

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

**Teacher**-Ashley Creasey

**Grade Level**-7<sup>th</sup> grade

**Course**-Life Science

**Course Aims**--Students will be introduced to the basic principles and theories of the life sciences.

**Course Description**- In 7th grade science we will be focusing on life, interactions, anatomy, biodiversity and botany. This will be accomplished through homework, independent research, chapter tests, lab work, and quizzes. The students will also do hands-on experiments such as dissections, animal observations and growing plants to help them to further understand the material.

**Textbook:**

Title: Life Science

ISBN:978-0-07-888037-7

Authors: Glencoe

Publisher:McGraw-Hill Companies

Publication Date: 2012

**Assessment**

There will be a minimum of 300 points scored each quarter. These points will be obtained from assignments, quizzes, chapter tests, labs, and projects. The points will be distributed from each category from the range of percent's given below.

**Example**

- Assignments/Writing 20% – 45%
- Quizzes 10% - 20%
- Tests 35% - 50%
- Projects/Labs 15% - 25%

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

QUARTER: First Unit 1

COURSE: Life Science Cells                     

<i><b>Content</b></i>	<i><b>Assessment</b></i>	<i><b>Common Core</b></i>	<i><b>Essential Questions</b></i>
<p>Ch.1 Classifying and Exploring Life            A)Characteristics of Life            B)Domains and Kingdoms            C)Microscopes            D)Binomial Nomenclature            (Condensed)</p>	<p>Daily Homework            Quizzes            Lab/Projects            Tests</p>	<p>CCSS.ELA-Literacy.W.7.1             CCSS.ELA-Literacy.W.7.4             MS-LS1-1.            Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.             MS-LS1-6.            Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p>	<p>1. What characteristics do all living things share?            2. What methods are used for classifying living things into groups?            3. How do microscopes change our ideas about living things?</p>
<p>Ch.2 Cell Structure and Function            A)Cell Theory            B)Plant/Animal Cell Shape and Parts            (BBC Hidden World)            (Expanded with additional resources)</p>	<p>Daily Homework            Quizzes            Labs3D Cell Project            Tests</p>	<p>CCSS.ELA-Literacy.W.7.2             CCSS.ELA-Literacy.W.7.1c             MS-LS1-2.            Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p>	<p>1. What is the cell theory?            2. What are the basic substances that make up a cell?            3. What are the differences between the plant and animal cell?            4. How do materials enter and leave the cell?            5. How does a cell obtain energy?</p>
<p>Ch.3 From a Cell to an Organism            A)Mitosis (BrainPop)            B)Unicellular/Multicellular Organisms            C)Layers of Organization</p>	<p>Daily Homework            Quizzes            Lab/Projects            Tests</p>	<p>MS-LS1-1.            Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells</p>	<p>1. What are the phases of the cell cycle?            2. How do unicellular and multicellular organisms differ?</p>

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

<p>Chapters 4 &amp; 5 Reproduction and Genetics</p> <p>A) Sexual/asexual reproduction, meiosis</p> <p>B) Mendel (Brian Pop)</p> <p>C) DNA and Genetics</p> <p>D) Punnett Squares</p>	<p>Daily Homework</p> <p>Quizzes</p> <p>Punnett Squares: expand home project</p> <p>Lab/Projects</p> <p>Tests</p>	<p>CCSS.ELA-Literacy.W.7.3e</p> <p>MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.</p> <p>MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.</p> <p>MS-LS3-1. Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.</p>	<p>1. What are sexual /asexual reproductions and why are they important?</p> <p>2. What is the order of the phases of meiosis and what happens during each phase?</p> <p>3. Why did Mendel perform cross-pollination experiments and what did he conclude?</p> <p>4. What determines the expression of traits?</p> <p>5. What is DNA and how do changes in the sequence affect traits?</p>
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QUARTER:           Second           Unit 3          

COURSE:                           Life Science                                     Animals          

<i>Content</i>	<i>Assessment</i>	<i>Common Core</i>	<i>Essential Questions</i>
<p>Ch.11 Animal Diversity</p> <p>A)Animal Characteristics</p> <p>B)Invertebrates</p> <p>C)Vertebrates</p>	<p>Daily Homework</p> <p>Quizzes</p> <p>Lab/Projects</p> <p>Tests</p>	<p>CCSS.ELA-Literacy.W.7.4</p> <p>MS-LS1-5. Construct a scientific explanation based on evidence</p>	<p>1. What characteristics do all animals have?</p> <p>2. How are animals classified?</p> <p>3. What are characteristics of invertebrates?</p>

