

Niagara Falls City School District

630 66th Street, Niagara Falls, NY 14304

Science - Grade 7 - 20 Weeks

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NYS Performance Indicators	Objectives	Text Resources	Resources (Suggested Activities)	Cross-Curriculum Connections	Assessment Items
	<p>Essential Questions/Focus for: 6.2a-6.2c</p> <p>1. Describe the process of photosynthesis including the reactants and products.</p> <p>2. Explain how energy is converted through the process of</p>				

		<p>photosynthesis.</p> <p>3. How do photosynthesis and respiration relate to the oxygen-carbon dioxide cycle?</p>				
<p>MST4.1.</p> <p>LE6B</p>	<p>Students provide evidence that green plants make food and explain the significance of this process to other organisms.</p>	<p>6.2a Photosynthesis is carried on by green plants and other organisms containing chlorophyll. In this process, the Sun's energy is converted into and stored as chemical energy in the form of sugar. The quantity of sugar molecules increases in green plants during photosynthesis in the presence of sunlight.</p>	<p>Bacteria to Plants pp. 124-129</p>	<p>PBS Webquest</p> <p>Worksheet for PBS webquest</p>	<p>Bacteria to Plants pp. 131-132</p>	<p>30, 31, 32, 35, 36, 66a b, 67, 72 d e f</p>

<p>Students provide evidence that green plants make food and explain the significance of this process to other organisms.</p> <p>MST4.I.</p> <p>LE6B</p>	<p>6.2b The major source of atmospheric oxygen is photosynthesis. Carbon dioxide is removed from the atmosphere and oxygen is released during photosynthesis.</p>	<p>Bacteria to Plants pp. 124-129</p>	<p>Photosynthesis Lab</p>		<p>33, 34</p>
<p>Students provide evidence that green plants make food and explain the significance of this process to other organisms.</p> <p>MST4.I.</p> <p>LE6B</p>	<p>6.2c Green plants are the producers of food which is used directly or indirectly by consumers.</p>	<p>Bacteria to Plants pp. 124-129</p>			<p>39</p>

	<p>Essential Questions/Focus for: 5.1c</p> <p>1. Explain the process of cellular respiration including the reactants and products.</p> <p>2. Compare and contrast cellular respiration to photosynthesis.</p>				
<p>Students compare the way a variety of living specimens carry out basic life functions and maintain dynamic equilibrium.</p> <p>MST4.I.</p> <p>LE5A</p>	<p>5.1c All organisms require energy to survive. The amount of energy needed and the method for obtaining this energy vary among cells. Some cells use oxygen to release the energy stored in food.</p>	<p>Bacteria to Plants pp. 129-131</p>	<p>Photosynthesis vs. Respiration Lab</p>		<p>17, 37, 38, 39, 40</p>

Essential**Questions/Focus**

**for: 4.4a-b, 4.1b,
4.4d**

- 1. Describe the steps involved in mitosis.**
- 2. Give examples of the various types of asexual reproduction.**
- 3. Describe the effects of abnormal cell division.**

<p>Students observe and describe cell division at the microscopic level and its macroscopic effects.</p> <p>MST4.1. LE4D</p>	<p>4.4a In multicellular organisms, cell division is responsible for growth, maintenance, and repair. In some one-celled organisms, cell division is a method of asexual</p>	<p>Life's Structure & Function pp. 96-105</p>	<p>Asexual Reproduction</p>		<p>19, 52, 55,</p>
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	reproduction.					
MST4.I. LE4D	Students observe and describe cell division at the microscopic level and its macroscopic effects.	4.4b In one type of cell division, chromosomes are duplicated and then separated into two identical and complete sets to be passed to each of the two resulting cells. In this type of cell division, the hereditary information is identical in all the cells that result.	Life's Structure & Function pp. 96-105	Mitosis tutorial	<i>Math</i> Life's Structure & Function p. 104	44, 45, 71
4.4c	Another type of cell division accounts for the production of egg and sperm cells in sexually reproducing organisms. The eggs and sperm resulting from this type of cell					41, 42, 43

<p>division contain one-half of the hereditary information.</p>					
<p>MST4.I. LE4A</p> <p>Students observe and describe the variations in reproductive patterns of organisms, including asexual and sexual reproduction.</p>	<p>4.1b There are many methods of asexual reproduction, including division of a cell into two cells, or separation of part of an animal or plant from the parent, resulting in the growth of another individual.</p>	<p>Life's Structure & Function pp. 100-104</p>	<p>Mitosis in Onion Lab Budding Lab</p>		<p>18, 54, 74, 75</p>
<p>MST4.I. LE4D</p> <p>Students observe and describe cell division at the microscopic level and its macroscopic effects.</p>	<p>4.4d Cancers are a result of abnormal cell division.</p>				<p>51</p>

Essential**Questions/Focus**

**for: 4.1a, c, d,
4.2a-b, 4.4c**

- 1. Describe the steps involved in meiosis.**
- 2. Name the cells that are produced as a result of meiosis.**
- 3. Describe how fertilization occurs and what occurs after.**
- 4. Compare and contrast mitosis and meiosis including number of cells and genetic information.**
- 5. Compare and contrast internal**

