THE SCIENCE OF ENERGY BALANCE: CALORIE INTAKE AND PHYSICAL ACTIVITY		
Arkansas Science Standards: Grades 6 – 8		
Grade 6		
Lesson	**Standard**	**Descriptor**
1, 2, 3, 4	**NS.1.6.1**	Verify accuracy of observations.
1, 3, 4	**NS.1.6.2**	Apply components of *experimental design* used to produce *empirical evidence:* • *hypothesis* • replication • sample size • appropriate use of *control* • use of standardized *variables*
1, 2, 3, 4	**NS.1.6.4**	Construct and interpret scientific data using • data tables/charts • bar and double bar graphs • line graphs • *stem and leaf plots* • line graphs
1, 2, 3, 4	**NS.1.6.5**	Communicate results and conclusions from scientific inquiry.
All lessons	**NS.1.6.7**	Distinguish between scientific fact and opinion.
4	**NS.1.6.8**	Explain the role of prediction in the development of a theory.
3, 4	**LS.3.6.6**	Differentiate between *innate behaviors:* • *migration* • web spinning • defensive posture • *communication* • *imprinting* and *learned behavior*s: • speaking a language • using tools • hunting skills
3, 4	**LS.4.6.1**	Identify *environment*al conditions that can affect the survival of individual *organisms* and entire *species.*
All lessons	**PS.7.6.2**	Summarize the application of the law of conservation of energy in real world situations: • electrical *energy* into mechanical *energy* • electrical *energy* into *heat*

		• chemical *energy* into mechanical *energy* • chemical *energy* into light
1, 2, 3, 4	**PS.7.6.3**	Conduct investigations demonstrating how *energy* can be converted from one form to another.
All lessons	**PS.7.6.4**	Investigate the transfer of *energy* in real world situations: • *conduction* • *convection* • *radiation*
Grade 7		
Lesson	**Standard**	**Descriptor**
1, 2, 3, 4	**NS.1.7.1**	Interpret *evidence* based on observations.
1, 3, 4	**NS.1.7.2**	Analyze components of *experimental design* used to produce *empirical evidence:* • *hypothesis* • replication • sample size • appropriate use of *control* • use of standardized *variables*
1, 3, 4, 5	**NS.1.7.4**	Construct and interpret scientific data using • histograms • circle graphs • *scatter plots* • double line graphs • line graphs by • approximating line of best fit
1, 2, 3, 4	**NS.1.7.5**	Communicate results and conclusions from scientific inquiry.
1, 3, 4	**NS.1.7.7**	Distinguish between questions that can and cannot be answered by science.
3, 4	**NS.1.7.8**	Explain the role of testability and modification in the development of a theory.
3	**LS.2.7.6**	Identify human body systems: nervous, digestive, circulatory, respiratory, excretory, integumentary, skeletal/muscular, endocrine, and reproductive.
3	**LS.2.7.8**	Investigate functions of human body systems.
3, 4	**LS.4.8.1**	Analyze the effect of changes in environmental conditions on the survival of individual *organisms* and entire *species.*
Grade 8		
Lesson	**Standard**	**Descriptor**
1, 2, 3, 4	**NS.1.8.1**	Justify conclusions based on appropriate and unbiased observations.
1, 3, 4	**NS.1.8.2**	Evaluate the merits of *empirical evidence* based on *experimental design:* • *hypothesis*

