

**SANTA ROSA CITY SCHOOLS
CONTENT AND PERFORMANCE STANDARDS
LIFE/HEALTH SCIENCE 7**

Cell Biology:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
<p>7.1 All Living things are made of cells.</p> <p>7.1.1 The student will compare the similarity in cell function in all organisms.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ Comparing and contrasting the functions of cell organelles of plant and animal cells. ▪ Outlining and drawing the process of mitosis. ▪ Observing the life cycle of a frog and the changes a frog undergoes.
Important to Know and Do	
<p>7.1.2 The student will Investigate the characteristics of plant and animal cells including chloroplasts and cell walls.</p> <p>7.1.3 The student will compare and contrast the functions of different cell parts.</p> <p>7.1.4 The student will define mitosis and recognize that cells divide in a process of mitosis.</p>	
Worth Being Familiar With	
<p>7.1.5 The student will indicate that when multi-cellular organisms develop their cells differentiate.</p>	

Genetics:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
<p>7.2 A typical cell of any organism contains genetic instructions that specify its traits.</p> <p>7.2.6 The student will identify DNA as the genetic material of living organisms and identify the location of DNA in the cell.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ Diagramming the life cycle of amoeba and a frog. ▪ Using dominant and/or recessive genes, creating an organism that inherits genes randomly from two

Important to Know and Do	<ul style="list-style-type: none"> parents. ▪ Making a list of traits that can be determined by multiple genes (example: hair color, eye color, etc...) ▪ Comparing the number of chromosomes in a lily to those in a human and contrast complexity. ▪ Drawing and labeling a diagram of a typical; animal cell.
7.2.2 The student will describe how sexual reproduction produces offspring that inherit half of their genetic material from each parent.	
7.2.3 The student will diagram how inherited traits can be determined by one or more genes. 7.2.5 The student will apply information about dominant and recessive genes to describe the results of gene combinations in determining phenotypes.	
Worth Being Familiar With	
7.2.1 The student will analyze the differences between life cycles and reproduction of sexual and asexual organisms.	
7.2.4 The student will compare and contrast the number of chromosomes in various organisms.	

Evolution:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
7.3 Biological evolution accounts for the diversity of life.	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ Reading and discussing changes that have occurred in Darwin's finches over time. ▪ Using skeletal drawings of living and <i>related</i> extinct organisms (i.e. archeopteryx and chickens), describing the similarities and proposing a hypothesis to explain the findings. ▪ Constructing a simple branching diagram to classify living and extinct organisms. ▪ Designing a family tree that demonstrates the relationship between extinct and living organisms. ▪ Theorize why some organisms become extinct.
Important to Know and Do	
7.3.1 The student will describe how both genetic variation and environmental factors are causes of evolution and diversity in living things.	
7.3.2 The student will demonstrate that natural selection is a mechanism of evolution.	
7.3.5 The student will analyze how extinction of a species can occur when the environment changes and the species no longer fits.	
Worth Being Familiar With	
7.3.3 The student will consider how independent lines of evidence from geology, fossils, and comparative anatomy provide a basis for the theory of evolution.	
7.3.4 The student will classify living and extinct organisms based on similar characteristics.	

Earth & Life History (Earth Science):

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
	Students may demonstrate these performance standards by:
<p style="text-align: center;">Important to Know and Do</p>	<ul style="list-style-type: none"> ▪ Constructing a model of the Earth's landmasses showing the process of plate tectonics from the time of Pangea to the present.
<p>7.4 Evidence from rocks and fossils demonstrate the evolution of life on Earth.</p>	<ul style="list-style-type: none"> ▪ Labeling a map of the Earth identifying locations of volcanoes and earthquakes and analyzing these locations to plate boundaries.
<p style="text-align: center;">Worth Being Familiar With</p>	
<p>7.4.1 The student will describe how geographical processes have had and continue to have large cumulative effects over time.</p> <p>7.4.2 The student will discuss how plate movements, past and present, affect geography, climate, and distribution of life forms on Earth.</p> <p>7.4.3 The student will use evidence from radioactive dating, fossils, and geological layering to interpret Earth history.</p> <p>7.4.4 The student will identify how the Earth's history has been disrupted by major catastrophic events such as volcanic eruptions, or the impact of an asteroid.</p> <p>7.4.5 The student will explain the significant developments and extinctions of plant and animal life on the geological time scale.</p> <p>7.4.6 The student will illustrate the rock cycle including the formation of new sediment rocks.</p>	<ul style="list-style-type: none"> ▪ Constructing a time line of the 4.5 billion years of Earth's history, identifying the appearance and extinction of life forms plus any major geological events and making connections between each of these. ▪ Calculating the approximate age of rocks and fossils by radioactive dating and sediment layering data.

