

MISSOURI ALIGNMENT FOR NIH SUPPLEMENT THE SCIENCE OF ENERGY BALANCE: CALORIE INTAKE AND PHYSICAL ACTIVITY

THE SCIENCE OF ENERGY BALANCE: CALORIE INTAKE AND PHYSICAL ACTIVITY		
Missouri Grade Level Expectations: Science – Grades 6 – 8		
Lesson	Standard	GLE
All lessons	1.2.A.a	Recognize chemical energy is stored in chemical compounds (e.g., energy stored in and released from food molecules, batteries, nitrogen explosives, fireworks, organic fuels). (8)
All lessons	1.2.F.c	Recognize energy is not lost but conserved as it is transferred and transformed. (7)
3	3.1.C.a	Recognize all organisms are composed of cells, the fundamental units of life, which carry on all life processes.
3	3.2.C.c	Explain the interactions between the circulatory and digestive systems as nutrients are processed by the digestive system, passed into the blood stream, and transported in and out of the cell. (8)
3, 4, 5	3.2.G.a	Explain the cause and effect of diseases (e.g., AIDS, cancer, diabetes, and hypertension) on the human body). (8)
3, 4, 5	3.2.G.c	Differentiate between infectious and noninfectious diseases. (8)
3, 4	4.3.C.b	Predict how certain adaptations, such as behavior, body structure, or coloration, may offer a survival advantage to an organism in a particular environment. (6)
1, 2, 3, 4	7.1.A.a	Formulate testable questions and hypotheses.
1, 4	7.1.A.b	Recognize the importance of the independent variable, dependent variables, control of constants, and multiple trials to the design of a valid experiment.
1, 3, 4	7.1.A.c	Design and conduct a valid experiment.
1, 3, 4	7.1.A.d	Evaluate the design of an experiment and make suggestions for reasonable improvements or extensions of an experiment.
1, 2, 3, 4	7.1.A.e	Recognize different kinds of questions suggest different kinds of scientific investigations (e.g., some involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve making observations in nature; some involve discovery of new objects and phenomena; some involve making models).
1, 3, 4	7.1.A.f	Acknowledge there is no fixed procedure called “the scientific method”, but that some investigations involve systematic observations, carefully collected and relevant evidence, logical reasoning, and some imagination in developing hypotheses and other explanations. (7 & 8)
1, 2, 3, 4	7.1.B.a	Make qualitative observations using the five senses.
1, 2, 3, 4	7.1.B.b	Determine the appropriate tools and techniques to collect data.
1, 2, 3, 4	7.1.B.c	Use a variety of tools and equipment to gather data (e.g., microscopes, thermometers, computers, spring scales, balances, magnets, metric rulers, graduated cylinders, stopwatches).
1, 2	7.1.B.d	Measure length to the nearest millimeter, mass to the nearest gram, volume to the nearest milliliter, temperature to the nearest degree Celsius, force (weight) to the nearest Newton, time to the nearest second.

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1, 2, 3, 4	7.1.B.e	Compare amounts/measurements.
1, 2, 3, 4	7.1.B.f	Judge whether measurements and computation of quantities are reasonable.
1, 2, 3, 4	7.1.C.a	Use quantitative and qualitative data as support for reasonable explanations (conclusions).
1, 2, 3, 4	7.1.C.b	Use data as support for observed patterns and relationships, and to make predictions to be tested.
1, 2, 3, 4	7.1.C.c	Recognize the possible effects of errors in observations, measurements, and calculations on the formulation of explanations (conclusions).
1, 2, 3, 4	7.1.D.a	Evaluate the reasonableness of an explanation (conclusion).
1, 2, 3, 4	7.1.D.b	Analyze whether evidence (data) and scientific principles support proposed explanations (hypotheses, laws, theories).
1, 2, 3, 4	7.1.E.a	Communicate the procedures and results of investigations and explanations through: oral presentations; drawings and maps; data tables (allowing for the recording and analysis of data relevant to the experiment such as independent and dependent variables, multiple trials, beginning and ending times or temperatures, derived quantities); graphs (bar, single line, and pictograph); writings.
2	8.1.A	Designed objects are used to do things better or more easily and to do some things that could not otherwise be done at all.
4, 5	8.3.B.a	Describe ways in which science and society influence one another (e.g., scientific knowledge and the procedures used by scientists influence the way many individuals in society think about themselves, others, and the environment; societal challenges often inspire questions for scientific research; social priorities often influence research priorities through the availability of funding for research).
4, 5	8.3.B.b	Identify and evaluate the physical, social, economic, and/or environmental problems that may be overcome using science and technology (e.g., the need for alternative fuels, human travel in space, AIDS).