		• replication • sample size • appropriate use of *control* • use of standardized *independent* and *dependent variables*
1, 3, 4	**NS.1.8.3**	Formulate a testable problem using *experimental design.*
1, 3, 4, 5	**NS.1.8.5**	Suggest *solutions* to real world problems by analyzing scientific data in • data tables/charts • histograms • circle graphs • *scatter plots* • *stem and leaf plots* • line and double line • graphs by approximating line of best fit
All lessons	**NS.1.8.6**	Formulate inferences based on scientific data.
1, 3, 4	**NS.1.8.7**	Communicate results and conclusions from scientific inquiry following peer review.
1, 3, 4	**NS.1.8.9**	Generate questions that can and cannot be answered by science.
Arkansas Mathematics Standards: Grades 6 – 8		
Grade 6		
Lesson	**Standard**	**Descriptor**
1, 2, 3, 4	**NO.1.6.1**	Demonstrate conceptual understanding to find a specific *percent* of a number, using models, real life examples, or explanations.
2, 3	**NO.1.6.2**	Find decimal and *percent equivalents* for proper fractions and explain why they represent the same value.
1, 2, 3, 4	**NO.2.6.3**	Apply the addition, subtraction, multiplication and division properties of equality to one-step *equations* with *whole numbers.*
1, 2, 3, 4	**NO.2.6.4**	Apply rules (conventions) for *order of operations* to *whole number*s with and without parentheses
2, 3	**NO.2.6.5**	Model multiplication and division of fractions (including mixed numbers) and decimals using pictures and physical objects.
1, 2, 3, 4	**NO.3.6.1**	Apply, with and without appropriate *technology*, *algorithms* with *computational fluency* to perform *whole number* oper*ation*s (+, -, x, /).
2, 3	**NO.3.6.2**	Develop and analyze *algorithms* for computing with fractions (including mixed numbers) and decimals and demonstrate, with and without *technology*, *computational fluency* in their use and justify the solution.
1, 2, 3, 4	**NO.3.6.3**	Solve, with and without appropriate *technology*, multi-step problems using a variety of methods and tools (i.e., objects, mental computation, paper and pencil).
1, 2, 3, 4	**NO.3.6.6**	Use proportional reasoning and *ratios* to represent problem situations and determine the reasonableness of solutions

		with and without appropriate *technology*.
1, 2, 3, 4	**NO.3.6.7**	Determine the *percent* of a number and solve related problems in real world situations.
1, 2, 3, 4	**A.5.6.1**	Model, write and solve one-step *equations* by informal methods using manipulatives and appropriate *technology.*
1, 4	**A.6.6.1**	Complete, with and without appropriate *technology*, and interpret tables and *line graphs* that represent the relationship between two *variable*s in *quadrant* I.
4	**A.7.6.1**	Identify and compare situations with constant or varying *rates* of change.
1, 2, 3	**M.12.6.1**	Identify and select appropriate units and tools from both systems to measure.
1, 2	**M.12.6.2**	Make conversions within the same measurement system in real world problems.
2	**M.13.6.2**	Determine which unit of measure or measurement tool matches the context for a problem situation.
1, 3, 4	**DAP.14.6.1**	Formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population.
1, 2, 3, 4	**DAP.14.6.2**	Collect data and select appropriate graphical representations to display the data including *Venn diagrams.*
1, 3, 4	**DAP.14.6.3**	Construct and interpret graphs, using correct scale, including *line graphs* and *double-bar graphs.*
5	**DAP.15.6.1**	Interpret graphs such as *double line graphs* and *circle graphs.*
All lessons	**DAP.16.6.1**	Use observations about differences in data to make justifiable inferences.
Grade 7		
Lesson	**Standard**	**Descriptor**
1, 2, 3, 4	**NO.1.7.1**	Relate, with and without models and pictures, concepts of *ratio*, *proportion*, and *percent*, including *percents* less than 1 and greater than 100.
2, 3	**NO.1.7.4**	Find decimal and *percent equivalents* for mixed numbers and explain why they represent the same value.
1, 2, 3, 4	**NO.2.7.2**	Apply the addition, subtraction, multiplication and division properties of equality to one-step *equations* with *integers*, fractions, and decimals.
1, 2, 3, 4	**NO.2.7.3**	Apply rules (conventions) for *order of operations* to *integers* and positive *rational numbers* including parentheses, brackets or exponents.
1, 2, 3, 4	**NO.2.7.4**	Model and develop addition, subtraction, multiplication and division of *integers.*
1, 2, 3, 4	**NO.3.7.1**	Compute, with and without appropriate *technology*, with *integers* and positive *rational numbers* using real world situations to solve problems.
1, 2, 3, 4	**NO.3.7.2**	Solve with and without appropriate *technology*, multi-step problems using a variety of methods and tools (i.e., objects, mental computation, paper and pencil).
1, 2, 3, 4	**NO.3.7.6**	Solve, with and without *technology*, real world *percent* problems.
1, 4	**A.6.7.1**	Use tables and graphs to represent *linear equations* by plotting, with and without appropriate *technology*, points in a *coordinate plane.*
4	**A.7.7.1**	Use, with and without appropriate *technology*, tables and graphs to compare and identify situations with constant or

