THE SCIENCE OF ENERGY BALANCE: CALORIE INTAKE AND PHYSICAL ACTIVITY

Utah Integrated Science Core Curriculum Standards: Grades 7 & 8

Grade 7

Lesson	Standard	Objective
2	3:1.e	Gather information to report on how the basic functions of organisms are carried out within cells (e.g., extract energy from food, remove waste, produce their own food).
2	3:2.d	Describe how the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs (e.g., lungs provide oxygen to cells, kidneys remove wastes from cells).
3, 4	4:2.b	Cite examples of traits that provide an advantage for survival in one environment but not other environments.

Grade 8

Lesson	Standard	Objective
1, 2	2:1.b	Explain how respiration in animals is a process that converts food energy into mechanical and heat energy.

Utah Science Intended Learning Outcomes: Grades 7 & 8

Lesson	ILO	Descriptor
1, 2, 3, 4	1.a	Observe objects and events for patterns and record both qualitative and quantitative information.
1, 2, 3, 4	1.b	Sort and sequence data according to a given criterion.
2	1.c	Develop and use categories to classify subjects studied.
2	1.d	Select the appropriate instrument; measure, calculate, and record in metric units, length, volume, temperature and mass, to the accuracy of instruments used.
1, 3, 4	1.e	When given a problem, plan and conduct experiments in which they: Form research questions, discuss possible outcomes of investigations, identify variables, plan procedures to control independent variable(s), collect data on the dependent variable(s), select appropriate format (e.g., graph, chart, diagram) to summarize data obtained, analyze data and construct reasonable conclusions, and prepare written and oral reports of their investigation.
All lessons	1.f	Distinguish between factual statements and inferences.
1, 2, 3, 4	2.b	Raise questions about objects, events and processes that can be answered through scientific investigation.
All lessons	2.c	Maintain an open and questioning mind toward ideas and alternative points of view.
1, 2, 3, 4	2.d	Check reports of observations for accuracy.
All lessons	3.a	Know and explain science information specified for their grade level.
All lessons	3.c	Compare concepts and principles based upon scientific criteria.
1, 2, 3, 4	3.d	Solve problems appropriate to grade level by applying science principles and procedures.
1, 2, 3, 4	4.a	Provide relevant data to support their inferences and conclusions.

All lessons	**4.b**	Use precise scientific language in oral and written communication.
All lessons	**4.c**	Use correct English in oral and written reports.
1, 2, 3, 4	**4.e**	Use mathematical language and reasoning to communicate information.
2, 4	**4.f**	Construct models to describe concepts and principles.
3, 4, 5	**5.a**	Cite examples of how science affects life.
4	**5.c**	Understand the cumulative nature of the development of science knowledge.
4	**5.d**	Recognize contributions to science knowledge that have been made by both women and men.
1, 2, 3, 4	**6.a**	Science is a way of knowing that is used by many people, not just scientists.
1, 3, 4	**6.b**	Understand that science investigations use a variety of methods and do not always use the same set of procedures; understand that there is not just one "scientific method."
1, 2, 3, 4	**6.c**	Science findings are based upon evidence.
1, 3, 4	**6.d**	Understand that science conclusions are tentative and therefore never final. Understandings based upon these conclusions are subject to revision in light of new evidence.
1, 2, 3, 4	**6.e**	Understand that scientific conclusions are based on the assumption that natural laws operate today as they did in the past and that they will continue to do so in the future.
1, 3, 4	**6.f**	Understand that various disciplines of science are interrelated and share common rules of evidence to explain phenomena in the natural world.

Utah Mathematics Core Curriculum Standards: Math 7, Pre-Algebra, and Algebra I

Math 7

Lesson	Standard	Objective
All lessons	**1:1.a**	Demonstrate multiple ways to represent whole numbers, decimals, fractions, percents, and integers using models and real-life examples.
All lessons	**1:3.a**	Find equivalent forms for common fractions, decimals, percents, and ratios, including repeating or terminating decimals.
All lessons	**1:3.b**	Predict the effect of operating with fractions, decimals, percents, and integers as an increase or a decrease of the original value.
All lessons	**1:4.b**	Recognize percents as ratios based on 100 and decimals as ratios based on powers of 10.
All lessons	**1:5.a**	Compute fluently using all four operations with integers and positive fractions and decimals.
All lessons	**1:5.b**	Solve problems using factors, multiples, prime factorization, relatively prime numbers, and common divisibility rules.
All lessons	**1:5.c**	Solve application problems involving rational numbers.
All lessons	**1:5.d**	Determine if an answer is reasonable using estimation.