Structure & Function of Living Systems:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
<p>7.5 The anatomy & physiology of animals & plants illustrate the complementary nature of structure & function.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ Comparing and contrasting the nine human body systems with the

Important to Know and Do	<ul style="list-style-type: none"> ▪ comparative plant structures. ▪ Constructing a model showing how <i>bone</i> and muscle provide the framework for movement. ▪ Using plant dissection to identify structure and function of specific plant organisms. ▪ Demonstrating how the ear focuses sound waves in the manner of a satellite dish. ▪ Constructing a model that demonstrates the concept of simple to complex. ▪ Producing a series of products demonstrating the relationship between organisms and organ systems through models, demonstrations, technology based projects, lab investigations including dissections, and research presentations.
7.5.1 The student will describe the different levels of organization for structure & function in animals & plants including cells, tissues, organs, organ systems, and the whole organism.	
7.5.2 The student will explain how organisms function due to combined contributions from individual organs, tissues, and cells, and how the failure of one can affect the whole.	
7.5.3 The student will describe how in plants and animals, each organ system has a unique and complex structure that is specific to its function.	
Worth Being Familiar With	

Physical Principles of Living Systems (Physical Science):

Enduring Understandings	EXAMPLES/ILLUSTRATIONS
	Students may demonstrate these performance standards by:
Important to Know and Do	<ul style="list-style-type: none"> ▪ Using a prism or spectroscope to separate wavelengths or colors in light. ▪ Analyzing the effects of color filters in white light. ▪ Determining focal points, image, size and direction of image with convex, concave, and plane lenses. ▪ Measuring the index of refraction or light traveling through water, air and glass. ▪ Constructing levers, pulleys, and hinges, and comparing mechanical work required to <i>lift</i> or move specific masses.
7.6.5 The student will compare the function and operations of the muscular-skeletal system of the human body to that of simple machines.	

Worth Being Familiar With	
<p>7.6 Physical principles underlie biological structures and functions.</p> <p>7.6.1 The student will define visible light as a band within a spectrum and white light as a mixture of wavelengths, which create color.</p> <p>7.6.2 The student will compare and contrast lenses in a magnifying glass, the eye, a camera, a telescope and a microscope.</p> <p>7.6.3 The student will differentiate between reflection, absorption and transmission.</p> <p>7.6.4 The student will demonstrate how light bends or changes speed and/or direction when hitting a surface.</p>	

Physiology:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
<p>7.7.4 The student will compare and contrast the structure, function, and reproduction of bacteria and viruses.</p> <p>7.7.6 The student will explain why an individual with a compromised immune system may be unable to fight off infections of microorganisms that are usually benign.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ Labeling diagrams of the skin and identifying the functions of each structure. ▪ Creating a flow chart showing the response of antibodies to pathogens. ▪ Explaining how a small amount of (live or killed) pathogen put in the body <i>triggers</i> the natural immune response. ▪ Labeling a diagram of a virus and a bacteria. ▪ Labeling a diagram of the normal immune response and identifying infectious diseases, their pathogens, symptoms, and treatments.
Important to Know and Do	
<p>7.7 Organisms have a variety of mechanisms to combat disease.</p> <p>7.7.1 The student will identify the role of the skin in providing non-specific defenses against infection.</p> <p>7.7.2 The student will explain the role of antibodies in the human immune response</p> <p>7.7.3 The student will demonstrate how artificial immunity (vaccination) protects an individual from infectious diseases.</p> <p>7.7.5 The student will describe the primary response of the immune system against pathogens and list the effective treatments and preventions.</p>	
Worth Being Familiar With	

