



Biology

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STANDARDS

PAGE REFERENCES

Scientific Inquiry (Nature of Science Unifying Concept A)

Scientific inquiry is the process by which humans systematically examine the natural world. Scientific inquiry is a human endeavor and involves observation, reasoning, insight, energy, skill, and creativity. Scientific inquiry is used to formulate and test explanations of nature through observation, experiments, and theoretical or mathematical models. Scientific explanations and evidence are constantly reviewed and examined by others. Questioning, response to criticism and open communication are integral to the process of science.

By the end of grade band, students know and are able to do everything required in earlier grades and:

N.12.A Students understand that a variety of communication methods can be used to share scientific information.

N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations. E/S

Student Edition:

20

BioLab: Design You Own 51, 173, 653, 1039

Data Analysis Lab 14

MiniLab 14, 19

Skillbuilder Handbook 1115-1118

Teacher Wraparound Edition:

SP 20

STANDARDS	PAGE REFERENCES
<p>N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations. I/S</p>	<p>The following references can be incorporated to meet this standard.</p> <p>Student Edition: 14, 20-21 <i>BioDiscoveries</i> 22, 350 <i>BioLab: Design You Own</i> 51, 173, 653, 1039</p> <p>Teacher Wraparound Edition: CT 18</p>
<p>N.12.A.3 Students know repeated experimentation allows for statistical analysis and unbiased conclusions. E/S</p>	<p>The following references can be incorporated to meet this standard.</p> <p>Student Edition: 20 <i>BioLab: Design Your Own</i> 567, 593, 925, 1039 <i>MiniLab</i> 19 <i>Section Assessment</i> 282 (#4)</p>
<p>N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L</p>	<p>Student Edition: 16, 18-21 <i>BioLab: Design Your Own</i> 23, 173, 533, 567, 593, 353, 925 <i>Investigation and Experimentation</i> xxviii-xli <i>National Geographic</i> 17</p> <p>Teacher Wraparound Edition: CT 18</p>
<p>N.12.A.5 Students know models and modeling can be used to identify and predict cause-effect relationships. I/S</p>	<p>Student Edition: <i>BioLab: Design Your Own</i> 83, 173 <i>BioLab</i> 843, 983 <i>MiniLab</i> 66, 203, 281, 580, 1035, 1082</p>
<p>N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets. E/S</p>	<p>Student Edition: 490-496, 499-503, 517, 606, 609, 693 <i>BioLab</i> 505, 623 <i>MiniLab</i> 488, 500, 519, 620, 672 <i>National Geographic</i> 608</p> <p>Teacher Wraparound Edition: DC 693; RS 606</p>

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<p>Science, Technology, and Society (Nature of Science Unifying Concept B)</p> <p>Technology defines a society or era. It can shape the environment in which people live, and it has increasingly become a larger part of people’s lives. While many of technology’s effects on society are regarded as desirable, other effects are seen as less desirable. These concepts are shared across subject areas such as science, math, technology, social studies and language arts. The development and use of technology affects society and the environment in which we live, and, at the same time, society influences the development of technology and its impact on culture.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>N.12.B Students understand the impacts of science and technology in terms of costs and benefits to society.</p>	
<p>N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways. E/S</p>	<p>Student Edition: 5-6, 12-13, 256-257, 363, 370-371, 378-379 <i>Biology & Society</i> 258, 680, 1066, 1096 <i>Cutting-Edge Biology</i> 532, 982</p> <p>Teacher Wraparound Edition: CB 363; DC 15, 257; RS 370</p>
<p>N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts. E/S</p>	<p>Student Edition: 105, 123-128, 129-131, 133-135 <i>Biology & Society</i> 50, 1010 <i>MiniLab</i> 120 <i>National Geographic: In the Field</i> 136</p> <p>Teacher Wraparound Edition: AG 136, 1010; DC 125; BA 50; SP 129; WS 120</p>
<p>N.12.B.3 Students know the influence of ethics on scientific enterprise. E/S</p>	<p>The following references can be incorporated to meet this standard.</p> <p>Student Edition: 15, 16, 18-20, 256-257, 370-371, 372-375, 378-379 <i>Biology & Society</i> 258 <i>National Geographic</i> 17</p> <p>Teacher Wraparound Edition: BA 258; DC 257; MI 372</p>
<p>N.12.B.4 Students know scientific knowledge builds on previous information. E/S</p>	<p>Student Edition: 11-14, 18, 20, 182-183, 326-331, 401-407, 418-420 <i>BioDiscoveries</i> 350</p> <p>Teacher Wraparound Edition: CB 12, 17; RS 326; WS 12, 402</p>