All lessons	2:1.a	Solve ratio and rate problems using informal methods involving multiplication and division.
All lessons	2:1.b	Solve percent problems using ratio and proportion, including problems involving discounts, interest, taxes, tips, and percent increase or decrease.
All lessons	2:1.c	Solve problems involving proportions, rates, and measures.
2	2:2.a	Convert from one unit of measurement to an equivalent unit of measurement in the same system using a given conversion factor.
All lessons	3:1.b	Translate verbal expressions into algebraic expressions.
1, 2, 3, 4	3:2.c	Model real-world problems using graphs, tables, equations, manipulatives, and pictures.
2	4:2.a	Estimate metric and customary measures using everyday objects and comparisons.
2	4:2.b	Measure length, area, volume, and angles to appropriate levels of precision.
1, 2, 3, 4	5:2.a	Display data using tables, scatter plots, and circle graphs.
1, 4	5:2.b	Compare two similar sets of data on the same graph.
4	5:2.c	Compare two different kinds of graphs representing the same set of data.
1, 2, 3, 4	5:2.d	Propose and justify inferences and predictions based on data.
Pre-Algebra		
Lesson	**Standard**	**Objective**
All lessons	1:1.a	Compute fluently using all four operations with integers, and explain why the corresponding algorithms work.
All lessons	1:2.b	Predict the effect of operating with fractions, decimals, percents, and integers as an increase or a decrease of the original value.
All lessons	1:3.b	Simplify numerical expressions, including those with whole number exponents and absolute values, using the order of operations.
All lessons	1:3.c	Solve problems involving rational numbers, percents, and proportions.
All lessons	2:1.a	Compare ratios to determine if they are equivalent.
All lessons	2:2.a	Set up and solve problems involving proportional reasoning using variables.
All lessons	3:2.a	Evaluate algebraic expressions, including those with whole number exponents, when given values for the variable(s).
1, 2, 3, 4	3:3.e	Model real-world problems using graphs, tables, equations, manipulatives, and pictures, and identify extraneous information.
2	4:1.a	Convert units of measure within the same system.
1, 3, 4	5:2.a	Formulate questions that can be answered through data collection and analysis.
All lessons	5:2.e	Use graphical representations and numerical summaries to answer questions and interpret data.
Algebra I		

Lesson	Standard	Objective
1, 2, 3, 4	1:2.c	Compute solutions to problems, represent answers in exact form, and determine the reasonableness of answers.
1, 4	4:1.a	Collect, record, organize, and display a set of data with at least two variables.

Utah Mathematics Intended Learning Outcomes: Grades 7 & 8		
Lesson	**ILO**	**Descriptor**
All lessons	2	Become proficient problem-solvers by posing appropriate questions, selecting appropriate methods, employing a variety of strategies, and exploring alternative approaches.
All lessons	3	Think logically, using inductive reasoning to formulate reasonable conjectures and using deductive reasoning for justification, formally and informally.
All lessons	4	Cooperatively and independently explore mathematics, using inquiry and technological skills.
All lessons	5	Make connections between mathematical ideas, between mathematics and other disciplines, and to life.
All lessons	6	Communicate mathematics through verbal, written, and visual representations, using precise mathematical language and symbolic notation.

Utah Language Arts Core Curriculum Standards: Grades 7 & 8		
Grade 7		
Lesson	**Standard**	**Objective**
All lessons	1:1.c	Determine word meaning through definition or explanation context clues.
All lessons	1:2.c	Retell, paraphrase and summarize from informational text.
All lessons	1:2.d	Distinguish main idea and supporting details in text.
All lessons	2:1.a	Retell significant events in sequence.
All lessons	2:1.b	Summarize essential information from literary or informational text.
All lessons	2:1.c	Connect text to self.
All lessons	3:1.a	Establish a purpose for inquiry.
All lessons	3:1.b	Gather relevant information to answer questions.
All lessons	3:1.c	Validate the accuracy and relevance of information, discriminating between fact and opinion.
All lessons	3:2.a	Select an appropriate format to report information.
All lessons	3:2.b	Gather information on an idea or concept.
All lessons	3:2.c	Report information using summarization.
All lessons	3:3.a	Determine the purpose for communication (e.g., to respond to writing, to obtain a result, to convey ideas or information, to seek validation).

