

A Correlation
of the
DoDEA Science Performance Standards
to Scholastic's READ 180
Stage C: Grades 9-12

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GRADES NINE - TWELVE

GRADES 9-12 - S1 SCIENTIFIC INQUIRY

READ 180 - STAGE C

<p>Gr.9-12: S1a: constructs questions that initiate and guide scientific investigations.</p>	<p>Links, located in the <i>Teacher's Guide</i>, suggest resources for students to explore a topic further and provide opportunities to meet this objective. See, for example: Teacher's Guide: 113, 125, 131, 147, 155, 169, 175, 183, 197, 207</p>
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GRADES 9-12 - S2 HISTORY AND NATURE OF SCIENCE

READ 180 - STAGE C

<p>Gr.9-12: S2a: describes how the work of scientists is influenced by their ethical standards and by societal, cultural, and personal beliefs, and how scientists use the habits of mind (such as: reasoning, insight, creativity, intellectual honesty, tolerance for ambiguity and openness to new ideas) in their work.</p>	<p>The Following Match Provides Opportunities to Meet this Objective: Nonfiction Paperbacks <i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>Gr.9-12: S2b: compares and contrasts the difference between science and other ways of knowing through use of empirical standards, logical arguments, and skepticism.</p>	<p>The Following Match Provides Opportunities to Meet this Objective: Nonfiction Paperbacks <i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>Gr.9-12: S2c: assesses the work of scientists showing that all scientific ideas depend on experimental and observational confirmation and are subject to change as new evidence becomes available.</p>	<p>The Following Match Provides Opportunities to Meet this Objective: Nonfiction Paperbacks <i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>Gr.9-12: S2d: describes the contributions of diverse cultures to scientific knowledge and the changes to scientific thinking that evolve over time, building upon earlier knowledge.</p>	<p>The Following Match Provides Opportunities to Meet this Objective: Nonfiction Paperbacks <i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>

GRADES 9-12 - S3 SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

READ 180 - STAGE C

<p>Gr.9-12: S3a: employs the tenets of personal and community health, safety and resource conservation.</p>	<p>The Following Match Supports this Objective: Nonfiction Paperbacks <i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>Gr.9-12: S3b: identifies, accesses and uses data to construct explanations about</p>	<p>The Following Match Provides Opportunities to Meet this Objective:</p>

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<p>the characteristics, rates, and sources of changes in populations, natural resources, and environmental quality.</p>	<p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>Gr.9-12: S3c: assesses potential danger and risk of natural and human-induced hazards.</p>	<p>The Following Match Provides Opportunities to Meet this Objective:</p> <p>Historical Fiction Paperbacks: <i>The Plague</i></p>
<p>Gr.9-12: S3d: analyzes the relationships among technological, social, political, and economic changes and the impact on humans and the environment.</p>	<p>The Following Match Provides Opportunities to Meet this Objective:</p> <p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>GRADES 9-12 - S4 SCIENCE AND TECHNOLOGY</p>	<p align="center">READ 180 - STAGE C</p>
<p>Gr.9-12: S4d: analyzes innovations in science and technology with respect to alternatives, risks, costs and benefits to society and the environment.</p>	<p>The Following Match Provides Opportunities to Meet this Objective:</p> <p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>GRADES 9-12 - S5 BIOLOGY</p>	<p align="center">READ 180 - STAGE C</p>
<p>Gr.9-12: S5a: describes, analyzes and compares structure, function, and organization of various cells.</p> <ul style="list-style-type: none"> • All living organisms are made of cells. Cells are composed of a small number of chemical elements mainly carbon, hydrogen, nitrogen, oxygen, phosphorous, and sulfur. Carbon atoms can easily bond to several other carbon atoms in chains and rings to form the large complex molecules of life. • Every cell is covered by a selectively permeable membrane that controls what can enter and leave the cell. In all but quite primitive cells, a complex network of proteins provides organization and shape and, for animal cells, movement. • Within every cell are specialized parts for the containment of hereditary material, energy transfer, protein building, waste disposal, information feedback, and even movement. In 	<p>The Following Match Provides Opportunities to Meet this Objective:</p> <p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>

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<p>addition, most cells both individually and in groups in multicellular organisms perform some specialized function that others do not.</p> <ul style="list-style-type: none"> • Communication between cells is required to coordinate their diverse activities. Some cells secrete substances that spread only to nearby cells. Others secrete hormones, special molecules that are carried in the bloodstream to widely distributed cells that have specific receptor sites to which they attach. Along nerve cells, electrical impulses carry information much more rapidly than is possible by diffusion or blood flow. 	
<p>Gr.9-12: S5b:</p> <p>communicates an understanding of the biochemistry of life including organic compounds, enzymes, cellular respiration and photosynthesis.</p> <ul style="list-style-type: none"> • Chemical bonds between atoms of carbon-containing (organic) molecules can be used to assemble larger macromolecules with biological activity (including proteins, DNA, carbohydrates, and lipids). • The work of the cell is carried out by the many different types of molecules it assembles, mostly proteins. Protein molecules are long, usually folded chains made from 20 different kinds of amino-acid molecules. The function of each protein molecule depends on its specific sequence of amino acids and the shape the chain takes is a consequence of attractions between the chain's parts. • Complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division. Cell behavior can also be affected by molecules from other parts of the organism or even other organisms. • Cell functions are regulated. Regulation occurs both through changes in the activity of the functions performed by proteins and through the selective expression of individual genes. This regulation allows cells to respond to their environment and to control and coordinate cell products, growth and division. • For the body to use food for energy and building materials, the food must be broken down through a series of biochemical processes into molecules that are absorbed and transported to cells. • In some animals and humans to release energy from food, oxygen must be supplied to cells, and carbon dioxide removed. Lungs take in oxygen for the combustion of food and eliminate the carbon dioxide produced. The exchange of the two gases takes 	<p>The Following Match Provides Opportunities to Meet this Objective:</p> <p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>