Life Physiology:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
<p>7.8 As a result of coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (Homeostatic), despite changes in the outside environment.</p> <p>7.8.5 The student will identify the roles of sensory neurons, interneurons and motor neurons and the role of the synapse.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ Labeling the major structures of the nervous system with identifying notes on the function of each structure and creating a flow chart that tracks a nervous impulse. ▪ Completing a series of investigations and experiments related to the reflex response. ▪ Tracing the path of inhaled oxygen through the body to the cell where the path of carbon dioxide is traced out of the body. ▪ Labeling a diagram of the central nervous system, the peripheral system and the structure of a neuron.
<p>Important to Know and Do</p>	
<p>7.8.1 The student will explain how body systems provide cells with oxygen and nutrients and remove waste and carbon dioxide.</p> <p>7.8.3 The student will explain how the nervous and endocrine systems regulate conditions in the body.</p>	
<p>Worth Being Familiar With</p>	
<p>7.8.2 The student will describe how the nervous system communicates between the body and the environment.</p> <p>7.8.4 The student will diagram how neurons transmit electro chemical impulses.</p>	

Investigation and Experimentation:

Enduring Understandings	EXAMPLES/ILLUSTRATIONS
<p>7.9 Scientific progress is made by asking meaningful questions and conducting careful investigations.</p> <p>7.9.1 The student will select and use appropriate tools and technology to perform tests, collect data, and display data.</p> <p>7.9.2 The student will utilize a variety of print and electronic resources to collect information as evidence as part of a research project.</p> <p>7.9.5 The student communicate the steps and results from an investigation in written reports and verbal presentations.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ Choosing appropriate tools for an investigation of their own design and displaying their data in a graph. ▪ Researching the evolutionary history of a species using several sources and hypothesizing factors that could have lead to the evolutionary path. ▪ Writing a lab report with: a title showing the relationship between

Important to Know and Do	<p>variables, a hypothesis, methods and materials, data collected, and conclusions drawn.</p> <ul style="list-style-type: none"> ▪ Writing a letter to a scientific society describing the experiments on genetic inheritance of traits and summarizing the important conclusions that can be drawn from the data. ▪ Holding a mini-science conference and presenting research on an important topic.
<p>7.9.3 The student will communicate the logical connection among hypothesis, tests conducted, data collected, and conclusions drawn and relate this to experiments as well as the scientific concepts based on historical experiments.</p> <p>7.9.4 The student will construct scale models, maps and appropriately labeled diagrams to communicate scientific knowledge.</p>	
Worth Being Familiar With	

Wellness Education:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
<p>7.10.5 The student will recognize, prevent and manage stress.</p> <p>7.10.8 The student will recognize societal influences on behavior.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ developing a coat-of-arms which represents a student's personal balance in maintaining ▪ Identifying short and long term goals and creating a plan to achieve those goals ▪ acting out a role play which identifies and uses communication styles, listening skills, "I" statements, conflict resolution skills, and/or refusal skills ▪ designing an educational brochure for 6th -8th grade students on suicide prevention. ▪ writing an advice letter to someone who is experiencing stress, or another wellness- related problem
Important to Know and Do	
<p>7.10 Wellness consists of a balance between the following three components: physical health, mental and emotional health, and social health.</p> <p>7.10.1 The student will recognize the need for and identify community resources available for promoting wellness.</p> <p>7.10.2 The student will demonstrate skills in problem solving, decision-making and goal setting.</p> <p>7.10.3 The student will develop and use effective communication techniques and styles (e.g.) "I" statements, listening skills, refusal skills, negotiation, etc...) develop skills to deal with anger and practice nonviolent alternatives to conflict.</p> <p>7.10.4 The student will develop skills to deal with anger and practice nonviolent alternatives to conflict.</p> <p>7.10.6 The student will recognize the problem of teen suicide, the warning signs and know how to help someone who is suicidal.</p>	

Worth Being Familiar With	
7.10.7 The student will identify the symptoms of eating disorders and recognize the link between emotional health and those disorders (e.g. anorexia, bulimia, obesity).	