		varying *rates* of change.
2	**M.12.7.1**	Understand, select and use the appropriate units and tools (metric and customary) to measure length, weight, *mass* and *volume* to the required degree of accuracy for real world problems.
2, 3, 4	**M.12.7.2**	Understand relationships among units within the same system.
1, 3, 4	**DAP.14.7.1**	Identify different ways of selecting samples and compose appropriate questions.
All lessons	**DAP.14.7.2**	Explain which types of display are appropriate for various data sets (*line graph* for change over time, *circle graph* for part-to-whole comparison, *scatter plot* for trends).
4, 5	**DAP.14.7.3**	Construct and interpret *circle graphs, box-and-whisker plots, histograms, scatter plots* and *double line graphs* with and without appropriate *technology.*
All lessons	**DAP.15.7.1**	Analyze data displays, including ways that they can be misleading.
Grade 8		
Lesson	**Standard**	**Descriptor**
1, 2, 3, 4	**NO.2.8.1**	Apply the addition, subtraction, multiplication and division properties of equality to two-step *equations.*
1, 2, 3, 4	**NO.2.8.4**	Apply rules (conventions) for *order of operations* to *rational numbers.*
1, 2, 3, 4	**NO.2.8.5**	Model and develop addition, subtraction, multiplication and division of *rational numbers.*
1, 2, 3, 4	**NO.3.8.1**	Compute, with and without appropriate *technology*, with *rational numbers* in multi-step problems.
1, 2, 3, 4	**NO.3.8.2**	Solve, with and without appropriate *technology*, multi-step problems using a variety of methods and tools (i.e. objects, mental computation, paper and pencil).
1, 2, 3, 4	**NO.3.8.6**	Solve, with and without *technology*, real world *percent* problems including *percent* of increase or decrease.
1, 2, 3, 4	**A.6.8.2**	Represent, with and without appropriate *technology*, *linear* relationships concretely, using tables, graphs and *equations.*
4	**A.7.8.1**	Use, with and without *technology*, graphs of real life situations to describe the relationships and analyze change including graphs of change (cost per minute) and graphs of accumulation (total cost).
2	**M.12.8.1**	Understand, select and use, with and without appropriate *technology*, the appropriate units and tools to measure angles, *perimeter*, *area*, *surface area* and *volume* to solve real world problems.
2, 3	**M.12.8.2**	Describe and apply equivalent measures using a variety of units within the same system of measurement.
1, 4	**DAP.14.8.1**	Design and conduct investigations which include • adequate number of trials • unbiased sampling • accurate measurement • record-keeping
1, 2, 3, 4	**DAP.14.8.2**	Explain which types of display are appropriate for various data sets (*scatter plot* for relationship between two variants and *line of best fit*).
All lessons	**DAP.14.8.3**	Interpret or solve real world problems using data from charts, *line plots, stem-and leaf plots, double-bar graphs, line*

