

Oxford Area School District Science Scope and Sequence – Quarter 1:

Marine Biology

Natural  
Resources  
4.3.10.A

- Explain the relationship between water quality and the diversity of life in an ecosystem.
- Explain how limiting factors affect the growth and reproduction of organisms.

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Oxford Area School Science Scope and Sequence – Quarter 2:

Marine Biology

4.1.10.D

- Evaluate the efficiency of energy flow within a food web.  
Describe how energy is converted from one form to another as it moves through a food web (photosynthetic, geothermal).

Natural  
Resources  
4.3.10.A

- Explain the relationship between water quality and the diversity of life in a ecosystem.
- Explain how limiting factors affect the growth and reproduction of organisms.

Oxford Area School District Science Scope and Sequence – Quarter 3:

Marine Biology

4.1.10.C

- Examine the effects of limiting factors on population dynamics
- Explain the consequences of interrupting natural cycles.

4.1.10.D

- Evaluate the efficiency of energy flow within a food web.
- Describe how energy is converted from one form to another as it moves through a food web (photosynthetic, geothermal).

4.1.10.E

- Research practices that impact biodiversity in specific ecosystems
- Analyze the relationship between habitat changes to plant and animal population fluctuations.

4.1.10.A

- Analyze how humans influence the pattern of natural changes (e.g. primary / secondary succession and desertification) in ecosystems over time.

4.4.10.B

- Examine the interactions between abiotic and biotic factors within a watershed  
Describe how topography influences the flow of water in a watershed  
Describe how vegetation affects water runoff.  
Investigate and analyze the effects of land use on the quality of water in a watershed.

Oxford Area School District Science Scope and Sequence – Quarter 4:

Marine Biology

4.1.10.E

- Research practices that impact biodiversity in specific ecosystems
- Analyze the relationship between habitat changes to plant and animal population fluctuations.

4.1.10.A

- Analyze how humans influence the pattern of natural changes (e.g. primary / secondary succession and desertification) in ecosystems over time.

4.1.10.D

- Evaluate the efficiency of energy flow within a food web.
- Describe how energy is converted from one form to another as it moves through a food web (photosynthetic, geothermal).

Watersheds and  
Wetlands  
4.2.10.A

- Evaluate factors affecting the use of natural resources
- Evaluate the effect of consumer demands on the use of natural resources
- Analyze how technologies such as modern mining, harvesting, and transportation equipment affect the use of our natural resources
- Describe how local and state agencies manage natural resource

4.2.10.C

- Examine how human interactions impact wetlands and their surrounding environments
- Describe how land use decisions affect wetlands

Natural  
Resources  
4.3.10.A

- Explain the relationship between water quality and the diversity of life in an ecosystem.
- Explain how limiting factors affect the growth and reproduction of organisms.

4.1.10.E

- Research practices that impact biodiversity in specific ecosystems
- Analyze the relationship between habitat changes to plant and animal population fluctuations.

4.1.10.A

- Analyze how humans influence the pattern of natural changes (e.g. primary / secondary succession and desertification) in ecosystems over time.

4.4.10.B

- Examine the interactions between abiotic and biotic factors within a watershed
- Describe how topography influences the flow of water in a watershed
- Describe how vegetation affects water runoff.
- Investigate and analyze the effects of land use on the quality of water in a watershed.

4.2.10.C

- Examine how human interactions impact wetlands and their surrounding environments
- Describe how land use decisions affect wetlands

<b>Big Idea: Organisms share common characteristics of life.</b>			
<b>EQ. How do we know if something is alive?</b>			
<b>Concepts</b>	<b>Competencies</b>	<b>Resources</b>	<b>Assessments</b>
<p>S11.A.1.1.1 Describe the characteristics of life shared by all prokaryotic and eukaryotic organisms</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p> <p>S11.A.1.1.3 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization,</p>		

<p>observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits). Pennsylvania</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human</p>	<p>and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p>			
<p><b>Vocabulary</b></p>			

<p><b>Big Idea: New cells arise from the division of pre-existing cells.</b></p>	
<p><b>How do cells grow and reproduce?</b></p>	

Concepts	Competencies	Resources	Assessments
<p>S11.A.1.1.1 Describe the characteristics of life shared by all prokaryotic and eukaryotic organisms</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p> <p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g.,</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out</p>		

<p>biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p>	<p>experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>S11.B.1.1.3 Compare and contrast cellular processes (e.g., photosynthesis and respiration, meiosis and mitosis, protein synthesis and DNA replication).</p> <p>S11.B.2.1.1 Explain the theory of evolution by interpreting data from fossil records, similarities in anatomy and physiology, or DNA studies that are relevant to the theory of evolution.</p> <p>S11.B.2.1.2 Explain the role of mutations, differential reproduction, and gene recombination in changing the genetic makeup of a population.</p> <p>S11.B.2.1.3 Explain the role of selective breeding and biotechnology in changing the genetic makeup of a population.</p> <p>S11.B.2.1.4 Explain why natural selection can act only on inherited traits.</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance,</p>			
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recessiveness, sex-influenced traits, and sex-linked traits)			
<b>Vocabulary</b>			