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<p>place in the alveoli of the lungs. However, metabolic processes can change when there is limited oxygen or hostile environments.</p> <ul style="list-style-type: none"> The processes of photosynthesis and respiration in plants transfer energy from the Sun to living systems (e.g., chloroplasts in plant cells use energy from sunlight to combine molecules of carbon dioxide and water into complex, energy rich organic compounds, and release oxygen into the environment). 	
<p>Gr.9-12: S5c: describes the behavior of organisms and hypothesizes the relationship to nervous and endocrine systems and various external stimuli.</p> <ul style="list-style-type: none"> Characteristics can be observed at molecular, cellular, and whole-organism levels—in structure, chemistry, or behavior. These characteristics strongly influence what capabilities an organism will have and how it will react. Multicellular organisms have nervous systems that help an organism adjust to changes in both its internal and external environments. Nervous systems are formed from specialized cells that carry impulses rapidly through their long cell extensions called axons. The nerve cells communicate with each other by secreting specific excitatory and inhibitory molecules. In sense organs, specialized cells detect light, sound, and specific chemicals that enable organisms to monitor what is going on in their environment. The nervous system works by electrochemical signal transport from one nerve to the next. The hormonal system exerts its influences through chemicals that circulate in the blood. These two systems also affect each other by coordinating body functions. Organisms have behavioral responses to internal changes and to external stimuli. Responses to external stimuli can result from interactions with the organism’s own species and others, as well as environmental changes. These responses either can be innate or learned. Drugs, structural injuries, and chemical imbalances may mimic and/or block the molecules involved in transmitting nerve or hormone signals and therefore disturb normal operations of the brain and body. 	<p>The Following Match Provides Opportunities to Meet this Objective:</p> <p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner’s Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>Gr.9-12: S5d: elaborates on the principles of genetics and explains the role of</p>	<p>The Following Match Provides Opportunities to Meet this Objective:</p>

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<p>DNA, genes, chromosomes, and mutation in reproduction and heredity.</p> <ul style="list-style-type: none"> • The many body cells in an individual can be very different from one another, even though they are all descended from a single stem cell and thus have essentially identical genetic instructions. Different genetic instructions are used in different types of cells, influenced by the cell's environment and past history. • The genetic information encoded in DNA molecules provides instructions for assembling protein molecules. The individual units that make up the genetic code are virtually the same for all life forms. Before a cell divides, the instructions are duplicated so that each of the two new cells gets all the necessary information to perform life processes. • The information passed from parents to offspring is coded in DNA molecules through a series of units called genes. • Genes are segments of DNA molecules. Inserting, deleting, or substituting DNA segments can alter genes. An altered gene may be passed on to every cell that develops from it. The resulting features may help, harm, or have little or no effect on the offspring's success in its environment. • The sorting and recombination of genes in sexual reproduction results in a great variety of possible gene combinations in the offspring of any two parents. • Changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism, whereas others can change cells and organisms. Only mutations in germ cells can create the variation that changes an organism's offspring. 	<p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>
<p>Gr.9-12: S5e: relates theories of biological evolution to geologic time and addresses speciation, biodiversity, natural selection, and biological classification.</p> <ul style="list-style-type: none"> • Heritable characteristics influence what capabilities an organism will have and how it will react, and therefore influence how likely it is to survive and reproduce. • Offspring of advantaged individuals, in turn, are more likely than others to survive and reproduce in that environment. The proportion of individuals that have advantageous characteristics will increase. • New heritable characteristics can result from new combinations of existing genes or from mutations of genes in reproductive cells. • Natural survival in particular environments. When an 	<p>The Following Match Provides Opportunities to Meet this Objective:</p> <p>Nonfiction Paperbacks</p> <p><i>Body Book, The: An Owner's Guide to Fueling, Fixing, and Running the Most Important Machine You Own</i></p>

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<p>environment changes, the survival value of some inherited characteristics may change.</p> <ul style="list-style-type: none">• Natural selection and its long-term consequences provide a scientific explanation for the fossil record of ancient life forms, as well as for the molecular similarities observed among the diverse species of living organisms.• Biological changes over time appear to be like the growth of a bush: Some branches survive from the beginning with little or no change, many die out altogether, and others branch repeatedly, sometimes giving rise to more complex organisms. Thus, the theory of evolution builds on what already exists, so the more variety there is, the more there can be in the future. However, long-term progress is not necessarily in some set direction.• The basic idea of biological evolution is that the Earth's present-day species developed from earlier, distinctly different species.	
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