Missouri Grade Level Expectations: Mathematics – Grades 6 – 8

Lesson	Standard	GLE
2, 3	MA 1 3.3	Recognize and generate equivalent forms of fractions, decimals and percents. (6) use fractions, decimals and percents to solve problems. (7 & 8)
2, 3	MA 1 3.6	Recognize equivalent representations for the same number and generate them by decomposing and composing numbers, including scientific notation
1, 2, 3	MA 5 1.10	Use whole number factors and multiples to describe relationships between and among numbers. (7)
1, 2, 3, 4	MA 1 3.4,4.1	Describe the effects of addition and subtraction on fractions and decimals (6); the effects of multiplication and division on fractions and addition and subtraction on integers (7); the effects of multiplication and division on integers (8).
1, 2, 3, 4	MA 5 1.6,1.10	Apply properties of operations (including order of operations) to positive rational numbers. (7)
1, 2, 3, 4	MA 1 1.10,3.3	Add and subtract (6); multiply and divide (7) positive rational numbers. Apply all operations on rational numbers. (8)
1, 2, 3, 4	MA 1 3.3,4.1	Estimate and justify the results of addition and subtraction (6); multiplication and division (7) of positive rational

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		numbers. Estimate and justify the results of all operations on rational numbers. (8)
1, 2, 3	MA 1 3.3	Solve problems involving proportions, such as scaling and finding equivalent ratios. (7 & 8)
1, 2, 3, 4	MA 4 1.6,3.6	Represent and describe patterns with tables, graphs, pictures, symbolic rules or words. (6)
1, 2, 3, 4	MA 4 1.6	Compare (6) and contrast (7& 8) various forms of representations of patterns.
1	MA 4 1.6,3.6	Identify functions as linear or nonlinear from tables, graphs (6) or equations (7); Compare properties of linear functions between or among from tables, graphs or equations (8).
1, 4	MA 4 1.6,3.6	Model and solve problems, using multiple representations such as graphs, tables, expressions and equations (6), or inequalities. (7 & 8)
1, 2, 3, 4	MA 2 3.1	Draw or use visual models to represent and solve problem.
1	MA 5 3.1	Solve problems involving addition and subtraction of time (hours, minutes and seconds). (6 & 7)
1, 2, 3, 4	MA 2 1.7,3.8	Analyze precision and accuracy in measurement situations. (7)
2, 3	MA 2 1.6,1.10	Convert from one unit to another within a system of measurement.
1, 2, 3, 4	MA 3 1.2	Formulate questions, design studies and collect data about a characteristic.
All lessons	MA 3 1.8,3.6	Select, create and use appropriate graphical representation of data, including circle graphs, histograms and box plots (box and whiskers) (7) and scatter plots (8).
1, 3, 4, 5	MA 3 3.6	Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.
All lessons	MA 3 3.5	Use observations about differences between samples to make conjectures about the populations from which the samples were taken. (6 & 7)