<b>Big Idea: Heredity information in genes is inherited and expressed.</b>			
<b>How is hereditary information in genes inherited and expressed?</b>			
<b>Concepts</b>	<b>Competencies</b>	<b>Resources</b>	<b>Assessments</b>
<p>S11.A.1.1.1 Describe the characteristics of life shared by all prokaryotic and eukaryotic organisms</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p> <p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or</p>		

<p>germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p>	<p>challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B.</p>		
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<p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.1.1.3 Compare and contrast cellular processes (e.g., photosynthesis and respiration, meiosis and mitosis, protein synthesis and DNA replication).</p> <p>S11.B.2.1.1 Explain the theory of evolution by interpreting data from fossil records, similarities in anatomy and physiology, or DNA studies that are relevant to the theory of evolution.</p> <p>S11.B.2.1.2 Explain the role of mutations, differential reproduction, and gene recombination in changing the genetic makeup of a population.</p> <p>S11.B.2.1.3 Explain the role of selective breeding and biotechnology in changing the genetic makeup of a population.</p> <p>S11.B.2.1.4 Explain why natural</p>	<p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>selection can act only on inherited traits.</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).</p>			
<p><b>Vocabulary</b></p>			

<p><b>Big Idea: Evolution is a result of many random processes selection for the survival and reproduction of a population?</b></p>			
<p><b>How do we scientifically explain the evidence and mechanisms for biological evolution?</b></p>			
<p><b>Concepts</b></p>	<p><b>Competencies</b></p>	<p><b>Resources</b></p>	<p><b>Assessments</b></p>
<p>S11.A.1.1.1 Describe the characteristics of life shared by all prokaryotic and eukaryotic organisms</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D.</p>		

<p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.2.2.3</p> <p>S11.B.2.2.1 Describe how genetic</p>	<p>Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>. CC.3.5.11-12.H.</p> <p>Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical</p>		
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<p>information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.1.1.3 Compare and contrast cellular processes (e.g., photosynthesis and respiration, meiosis and mitosis, protein synthesis and DNA replication).</p> <p>S11.B.2.1.1 Explain the theory of evolution by interpreting data from fossil records, similarities in anatomy</p>	<p>context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>and physiology, or DNA studies that are relevant to the theory of evolution.</p> <p>S11.B.2.1.2 Explain the role of mutations, differential reproduction, and gene recombination in changing the genetic makeup of a population.</p> <p>S11.B.2.1.3 Explain the role of selective breeding and biotechnology in changing the genetic makeup of a population.</p> <p>S11.B.2.1.4 Explain why natural selection can act only on inherited traits.</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).</p>			
<p><b>Vocabulary</b></p>			

<b>Big Idea: Life emerges due to the chemical organization of matter into cells.</b>			
<b>How does life result from chemical structure and function?</b>			
<b>Concepts</b>	<b>Competencies</b>	<b>Resources</b>	<b>Assessments</b>
<p>S11.A.1.1.1 Compare and contrast scientific theories, scientific laws, and beliefs (e.g., the universal law of gravitation, how light travels, formation of moons, stages of ecological succession).</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p> <p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task,</p>		

<p>scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how</p>	<p>purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).</p>			
<p><b>Vocabulary</b></p>			

<p><b>Big Idea: Cells have organized structures and systems necessary to support chemical reactions needed to maintain the living condition.</b></p>			
<p><b>How does life result from cellular structure and function?</b></p>			
<p><b>Concepts</b></p>	<p><b>Competencies</b></p>	<p><b>Resources</b></p>	<p><b>Assessments</b></p>
<p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p>		

<p>problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p>	<p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific</p>		
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<p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g., chemical, cellular, anatomical).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple</p>	<p>words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).			
<b>Vocabulary</b>			

<b>Big Idea: Structure is related to function at all biological levels of organization.</b>			
<b>How is structure related to function at all biological levels of organization?</b>			
Concepts	Competencies	Resources	Assessments
<p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p>		

<p>scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how</p>	<p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical</p>		
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<p>relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g., chemical, cellular, anatomical).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g., classify organisms into classification groups, compare systems).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).</p>	<p>events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
<p><b>Vocabulary</b></p>			

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<b>Big Idea: Through a variety of mechanisms organisms seek to maintain a biological balance between their internal and external environments.</b>			
<b>How do organisms maintain a biological between their internal and external environments?</b>			
<b>Concepts</b>	<b>Competencies</b>	<b>Resources</b>	<b>Assessments</b>
<p>S11.A.1.1.1 Compare and contrast scientific theories, scientific laws, and beliefs (e.g., the universal law of gravitation, how light travels, formation of moons, stages of ecological succession).</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p> <p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task,</p>		