STANDARDS		PAGE REFERENCES
<p>Heredity (Life Science Unifying Concept A)</p> <p>Heredity is the genetic passing of a set of instructions from generation to generation. These instructions are encoded as DNA and may manifest themselves as characteristics. Some characteristics are inherited, and some result from interactions with the environment.</p>		
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>		
<p>L.12.A Students understand how genetic information is passed from one generation to another.</p>		
L.12.A.1	Students know genetic information passed from parents to offspring is coded in the DNA molecule. E/S	<p>Student Edition: 270-271</p> <p>Teacher Wraparound Edition: MI 270</p>
L.12.A.2	Students know DNA molecules provide instructions for assembling protein molecules. E/S	<p>Student Edition: 171, 193, 336-338, 340-341 <i>National Geographic</i> 339 <i>Section Assessment</i> 341 (#1)</p> <p>Teacher Wraparound Edition: FA 341; WS 336</p>
L.12.A.3	Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions. E/S	<p>Student Edition: 183, 246-247, 248, 250-252, 276, 695-697 <i>Launch Lab</i> 243 <i>National Geographic</i> 249</p>
L.12.A.4	Students know several causes and effects of somatic versus sex cell mutations. E/S	<p>Student Edition: 254-255, 345-349, 434 <i>Data Analysis Lab</i> 348 <i>Section Assessment</i> 257 (#3), 349 (#2)</p> <p>Teacher Wraparound Edition: CT 348, 349; WS 346</p>
L.12.A.5	Students know how to predict patterns of inheritance. E/S	<p>Student Edition: 280-282, 299-301 <i>BioLab</i> 287 <i>MiniLab</i> 281, 300 <i>Section Assessment</i> 282 (#3), 301 (#5)</p> <p>Teacher Wraparound Edition: CT 297; FA 282</p>

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<p>Structure of Life (Life Science Unifying Concept B) All living things are composed of cells. Cells range from very simple to very complex and have structures which perform functions for the organism. Cells and structures can be damaged or fail because of intrinsic failures or disease.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>L.12.B Students understand that all life forms, at all levels of organization, use specialized structure and similar processes to meet life's needs.</p>	
<p>L.12.B.1 Students know cell structures and their functions. E/S</p>	<p>Student Edition: 185-186, 187-190, 191, 193-200 <i>National Geographic</i> 192 Teacher Wraparound Edition: CT 196; DE 188; FA 200; RS 195; WS 193</p>
<p>L.12.B.2 Students know the human body has a specialized anatomy and physiology composed of an hierarchical arrangement of differentiated cells. E/S</p>	<p>Student Edition: 8, 694, 936, 941-942, 947-948, 962-963, 997-998, 1001, 1006-1007 <i>National Geographic</i> 949 Teacher Wraparound Edition: DC 962; DE 694; WS 694</p>
<p>L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism. E/S</p>	<p>Can be incorporated into the following: Student Edition: 999, 1004, 1008, 1035, 1080-1081, 1084-1086, 1088-1091, 1092-1095 <i>Section Assessment</i> 1009 (#6), 1083 (#2), 1091 (#5) Teacher Wraparound Edition: WS 1034</p>

