the problems that could cause.</p>
<p>Level 4 Description</p>	<p>Describes the recombination and that unique combinations of genetic material due to it cause differences between offspring. Describes that the chromosome number is restored when two haploid cells forms one diploid cell during fertilization with examples of importance. Given a set of information, student can pose questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring and set forth a plan of investigation to answer a question. Explain the sources of genetic variation in sexual reproducers, such as crossing over, independent assortment, and random fertilization. Describe how errors could occur(e.g. nondisjunction) and that those errors can result in offspring with a different number of chromosomes and the exemplifies the problems that could cause.</p>