		graphs, box-and whisker plots, scatter plots, frequency tables or double line graphs.
All lessons	**DAP.16.8.1**	Use observations about differences between sets of data to make *conjectures* about the populations from which the data was taken.
Arkansas English Language Arts Standards: Grades 6 – 8		
Grade 6		
Lesson	**Standard**	**Descriptor**
All lessons	**OV.1.6.1**	Develop vocabulary from content area texts and personal reading.
All lessons	**OV.1.6.2**	Use standard English in classroom discussion.
All lessons	**OV.1.6.3**	Use appropriate oral communication for various purposes and audiences.
All lessons	**OV.1.6.6**	Contribute appropriately to class discussion.
3, 4	**OV.1.6.7**	Deliver oral *presentation*s using standard English, appropriate vocabulary, and organization.
All lessons	**OV.2.6.1**	Demonstrate effective listening skills by exhibiting appropriate body language.
All lessons	**OV.2.6.2**	Establish purpose for listening.
All lessons	**OV.2.6.3**	Listen attentively for main ideas and detail.
All lessons	**OV.3.6.1**	View a variety of media (e.g., posters, film clips, periodicals, charts, cartoons, graphs, statistics, etc.) to enhance and show understanding of a specific topic.
1, 2, 3, 4	**OV.3.6.3**	Create *visual aids* that convey information.
All lessons	**W.4.6.3**	Demonstrate an awareness of purpose and audience for all modes of written *discourse.*
All lessons	**W.4.6.6**	Organize *expository* paragraphs that include a topic sentence, supporting details, and a concluding sentence.
All lessons	**W.5.6.1**	Write to describe, to inform, to entertain, to explain, and to persuade.
All lessons	**W.5.6.2**	Select the form of writing that addresses the intended audience.
All lessons	**W.5.6.3**	Create *expository*, narrative, descriptive, and persuasive writings.
1, 3, 4	**W.5.6.5**	Write research reports using a variety of sources, summarizing, and paraphrasing.
All lessons	**W.5.6.10**	Write across the curriculum.
All lessons	**W.6.6.2**	Use different *kinds of sentences* • Declarative • Interrogative • Imperative • Exclamatory
All lessons	**W.6.6.8**	Apply correct spelling to commonly misspelled words.
All lessons	**R.9.6.1**	Use previewing, activating prior knowledge, predicting content of text, formulating questions, and establishing purposes for reading.

All lessons	**R.9.6.2**	Analyze the interrelationships of text and world issues/events by applying connection strategies.
All lessons	**R.9.6.6**	Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text.
All lessons	**R.9.6.10**	Distinguish among facts and inferences supported by evidence and opinions in text.
All lessons	**R.9.6.11**	Use text information and background knowledge to draw conclusions and to make inferences (e.g., theme, etc.).
All lessons	**R.9.6.18**	Summarize the content of a text.
All lessons	**R.9.6.20**	Evaluate personal, social, and political issues as presented in text.
All lessons	**R.10.6.13**	Read and utilize functional/*practical text*s, including advertisements, slogans, brochures, and timelines.
All lessons	**R.11.6.6**	Use resources to determine meaning of technical and specialized vocabulary.
1, 3, 4	**IR.12.6.1**	Generate questions to explore and select a specific topic for research.
All lessons	**IR.12.6.3**	Use print and electronic sources, including computer databases, to locate information.
All lessons	**IR.12.6.5**	Interpret information from graphic sources.
1, 3, 4, 5	**IR.12.6.8**	Use research to create one or more oral, written, or visual *presentation*s /products.
Grade 7		
Lesson	**Standard**	**Descriptor**
All lessons	**OV.1.7.1**	Use vocabulary from content area texts and personal reading.
All lessons	**OV.1.7.2**	Use standard English in classroom discussion and *presentation*s.
All lessons	**OV.1.7.3**	Speak for and to various purposes and audiences.
All lessons	**OV.1.7.6**	Contribute appropriately to class discussion.
3, 4	**OV.1.7.7**	Deliver oral *presentation*s using standard English, appropriate vocabulary, examples and/or analogies.
All lessons	**OV.2.7.1**	Demonstrate effective listening skills by exhibiting appropriate body language.
All lessons	**OV.2.7.2**	Establish purpose for listening.
All lessons	**OV.2.7.3**	Listen attentively for mail ideas, details, and organization.
All lessons	**OV.3.7.1**	View a variety of visually presented materials for understanding of a specific topic.
All lessons	**W.4.7.3**	Determine a focus and an *organizational structure* based on purpose, audience, length, and required format for *expository*, narrative, and descriptive writing
All lessons	**W.5.7.1**	Write to develop narrative, *expository*, descriptive, and persuasive pieces.
All lessons	**W.5.7.2**	Select the form of writing that addresses the intended audience.
All lessons	**W.5.7.3**	Create *expository*, narrative, descriptive, and persuasive writings.
1, 3, 4	**W.5.7.5**	Write research reports and document sources, summarizing, and paraphrasing.
All lessons	**W.5.7.10**	Write across the curriculum.
All lessons	**W.6.7.1**	Vary sentence structure by using simple, compound, and complex sentences and different *kinds of sentences*