STANDARDS	PAGE REFERENCES
<p>Organisms and Their Environment (Life Science Unifying Concept C) A variety of ecosystems and communities exist on Earth. Ecosystems are dynamic interactions of organisms and their environment. Ecosystems have distinct characteristics and components that allow certain organisms to thrive. Change in one or more components can affect the entire ecosystem.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>L.12.C Students understand that ecosystems display patterns of organization, change, and stability as a result of the interactions and interdependencies among the living and non-living components of the Earth.</p>	
<p>L.12.C.1 Students know relationships of organisms and their physical environment. E/S</p>	<p>Student Edition: 35, 38-40, 61, 65-66 <i>BioLab: Design Your Own</i> 83 <i>Data Analysis Lab</i> 39 Teacher Wraparound Edition: DC 35, 61</p>
<p>L.12.C.2 Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability. E/S</p>	<p>Student Edition: 62-64, 120-121, 123-128 <i>BioLab</i> 137 <i>Biology & Society</i> 870 <i>MiniLab</i> 120 Teacher Wraparound Edition: FA 128; MI 116; SP 125</p>
<p>L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials. E/S</p>	<p>The following references can be incorporated to meet this standard. Student Edition: 41-44, 45-49, 61, 66, 68-73, 80-81 <i>Section Assessment 73 (#6)</i> Teacher Wraparound Edition: CT 65</p>
<p>L.12.C.4 Students know the unique geologic, hydrologic, climatic, and biological characteristics of Nevada's bioregions. E/S</p>	<p>The following references can be incorporated to meet this standard. Student Edition: 66, 70, 72 <i>BioLab: Design Your Own</i> 51 <i>Biology & Society</i> 50 Teacher Wraparound Edition: DC 70; DIB 50</p>

STANDARDS	PAGE REFERENCES
<p>Diversity of Life (Life Science Unifying Concept D) Evidence suggests that living things change over periods of time. These changes can be attributed to genetic and/or environmental influences. This process of change over time is called biological evolution. The diversity of life on Earth is classified using objective characteristics. Scientific classification uses a hierarchy of groups and subgroups based on similarities that reflect evolutionary relationships.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>L.12.D Students understand biological evolution and diversity of life.</p>	
<p>L.12.D.1 Students know organisms can be classified based on evolutionary relationships. E/S</p>	<p>Student Edition: 486, 491-496, 498 <i>BioLab</i> 505 <i>Data Analysis Lab</i> 494 <i>National Geographic</i> 497 Teacher Wraparound Edition: DC 493; DE 497</p>
<p>L.12.D.2 Students know similarity of DNA sequences gives evidence of relationships between organisms. E/S</p>	<p>Student Edition: 427, 493-495 <i>Cutting-Edge Biology</i> 234 <i>Data Analysis Lab</i> 494 <i>Section Assessment</i> 430 (#3), 498 (#7) Teacher Wraparound Edition: DC 493; SP 427</p>
<p>L.12.D.3 Students know the fossil record gives evidence for natural selection and its evolutionary consequences. E/S</p>	<p>Student Edition: 393-395, 423-424, 461, 462, 465 <i>BioDiscoveries</i> 474 <i>Launch Lab</i> 391 <i>National Geographic: In the Field</i> 408 <i>Section Assessment</i> 430 (#1) Teacher Wraparound Edition: AG 408; DC 428</p>
<p>L.12.D.4 Students know the extinction of species can be a natural process. E/S</p>	<p>Student Edition: 116, 122-123, 399, 859 Teacher Wraparound Edition: DE 122; WS 122, 859</p>
<p>L.12.D.5 Students know biological evolution explains diversity of life. E/S</p>	<p>The following references can be incorporated to meet this standard. Student Edition: 116-117, 418-420, 422, 431-441, 498 <i>National Geographic</i> 497</p>

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L.12.D.6 Students know the concepts of natural and artificial selection. E/S	<p>Student Edition: 360-362, 420, 422, 434-436 <i>BioLab</i> 443 <i>Data Analysis Lab</i> 420 <i>MiniLab</i> 361 <i>National Geographic</i> 421 <i>National Geographic: In the Field</i> 286 <i>Section Assessment</i> 422 (#3)</p> <p>Teacher Wraparound Edition: AC 421</p>