Missouri Grade Level Expectations: Communication Arts – Grades 6 – 8

Lesson	Standard	GLE
1, 3, 4	CA 2, 3 1.6	Apply decoding strategies to “problem-solve” unknown words when reading.
1, 3, 4	CA 2, 3 1.5, 1.6	Develop vocabulary through text, using roots and affixes, context clues, glossary, dictionary and thesaurus.
1, 3, 4	CA 2, 3 1.5 & 1.6	Apply pre-reading strategies to aid comprehension: access prior knowledge, preview, predict, set a purpose and rate for reading.
1, 3, 4	CA 2,3 1.5 & 1.6	During reading, utilize strategies to self-question and correct, infer, visualize, predict and check using cueing systems: meaning, structure, and visual.
1, 3, 4	CA 2, 3 1.6 & 3.5	Apply post-reading skills to comprehend and interpret text: question to clarify, reflect, analyze, draw conclusions, summarize, and paraphrase.
1, 3, 4, 5	CA 2, 3, 7 1.5, 1.6, 1.9	Compare, contrast, analyze (6) and evaluate (7 & 8) connections between text ideas and own experiences.
1, 3, 4, 5	CA 3 1.6, 1.7, 2.4, 3.5, 3.6, 3.1, 3.4	Use details from text to make predictions, make inferences, and evaluate the accuracy of the information. (6 & 7)

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All lessons	CA 3 1.5, 1.6	Read and apply multi-step directions to complete a complex task.
All lessons	CA 1, 4 1.8, 2.1, 2.2	Follow a writing process to create appropriate graphic organizers to provide a structure for information, and apply writing process to write effectively in various forms and types of writing. (7)
All lessons	CA 1 1.6, 2.2	Use conventions of capitalization in written text.
All lessons	CA 1 1.6, 2.2	Use parts of speech correctly in written text.
All lessons	CA 1 1.6, 2.1, 2.2	In writing, use correct spelling of grade-level frequently-used words, classroom resources and dictionary to verify correct spelling (6), dictionary, spell-check and other resources to spell correctly. (7 & 8)
All lessons	CA 1 1.6, 2.1, 2.2	In composing text use a variety of sentence structures.
All lessons	CA 2, 3, 4 1.6, 1.8	Use a note-taking system to organize information from oral presentations and written text. (6) Use a variety of note-taking methods to organize information. (7) Select and use an appropriate method for note-taking. (8)
1, 3, 4, 5	CA 2, 3, 4 1.8, 2.1, 4.1	Write expository and persuasive paragraphs (including cause/ effect) and multi-paragraph essays.
All lessons	CA 5, 6 1.5, 1.6, 1.10	Listen for enjoyment, for information, for directions (6 & 7) and use clarifying strategies for understanding (e.g., questioning, summarizing and paraphrasing). (8)
All lessons	CA 5, 6 1.5	Use active-listening behaviors (e.g., asks questions of speaker and uses body language and facial expressions to indicate agreement, disagreement or confusion).
All lessons	CA 1, 6 2.1, 2.3, 4.6	In discussions and presentations, speak clearly and stay on topic, use appropriate volume, tone of voice, rate of speech, fluency/ inflections and eye contact (6); use designated time constraints, media, and organized notes (7); use appropriate body language, incorporate media or technology, and respond to questions (8).
All lessons	CA 1, 6 2.1, 2.3	Give clear and concise multi-step oral directions to complete a complex task.
1, 2, 3, 4	CA 2, 3 1.1, 1.4, 4.5	Develop questions and statements of purpose to guide research. (6) Develop a research plan, with assistance, to guide investigation and research of focus questions. (7) Develop a research plan to guide investigation and research of focus questions. (8)
4	CA 5 1.5, 1.7, 2.7	Identify and explain viewpoints conveyed in various media (e.g., videos, pictures, web-sites, artwork, plays and/or news programs). (6) Identify and explain media techniques used to convey messages in various media. (7)

Missouri Grade Level Expectations: Health Education – Grades 6 – 8 (2006 Draft Version)

Lesson	Standard	GLE
3, 4, 5	I 1.K	Describe the impact heredity has on system functions and disease formation. (8)
3, 4, 5	I 1.M	Investigate interrelationships to predict health problems that could occur as a result of dysfunction. (8)
All lessons	I 2.B	Analyze cultural influences on personal health practices and decisions. (7)