		• Declarative • Interrogative • Imperative • Exclamatory
All lessons	**W.6.7.7**	Spell words correctly in all writing.
All lessons	**R.9.7.1**	Use previewing, activating prior knowledge, predicting content of text, formulating questions, and establishing purposes for reading.
All lessons	**R.9.7.2**	Analyze the interrelationships of text and world issues/events by applying connection strategies.
All lessons	**R.9.7.6**	Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text.
All lessons	**R.9.7.19**	Evaluate personal, social, and political issues as presented in text.
All lessons	**R.10.7.11**	Read and utilize functional/*practical text*s, including forms, reports, cover letters, letterheads, and business letters.
All lessons	**R.11.7.6**	Use resources to determine meaning of technical and specialized vocabulary.
1, 3, 4	**IR.12.7.1**	Formulate original questions to select a topic for research.
All lessons	**IR.12.7.3**	Use print and electronic sources, such as card catalogs and computer databases, to locate information.
All lessons	**IR.12.7.6**	Use information presented in graphic sources to draw conclusions.
1, 3, 4, 5	**IR.12.7.9**	Use research to create one or more oral, written, or visual *presentation*s /products.
Grade 8		
Lesson	**Standard**	**Descriptor**
All lessons	**OV.1.8.1**	Use vocabulary from content area texts and reading/literature.
All lessons	**OV.1.8.2**	Use standard English in classroom discussion and *presentation*s.
All lessons	**OV.1.8.3**	Speak for and to various purposes and audiences.
All lessons	**OV.1.8.6**	Contribute appropriately to class discussion.
3, 4	**OV.1.8.7**	Deliver oral *presentation*s using available technology.
All lessons	**OV.2.8.1**	Demonstrate effective listening skills by exhibiting appropriate body language.
All lessons	**OV.2.8.2**	Establish purpose for listening
All lessons	**OV.2.8.3**	Listen attentively to summarize.
All lessons	**OV.3.8.1**	View a variety of visually presented materials for understanding of a specific topic.
All lessons	**W.4.8.1**	Self select and apply an appropriate prewriting strategy for a variety of writing purposes across the curriculum, with emphasis on interviewing, note-taking, and gathering data.
All lessons	**W.4.8.3**	Select a focus and an *organizational structure* based on purpose, audience, length, and required format for *expository*, narrative, descriptive, and persuasive writing.
All lessons	**W.5.8.1**	Develop multiple works in a variety of modes of *discourse*.