All lessons	3:3.b	Use appropriate protocol for asking questions (e.g., turn taking, staying on topic, projecting adequately).
All lessons	3:3.c	Use appropriate protocol for responding to questions (e.g., respecting others' contributions, staying on topic, projecting adequately).
All lessons	3:3.d	Contribute constructively in classroom settings.
Grade 8		
All lessons	1:1.c	Determine word meaning through definition or explanation context clues.
All lessons	1:2.c	Infer meaning from explicit information in text.
All lessons	1:2.d	Distinguish fact from opinion.
All lessons	2:1.a	Organize events and ideas in order of importance.
All lessons	2:1.b	Focus written facts or events around a clearly stated, unifying idea.
All lessons	2:1c	Connect text to self, text to world and text to text.
All lessons	3:1.a	Formulate text-supported, open-ended questions for inquiry (i.e., literal, interpretive inferential, evaluative).
All lessons	3:1.b	Choose information that best supports the focus of inquiry.
All lessons	3:1.c	Distinguish between reliable and unreliable sources of information.
All lessons	3:2.a	Select an appropriate format to demonstrate understanding.
All lessons	3:2.c	Report information by paraphrasing, summarizing, and/or quoting from sources.
All lessons	3:3.a	Determine the purpose for small group learning activities (e.g., to respond to writing, to acquire information, to present ideas, to clarify understanding).
All lessons	3:3.b	Identify and assume responsibility for specific group tasks, including asking relevant questions.
All lessons	3:3.c	Respond appropriately to group members' questions and contributions.
1, 2, 3, 4	3:3.d	Present group reports.
Utah Language Arts Intended Learning Outcomes: Grades 7 & 8		
Lesson	**ILO**	**Descriptor**
All lessons	2.c	Develop thinking and language acquisition together through interactive learning.
All lessons	4.a	Give and seek information in conversations, in group discussions, and in oral presentations.
All lessons	4.b	Use questioning techniques to gain information.
All lessons	4.c	Participate in and report on small group learning activities.
All lessons	5.b	Access background knowledge to prepare to read and enjoy texts.
All lessons	5.c	Use meta-cognition strategies during reading to monitor comprehension.
All lessons	5.d	Improve comprehension by using strategies when meaning breaks down.

All lessons	5.e	Retain information from and respond to text after reading.
All lessons	6.e	Develop collaborative writing skills to prepare for workplace writing.
All lessons	6.f	Understand that writing is a tool for thinking: solving problems, exploring issues, constructing questions, addressing inquiry.
All lessons	6.g	Understand that reading and writing are interrelated: writers approach new reading experiences with enhanced appreciation for the text.
Utah Health Education Core Curriculum Standards: Grades 7 & 8		
3, 5	1:2.a	Identify factors that influence decision making: e.g., values, emotions, esteem, habits, peers, media, parents, faith.
5	1:2.b	Analyze decision-making process(es).
5	1:2.c	Develop an individual decision-making process.
3, 5	1:4.d	Predict the outcomes of being responsible for one's actions.
2, 3, 5	1:5.a	Interpret how personal attitudes and beliefs regarding body size and shape are influenced by culture, society, and media.
All lessons	1:5.b	Determine the factors that establish and maintain body size and shape; e.g., heredity, puberty, a body's natural genetics, diet, environment.
3, 5	1:5.c	Explain how self-acceptance impacts eating and exercising patterns.
5	4:1.a	Compare communicable and non-communicable diseases; e.g., influenza, mononucleosis, streptococcus, hepatitis, sexually transmitted infections, heart disease, cancers, emphysema, cirrhosis.
4, 5	4:1.c	Identify methods for reducing the risks on non-communicable diseases; e.g., exercise, non-use of alcohol, tobacco, and other drugs (ATOD), balance diet, regular check-ups, and coping skills.
4, 5	4:1.d	Summarize ways in which many diseases are treatable and manageable; e.g., proper use of medication, appropriate check-ups, diet, humor, and exercise.
All lessons	6:1.e	Demonstrate the ability to balance caloric intake with energy expenditure.
All lessons	6:1.f	Describe the benefits of physical fitness.
1	6:1.g	Record participation in a variety of daily physical activities.
3, 4	6:2.c	Determine the influence of heredity on illnesses.
3, 4	6:2.d	Explain why following dietary guidelines may help prevent some illnesses.
All lessons	6:2.e	Explain the impact of unhealthy daily food choices and habits.
All lessons	7:1.a	Identify a variety of information sources; e.g., Internet, infomercials, pamphlets, public health department, television, telephone book, clinics.
2, 3, 5	7:1.b	Determine media influences on perceptions and choices related to health.
2, 3, 4, 5	7:2.a	Identify health issues that affect individuals and/or families.

| 5 | 7:2.b | Develop a variety of advocacy skills; e.g., peer education, dialogue, presentation, letter writing, telephoning, lobbying. |
| 5 | 7:2.c | Predict the effect of an advocacy plan. |