[Mitosis vs Meiosis](#)

	and external fertilization.				
MST4.I. LE4A	Students observe and describe the variations in reproductive patterns of organisms, including asexual and sexual reproduction.	4.1a Some organisms reproduce asexually. Other organisms reproduce sexually. Some organisms can reproduce both sexually and asexually.	Life's Structure & Function pp. 106-111	Mitosis Intelligences	
MST4.I. LE4D	Students observe and describe cell division at the microscopic level and its macroscopic effects.	4.4c Another type of cell division accounts for the production of egg and sperm cells in sexually reproducing organisms. The eggs and sperm resulting from this type of cell division contain one-half of the hereditary	Life's Structure & Function pp. 96-105	Meiosis Animation Meiosis Flip Book	41, 42, 43

	information.				
MST4.I. LE4A	Students observe and describe the variations in reproductive patterns of organisms, including asexual and sexual reproduction.	4.1c Methods of sexual reproduction depend upon the species. All methods involve the merging of sex cells to begin the development of a new individual. In many species, including plants and humans, eggs and sperm are produced.	Life's Structure & Function pp. 106-111	What Type of Reproduction?	46, 53
MST4.I. LE4B	Students explain the role of sperm and egg cells in sexual reproduction.	4.2a The male sex cell is the sperm. The female sex cell is the egg. The fertilization of an egg by a sperm results in a fertilized egg.	Life's Structure & Function p. 106		47, 50, 69a b, 70

<p>MST4.I. LE4B</p> <p>Students explain the role of sperm and egg cells in sexual reproduction.</p>	<p>4.2b In sexual reproduction, sperm and egg each carry one-half of the genetic information for the new individual. Therefore, the fertilized egg contains genetic information from each parent.</p>	<p>Life's Structure & Function pp. 106-107</p>	<p>Meiosis Cut and Paste</p>		<p>59</p>
<p>MST4.I. LE4A</p> <p>Students observe and describe the variations in reproductive patterns of organisms, including asexual and sexual reproduction.</p>	<p>4.1d Fertilization and/or development in organisms may be internal or external.</p>	<p>Life's Structure & Function p. 106</p>			

Essential

Questions/Focus

for: 2.1a-2.1e

1. What is the structure of DNA?

2. Distinguish genes in terms of composition, location and role in heredity.

3. Describe the relationship between DNA, genes, chromosomes, and proteins.

4. Explain how the cell cycle contributes to reproduction and maintenance of the cell and/or organism.

5. How is genetic information

		passed from parent to offspring and how does it result in various traits?			
MST4.I. LE2A	Students describe sexual and asexual mechanisms for passing genetic materials from generation to generation.	2.1a Hereditary information is contained in genes. Genes are composed of DNA that makes up the chromosomes of cells.	Life's Structure & Function pp. 112-117	DNA Crossword	56, 57, 58
MST4.I. LE2A	Students describe sexual and asexual mechanisms for passing genetic materials from generation to generation.	2.1b Each gene carries a single unit of information. A single inherited trait of an individual can be determined by one pair or by many pairs of genes. A human cell contains thousands of	Life's Structure & Function pp. 112-117	Gene Reading Comprehension	60

		different genes.			
MST4.1. LE2A	Students describe sexual and asexual mechanisms for passing genetic materials from generation to generation.	2.1c Each human cell contains a copy of all the genes needed to produce a human being.	Life's Structure & Function pp. 112-117		59
MST4.1. LE2A	Students describe sexual and asexual mechanisms for passing genetic materials from generation to generation.	2.1d In asexual reproduction, all the genes come from a single parent. Asexually produced offspring are genetically identical to the parent.	Life's Structure & Function pp. 102-103	Cell Cycle Worksheet	48

<p>Students describe sexual and asexual mechanisms for passing genetic materials from generation to generation.</p> <p>MST4.I.</p> <p>LE2A</p>	<p>2.1e In sexual reproduction typically half of the genes come from each parent. Sexually produced offspring are not identical to either parent.</p>	<p>Life's Structure & Function</p> <p>pp. 106-107</p>	<p>Inheritance Lab</p> <p>Inheritance Lab</p> <p>Pictures</p>	<p><i>English</i></p> <p><i>Language</i></p> <p><i>Arts</i></p> <p>Life's Structure & Function</p> <p>p. 107</p>	<p>49</p>
					<p><i>Please see individual matrix for "Science - Grade 7 - Standard 1, Analysis, Inquiry and Design - Scientific</i></p>

*Inquiry**Skills**Matrix"*

Cell Division/Reproduction	Genetics	Photosynthesis/Respiration	Objectives
Anaphase Cell Cellular level Chlorophyll Chloroplast Cytokinesis Development Egg Genetic Material Interphase Life activities Meiosis Metaphase Mitosis Nucleus Offspring Ovary Prophase Reproductive Structure Reproductive System Sex Cells Sperm Telopphase Testes	Asexual Reproduction DNA External Fertilization Gene Heredity Internal Fertilization Mutation Sexual Reproduction Shared Characteristics	Carbon dioxide Cellular Respiration Chemical Energy Chloroplast Chlorophyll Gas exchange Glucose Leaves Oxygen Photosynthesis Pigment Sugar Sunlight	<p><u>Photosynthesis/Respiration</u></p> <ol style="list-style-type: none"> 1. Explain how energy is converted through the process of photosynthesis 2. Explain how energy is obtained through the process of cellular respiration. <p><u>Reproduction</u></p> <ol style="list-style-type: none"> 3. Describe the process of cell division, production of sex cells and asexual reproduction. 4. Explain consequences of abnormal cell division. 5. Compare and contrast sexual and asexual reproduction. 6. Describe changes in development which begin after fertilization. <p><u>Genetics</u></p> <ol style="list-style-type: none"> 7. Define gene in terms of chemical composition and it's location in cell. 8. Explain the role of genes in heredity. 9. Explain that genes are composed on DNA which make up chromosomes.

Last updated: 1/26/2011