Drug Education:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
<p>7.11 Drug use is hazardous and has far reaching consequences.</p> <p>7.11.5 The student will recognize the misleading nature of advertising.</p> <p>7.11.6 The student will practice refusal skills.</p>	<p>Students may demonstrate these performance standards by:</p> <ul style="list-style-type: none"> ▪ reading and discussing effects of illegal and legal drug use ▪ designing an alcohol warning label ▪ writing a paper which identifies roles of a dysfunctional family within the characters of the film script that they watched and analyzed ▪ finding alcohol & tobacco advertisements in magazines & redesigning the ad w/ the truth about substance abuse ▪ reviewing refusal skills and practicing skills in group role play ▪ attending a twelve-step meeting and writing a paper about the effectiveness of the meeting.
Important to Know and Do	
<p>7.11.1 The student will define the word “drug” and recognize appropriate and inappropriate drug use.</p> <p>7.11.4 The student will understand: the drug continuum, cycle of addiction, family roles in chemical dependency, dysfunctional relationships, and treatment options.</p>	
Worth Being Familiar With	
<p>7.11.2 The student will understand immediate and long-term effects of alcohol, tobacco products, marijuana, steroids, hallucinogens, stimulants, depressants, and inhalants.</p> <p>7.11.3 The student will discuss the effects of drugs on pregnancy.</p>	

Family Life Education:

Enduring Understanding	EXAMPLES/ILLUSTRATIONS
	Students may demonstrate these performance standards by:
<p style="text-align: center;">Important to Know and Do</p>	<ul style="list-style-type: none"> ▪ charting physical/emotional changes at puberty ▪ labeling physiology diagrams ▪ discussing prenatal care
<p>7.12 The family is the basic unit of society; abstinence is the only 100% effective way to prevent pregnancy and sexually transmitted diseases.</p> <p>7.12.1 The student will discuss the physical, emotional, intellectual, and social changes that occur during puberty.</p> <p>7.12.2 The student will demonstrate an understanding of the anatomy and physiology of the reproductive system.</p> <p>7.12.4 The student will discuss the effectiveness, use, availability, and side effects of various forms of birth control.</p> <p>7.12.7 The student will establish the skills involved in making, maintaining, and ending relationships.</p> <p>7.12.10 The student will define date/acquaintance rape and recognize it as an act of violence with legal consequences.</p>	<ul style="list-style-type: none"> ▪ “designing-a-kid” which depicts accurate genetic information such as showing a correct phenotype face ▪ discussing risks & long term effects of teen pregnancy ▪ creating STD posters which relay accurate information on transmission, symptoms, prevention & treatment ▪ passing a quiz that accurately identifies 4 body fluids and 5 body openings that are involved in transmitting HIV ▪ writing a letter of advice regarding skills involved in making, maintaining, and ending relationships; the power and influence of peers in the process of discovering values and beliefs; dating guidelines, safe and unsafe situations, influence of drug use, appropriate dress, behavior, and activities. ▪ practicing refusal skills through a group role play

Worth Being Familiar With

- 7.12.3 The student will trace normal fetal development and include multiple births, genetic abnormalities, and birth defects.
- 7.12.5 The student will differentiate between facts and myths about the cause, transmission, treatment, and prevention of sexually transmitted disease.
- 7.12.6 The student will assess the physical risks as well as the emotional, financial, and social implications of teen pregnancy.
- 7.12.8 The student will acknowledge the power and influence of peers in the process of discovering values and beliefs.
- 7.12.9 The student will develop personal dating guidelines including recognizing the degrees of intimacy, unstated expectations, safe and unsafe situations, influence of drug use, appropriate dress, behavior, and activities.
- 7.12.11 The student will identify rape prevention strategies and recognize the necessity of methods for effective reporting of rape.
- 7.12.12 The student will define molestation and sexual abuse and will understand the necessity for reporting and receiving support and counseling.