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

<p>Ch.12 Animal Structure and Function A)Support and Movement B)Circulation and Gas Exchange C)Digestion and Excretion</p>	<p>Daily Homework Quizzes Lab/Projects Tests Balloon Lab with scents.</p>	<p>for how environmental and genetic factors influence the growth of organisms.</p> <p>CCSS.ELA-Literacy.W.7.2</p> <p>CCSS.ELA-Literacy.W.7.1c</p>	<p>4. What are the . characteristics of vertebrates? 5. How do the classes of vertebrates differ?</p> <p>1. What are the different support structures that animals have? 2. What are the different ways that animals move? 3. How do the types of gas exchange differ? 4. What is the difference in an open/closed circulatory system? 5. How are an animal's structures for feeding and digestion related to its diet?</p>
<p>Ch.13 Animal Behavior and Reproduction A)Innate and Learned Behaviors B)Interacting with Others C)Animal Reproduction and Development -one day lab safety- -worm dissection 2 days-</p>	<p>Daily Homework Quizzes Lab/Projects Tests</p>	<p>CCSS.ELA-Literacy.W.7.3e</p> <p>CCSS.ELA-Literacy.W.7.9</p> <p>MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</p>	<p>1. How are animal behaviors classified? 2. How do animals communicate in societies? 4. What are the roles of male and female reproductive organs? 5. What are the different types of animal development?</p>

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

QUARTER: Third

COURSE: Life Science Human

<i>Content</i>	<i>Assessment</i>	<i>Common Core</i>	<i>Essential Questions</i>
Ch. 14 Structure and Movement A)Skeletal System B)Muscular System C)The Skin (brief, covered in health)	Daily Homework Quizzes Lab/Projects Tests	CCSS.ELA-Literacy.W.7.4 MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	<ol style="list-style-type: none"> <li>1. What does the skeletal system do?</li> <li>2. What does the muscular system do?</li> <li>3. What does the skin do?</li> </ol>
Ch.15 Digestion and Excretion A)Nutrition- food models B)Digestive System -sugar cube lab C)Excretory System	Daily Homework Quizzes Lab/Projects Tests	CCSS.ELA-Literacy.W.7.2  MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	<ol style="list-style-type: none"> <li>1. Why does your body need each of the six groups of nutrients?</li> <li>2. What does the digestive system do?</li> <li>3. What does the excretory system do?</li> </ol>
Ch.16 Respiration and Circulation A)Respiratory System B)Circulatory System -Cardio Lab	Daily Homework Quizzes Lab/Projects Tests	CCSS.ELA-Literacy.W.7.1c	<ol style="list-style-type: none"> <li>1. What does the respiratory system do?</li> <li>2. What does the circulatory system do?</li> <li>3. How do the parts of the blood differ?</li> <li>4. What does the lymphatic system do?</li> </ol>

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

<p>Ch.18 Control and Coordination A)Nervous System B)The Senses C)The Endocrine System</p> <p>Frog Dissection#</p>	<p>Daily Homework Quizzes Lab/Projects Tests</p>	<p>CCSS.ELA-Literacy.W.7.3e</p> <p>MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>	<p>1. What does the nervous system do? 2. What is the role of the senses in maintaining homeostasis? 3. What does the endocrine system do?</p>
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QUARTER: Fourth Unit 2

COURSE: Life Science Botany/Illinois

<i>Content</i>	<i>Assessment</i>	<i>Common Core</i>	<i>Essential Questions</i>
<p>Ch. 9 Plant Diversity A) What is a plant? B) Seedless plants C) Seed plants</p>	<p>Daily Homework Quizzes Lab/Projects Tests</p>	<p>CCSS.ELA-Literacy.W.7.4</p>	<p>1.What characteristics are common to all plants? 2.What adaptations have enabled plant species to survive Earth's changing environments? 3.How are plants classified?</p>
<p>Ch. 10 Plant Processes and Reproduction A) Energy processing in plants B) Plant responses C) Plant reproduction</p>	<p>Daily Homework Quizzes Lab/Projects Tests</p>	<p>CCSS.ELA-Literacy.W.7.2</p> <p>MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p>	<p>1.How do materials move inside a plant? 2.How do plants perform photosynthesis? 3.What is cellular respiration?</p>
<p>Chapter Creasey A) Growing plants</p>	<p>Daily Homework Quizzes Lab/Projects</p>	<p>CCSS.ELA-Literacy.W.7.1c CCSS.ELA-Literacy.W.7.3e</p>	<p>1.How do plants respond to environmental stimuli? 2.How do plants respond to chemical stimuli?</p>