All lessons	**W.5.8.2**	Select the form of writing that addresses the intended audience.
All lessons	**W.5.8.3**	Create *expository*, narrative, descriptive, and persuasive writings.
1, 3, 4	**W.5.8.5**	Write research reports that include a thesis and use a variety of sources.
All lessons	**W.5.8.10**	Write across the curriculum.
All lessons	**W.6.8.1**	Vary sentence structure by using simple, compound, and complex sentences and different *kinds of sentences* • Declarative • Interrogative • Imperative • Exclamatory
All lessons	**W.6.8.7**	Spell words correctly in all writing.
All lessons	**R.9.8.1**	Use previewing, activating prior knowledge, predicting content of text, formulating questions, and establishing purposes for reading.
All lessons	**R.9.8.2**	Analyze the interrelationships of text and world issues/events by applying connection strategies.
All lessons	**R.9.8.6**	Connect own background knowledge and personal experience to make inferences and to respond to new information presented in text.
5	**R.9.8.20**	Synthesize information from multiple texts and provide evidence to support.
All lessons	**R.9.8.22**	Evaluate personal, social, and political issues as presented in text.
All lessons	**R.10.8.12**	Read and utilize functional/*practical text*s, including manuals, memos, job applications, and career guides.
All lessons	**R.11.8.6**	Use resources to determine meaning of technical and specialized vocabulary.
1, 3, 4	**IR.12.8.1**	Formulate original questions to explain and select a topic for research.
All lessons	**IR.12.8.3**	Use print and electronic sources independently to locate information.
1, 3, 4	**IR.12.8.6**	Create visual graphics to interpret information.
1, 3, 4, 5	**IR.12.8.9**	Use research to create one or more oral, written, or visual *presentation*s /products.

Arkansas Physical Education and Health Standards: Grades 6 – 8

Grade 6

Lesson	Standard	Descriptor
All lessons	**PEL.2.6.4**	Compare caloric intake versus caloric expenditure to promote a proper level of fitness (e.g., daily food log, caloric intake calculator, caloric expenditure calculator).
All lessons	**PEL.3.6.1**	Compare and contrast various levels of health related fitness (e.g., low resting heart rate vs. high resting heart rate, high body fat percentage vs. low body fat percentage, strong bones vs. osteoporosis).
All lessons	**HW.6.6.2**	Identify risky behaviors that increase the possibility of developing diseases.
2, 3	**HW.7.6.3**	Examine how the media/advertising portrays body image.

2, 3, 4	**HW.11.6.2**	Recognize and examine factors that contribute to personal eating behaviors (e.g., hunger versus appetite, stress, environment, family/culture, media, and peers).
Grade 7		
Lesson	**Standard**	**Descriptor**
3, 4, 5	**HW.6.7.1**	Compare and contrast *communicable* and *non-communicable diseases.*
2, 3, 4, 5	**HW.6.7.2**	Identify ways individuals can reduce risk factors related to *communicable* and *chronic diseases* (e.g., Hand-washing protocols, healthy eating, maintain healthy weight, regular exercise).
2, 3, 4, 5	**HW.11.7.1**	Identify factors that influence food choices: time, cost/availability, culture, location, peers, media, family, and body image.
3, 5	**HW.11.7.2**	Discuss a personal eating plan and physical activity schedule for weight management (e.g., caloric intake versus caloric expenditure).
3, 5	**HW.11.7.3**	Explain how nutrients affect risk factors for the following four common *chronic disease*s: cancer, cardiovascular disease, osteoporosis, and type II diabetes.
Grade 8		
Lesson	**Standard**	**Descriptor**
5	**PEL.2.8.4**	Choose personal goals that affect *body composition* in nutrition and exercise: nutrition, exercise, and physical activity.
1, 3, 4, 5	**PEL.3.8.1**	Analyze the benefits of participating in regular physical activity to reduce *chronic disease* risks: reduce blood lipids, lower blood pressure, improve weight loss, reduce stress, lessen colon cancer risk, and lessen risk for diabetes.
5	**HW.5.8.1**	Analyze the interaction between the body systems to promote *health* and *wellness* (e.g., obesity's impact on specific body systems).
All lessons	**HW.10.8.2**	Distinguish personal responsibility in making choices affecting individual *health and wellness.*
2, 3, 4	**HW.11.8.1**	Analyze factors that influence food choices: time, cost/availability, culture, location, peers, media, family, and body image.
5	**HW.11.8.2**	Develop a personal eating plan and physical activity schedule for weight management (e.g., caloric intake versus caloric expenditure).
2, 3, 4, 5	**HW.11.8.3**	Analyze how nutrients affect risk factors of the following common *chronic disease*s: cancer, cardiovascular disease, osteoporosis, and type II diabetes.