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All lessons	II 1.A	Critique personal behaviors and their cause and effect that relate to the following choices: (1) eating breakfast every day, (2) refrain from the use of tobacco and alcohol, (3) sleeping six-eight hours a night, (4) maintaining a healthy weight, (5) daily moderate to vigorous physical activities, (6) making healthy food choices (fruits, vegetables, whole grains, portion sizes), and (7) stress. (7)
2, 3, 5	II 1.B	Identify various health needs during adolescence (e.g., mental, emotional, social, and physical). (6)
2, 3, 5	II 1.B	Predict problems that may occur due to health needs, insufficient or no preventative care. (7)
1, 2, 5	II 1.B	Assess personal health needs during adolescence and apply strategies to address those needs or problems. (8)
All lessons	II 1.C.a	Compare and contrast factors that can affect growth and development which one can alter, enhance, or adapt (e.g., heredity, family, environment, physical activity, hormones, disease). (6)
All lessons	II 1.C.b	Examine ways to enhance or adapt the identified factors that can affect growth and development. (6)
2, 3	II 2.A.a	Describe and differentiate the contribution specific nutrients make towards growth, repair, and cellular needs of the body: (3) Protein helps the body grow, makes muscles strong, and repairs body tissues, and (4) vitamins and minerals help to release energy and help the body fight infections, making strong bones and teeth. (6)
2	II 2.C.a	Compare the nutrient contribution of a food to its energy/caloric contribution. (7)
2, 3, 4, 5	II 2.C.c	Evaluate factors that influence food choices and their impact on nutrition and health. Factors include: culture, family, emotions, peers, and media. (7)
2, 3, 5	II 2.D	Formulate appropriate strategies to address problems that can affect a healthy body image during adolescence (e.g., culture, family, peers, media, personality, emotions). (6)
2, 3	II 2.D	Recognize the symptoms of various eating disorders and proper referral resources. (7)
2	II 2.E	Analyze and critique food labeling information to determine calories, nutrients, serving size, types of ingredients, and nutritional value in a product. (7)
2, 3, 4, 5	II 2.G	Summarize the direct relationship between diet and exercise. (6)
2, 3	II 2.G	Apply nutrition knowledge to compare the nutrient contribution of a food to its energy contribution. (7)
2, 3, 4, 5	II 2.H	Explain how nutritional needs change throughout the life cycle. (7)
	II 3.B	Identify agencies that provide consumer protection. (6)
5	II 3.C	Recognize how the collaboration efforts of individuals, communities, and government affect the health of a community (e.g., recycling effort, pollution centers). (6)
5	II 3.C.a	Connect the appropriate resources in the community to determine their role in prevention and treatment of health related problems (e.g., American Cancer Society, March of Dimes, American Heart Association). (8)
5	II 3.C.b	Examine the viewpoints and collaborative efforts of individuals, communities, and government regarding societal health issues in order to make decisions that are informed and responsible. (8)
5	II 3.C.c	Analyze how the Department of Health and Human Services, the Centers for Disease Control and Prevention, and other public health agencies are responsible for disease reduction and control prevention, research, education, and enforcement of laws (e.g., food inspection, safe food storage and handling, distributing flu vaccines, and no smoking ordinances). (8)

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3, 5	II 4.B	Apply the decision making process to adolescent health issues. (6)
3, 5	II 4.B	Analyze and evaluate how the decision making process can help an individual in life situations. (7)
3, 5	II 4.C.a	Evaluate the process used in solving problems and verify whether the solution addresses the problem to which it was applied. (7)
3, 5	II 4.C.b	Distinguish between problems that can be solved independently and those that need the help of a peer, adult, or professional.
5	II 4.D	Develop a plan of action to achieve realistic personal goals and assess the outcome relative to the impact on one's self-esteem.
3, 4, 5	III 1.A	Identify and list non-communicable diseases (e.g., cancer, hypertension, cardiovascular disease, leukemia, arthritis) and their causes (e.g., heredity, lifestyle factors, autoimmune system problems unknown reasons). (6)
3, 4, 5	III 1.A	Connect causative factors, symptoms, treatment, and preventative measures to their appropriate non-communicable diseases. (8)
3, 4, 5	III 1.D	Locate, select, and organize information about non-communicable diseases that may impact adolescents, such as diabetes, asthma, joint disease, cancer, and mental disorders. (6)
3, 5	III 1.D.a	Analyze the impact non-communicable diseases such as diabetes or asthma could have on adolescents' physical, social, and emotional development. (8)