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

<p>B) Experimenting with soil, light and water</p> <p>Chapter Illinois</p> <p>A) Animals and insects native to Illinois.</p> <p>B) Plants and fungi native to Illinois.</p> <p>C) Illinois preservation.</p>	<p>Tests</p> <p>Daily Homework</p> <p>Quizzes</p> <p>Lab/Projects</p> <p>Tests</p>	<p>CCSS.ELA-Literacy.W.7.9</p> <p>MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</p>	<p><i>1. What types of plants, insects and animals are native to Illinois?</i></p> <p><i>2. What types of plants and fungi are native to Illinois?</i></p> <p><i>3. What types of environmental preservations are being implemented in Illinois at this time and why?</i></p> <p><i>4. What can we do to help?</i></p>
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(6-8) Next Generation Life Science Standards:

- MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.** *[Clarification Statement: Emphasis is on developing evidence that living things are made of cells, distinguishing between living and non-living things, and understanding that living things may be made of one cell or many and varied cells.]*
- MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.** *[Clarification Statement: Emphasis is on the cell functioning as a whole system and the primary role of identified parts of the cell, specifically the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall.] [Assessment Boundary: Assessment of organelle structure/function relationships is limited to the cell wall and cell membrane. Assessment of the function of the other organelles is limited to their relationship to the whole cell. Assessment does not include the biochemical function of cells or cell parts.]*
- MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.** *[Clarification Statement: Emphasis is on the conceptual understanding that cells form tissues and tissues form organs specialized for particular body functions. Examples could include the interaction of subsystems within a system and the normal functioning of those systems.] [Assessment Boundary: Assessment does not include the mechanism of one body system independent of others. Assessment is limited to the circulatory, excretory, digestive, respiratory, muscular, and nervous systems.]*
- MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.** *[Assessment Boundary: Assessment does not include mechanisms for the transmission of this information.]*
- MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.** *[Clarification Statement: Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful*

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds, and creating conditions for seed germination and growth. Examples of plant structures could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.]

- MS-LS1-5.** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. [Clarification Statement: Examples of local environmental conditions could include availability of food, light, space, and water. Examples of genetic factors could include large breed cattle and species of grass affecting growth of organisms. Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large ponds than they do in small ponds.] [Assessment Boundary: Assessment does not include genetic mechanisms, gene regulation, or biochemical processes.]
- MS-LS3-1.** Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism. [Clarification Statement: Emphasis is on conceptual understanding that changes in genetic material may result in making different proteins.] [Assessment Boundary: Assessment does not include specific changes at the molecular level, mechanisms for protein synthesis, or specific types of mutations.]
- MS-LS3-2.** Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. [Clarification Statement: Emphasis is on using models such as Punnett squares, diagrams, and simulations to describe the cause and effect relationship of gene transmission from parent(s) to offspring and resulting genetic variation.]
- MS-LS4-5.** Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. [Clarification Statement: Emphasis is on synthesizing information from reliable sources about the influence of humans on genetic outcomes in artificial selection (such as genetic modification, animal husbandry, gene therapy); and, on the impacts these technologies have on society as well as the technologies leading to these scientific discoveries.]
- MS-LS1-6.** Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. [Clarification Statement: Emphasis is on tracing movement of matter and flow of energy.] [Assessment Boundary: Assessment does not include the biochemical mechanisms of photosynthesis.]
- MS-LS1-7.** Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. [Clarification Statement: Emphasis is on describing that molecules are broken apart and put back together and that in this process, energy is released.] [Assessment Boundary: Assessment does not include details of the chemical reactions for photosynthesis or respiration.]
- MS-LS2-1.** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.]