<p>scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how</p>	<p>purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p><b>Vocabulary</b></p>			

<p><b>Big Idea: Eukaryotic cells can differentiate and organize making it possible for multicellularity.</b></p>			
<p><b>What are the advantages of multicellularity?</b></p>			
<p><b>Concepts</b></p>	<p><b>Competencies</b></p>	<p><b>Resources</b></p>	<p><b>Assessments</b></p>
<p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p>		

<p>of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).</p>	<p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in</p>		
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<b>Vocabulary</b>			

<b>Big Idea: Organisms obtain and use energy to carry out their life processes.</b>			
<b>How do different organisms obtain and use energy to survive in their environment?</b>			
<b>Concepts</b>	<b>Competencies</b>	<b>Resources</b>	<b>Assessments</b>
<p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p>		

<p>problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.1.3.2 Describe or interpret dynamic changes to stable systems (e.g., chemical reactions, human body, food webs, tectonics, homeostasis).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p>	<p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific</p>		
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<p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect</p>	<p>words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).</p> <p>S11.C.2.1.2 Describe energy changes in chemical reactions.</p>			
<p><b>Vocabulary</b></p>			

<p><b>Big Idea: Organisms on Earth interact and depend in a variety of ways on other living and nonliving things in their environments?</b></p>			
<p><b>How do organisms interact and depend on each other and their environment for survival?</b></p>			
<p><b>Concepts</b></p>	<p><b>Competencies</b></p>	<p><b>Resources</b></p>	<p><b>Assessments</b></p>
<p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H.</p>		

<p>use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.1.3.2 Describe or interpret dynamic changes to stable systems (e.g., chemical reactions, human body, food webs, tectonics, homeostasis).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g.,</p>	<p>Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data</p>		
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<p>flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g., classify organisms into classification groups, compare systems).</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance,</p>	<p>when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>recessiveness, sex-influenced traits, and sex-linked traits).</p> <p>S11.C.2.1.2 Describe energy changes in chemical reactions.</p>			
<p><b>Vocabulary</b></p>			

<p><b>Big Idea: DNA segments contain information for the production of proteins necessary for growth and function of cells.</b></p>			
<p><b>Why is DNA called the “blueprint of life?”</b></p>			
<p><b>Concepts</b></p>	<p><b>Competencies</b></p>	<p><b>Resources</b></p>	<p><b>Assessments</b></p>
<p>S11.A.1.1.1 Compare and contrast scientific theories, scientific laws, and beliefs (e.g., the universal law of gravitation, how light travels, formation of moons, stages of ecological succession).</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p> <p>S11.A.1.1.3 Evaluate the appropriateness of research questions (e.g., testable vs. not-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g., momentum, Newton’s universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur’s</p>	<p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p>		

<p>germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.2.1 Explain and apply scientific concepts to societal issues using case studies (e.g., spread of HIV, deforestation, environmental health, energy).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g., biological indices, electrical circuit data, automobile diagnostic systems data).</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)</p> <p>S11.A.2.2.2 Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a</p>	<p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>CC.3.5.11-12.C. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>CC.3.5.11-12.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11–12 texts and topics</i>.</p> <p>CC.3.5.11-12.H. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>CC.3.6.11-12.B. Write informative/explanatory texts, including the narration of historical</p>		
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<p>system and its parts.</p> <p>S11.A.3.2.1 Compare the accuracy of predictions represented in a model to actual observations and behavior.</p> <p>S11.A.3.2.2 Describe advantages and disadvantages of using models to simulate processes and outcomes.</p> <p>S11.A.3.2.3 Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps).</p> <p>S11.B.1.1.3 Compare and contrast cellular processes (e.g., photosynthesis and respiration, meiosis and mitosis, protein synthesis and DNA replication).</p> <p>S11.B.2.1.1 Explain the theory of evolution by interpreting data from fossil records, similarities in anatomy and physiology, or DNA studies that are relevant to the theory of evolution.</p> <p>S11.B.2.1.2 Explain the role of mutations, differential reproduction, and gene recombination in changing the genetic makeup of a population.</p> <p>S11.B.2.1.3 Explain the role of selective breeding and biotechnology in changing the genetic makeup of a population.</p>	<p>events, scientific procedures/ experiments, or technical processes.</p> <p>CC.3.6.11-12.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>		
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<p>S11.B.2.1.4 Explain why natural selection can act only on inherited traits.</p> <p>S11.B.2.2.1 Describe how genetic information is expressed (i.e., DNA, genes, chromosomes, transcription, translation, and replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p> <p>S11.B.2.2.3 Explain how different patterns of inheritance affect population variability (i.e., multiple alleles, codominance, dominance, recessiveness, sex-influenced traits, and sex-linked traits).</p>			
<b>Vocabulary</b>			