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

- MS-LS2-3.** **Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.** [Clarification Statement: Emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems, and on defining the boundaries of the system.] [Assessment Boundary: Assessment does not include the use of chemical reactions to describe the processes.]
- MS-LS2-4.** **Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.** [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.]
- MS-LS2-2.** **Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.** [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.]
- MS-LS2-5.** **Evaluate competing design solutions for maintaining biodiversity and ecosystem services.\*** [Clarification Statement: Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.]
- MS-LS4-1.** **Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.** [Clarification Statement: Emphasis is on finding patterns of changes in the level of complexity of anatomical structures in organisms and the chronological order of fossil appearance in the rock layers.] [Assessment Boundary: Assessment does not include the names of individual species or geological eras in the fossil record.]
- MS-LS4-2.** **Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.** [Clarification Statement: Emphasis is on explanations of the evolutionary relationships among organisms in terms of similarity or differences of the gross appearance of anatomical structures.]
- MS-LS4-3.** **Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.** [Clarification Statement: Emphasis is on inferring general patterns of relatedness among embryos of different organisms by comparing the macroscopic appearance of diagrams or pictures.] [Assessment Boundary: Assessment of comparisons is limited to gross appearance of anatomical structures in embryological development.]
- MS-LS4-4.** **Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.** [Clarification Statement: Emphasis is on using simple probability statements and proportional reasoning to construct explanations.]
- MS-LS4-6.** **Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.** [Clarification Statement: Emphasis is on using mathematical models, probability

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

statements, and proportional reasoning to support explanations of trends in changes to populations over time.] *[Assessment Boundary: Assessment does not include Hardy Weinberg calculations.]*

Common Core Writing Standards for 7<sup>th</sup> grade:

### Text Types and Purposes

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- **CCSS.ELA-Literacy.W.7.1** Write arguments to support claims with clear reasons and relevant evidence.
  - **CCSS.ELA-Literacy.W.7.1a** Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.
  - **CCSS.ELA-Literacy.W.7.1b** Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
  - **CCSS.ELA-Literacy.W.7.1c** Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence.
  - **CCSS.ELA-Literacy.W.7.1d** Establish and maintain a formal style.
  - **CCSS.ELA-Literacy.W.7.1e** Provide a concluding statement or section that follows from and supports the argument presented.
- **CCSS.ELA-Literacy.W.7.2** Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
  - **CCSS.ELA-Literacy.W.7.2a** Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
  - **CCSS.ELA-Literacy.W.7.2b** Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
  - **CCSS.ELA-Literacy.W.7.2c** Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.
  - **CCSS.ELA-Literacy.W.7.2d** Use precise language and domain-specific vocabulary to inform about or explain the topic.
  - **CCSS.ELA-Literacy.W.7.2e** Establish and maintain a formal style.
  - **CCSS.ELA-Literacy.W.7.2f** Provide a concluding statement or section that follows from and supports the information or explanation presented.
- **CCSS.ELA-Literacy.W.7.3** Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

- **CCSS.ELA-Literacy.W.7.3a** Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.
- **CCSS.ELA-Literacy.W.7.3b** Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.
- **CCSS.ELA-Literacy.W.7.3c** Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
- **CCSS.ELA-Literacy.W.7.3d** Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.
- **CCSS.ELA-Literacy.W.7.3e** Provide a conclusion that follows from and reflects on the narrated experiences or events.

### **Production and Distribution of Writing**

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- **CCSS.ELA-Literacy.W.7.4** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
- **CCSS.ELA-Literacy.W.7.5** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7 [here](#).)
- **CCSS.ELA-Literacy.W.7.6** Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.

### **Research to Build and Present Knowledge**

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- **CCSS.ELA-Literacy.W.7.7** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.
- **CCSS.ELA-Literacy.W.7.8** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
- **CCSS.ELA-Literacy.W.7.9** Draw evidence from literary or informational texts to support analysis, reflection, and research.
- **CCSS.ELA-Literacy.W.7.9a** Apply *grade 7 Reading standards* to literature (e.g., “Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history”).

NORTH MAC MIDDLE SCHOOL  
CURRICULUM GUIDE

- **CCSS.ELA-Literacy.W.7.9b** Apply *grade 7 Reading standards* to literary nonfiction (e.g. “Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims”).

### Range of Writing

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- **CCSS.ELA-Literacy.W.7.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.