The Great Grow Along

Instructional Components

Pennsylvania State Standards Targeted

K-2 Band

Subject Area - 3: Science and Technology and Engineering Education
Standard Area - 3.1: Biological Sciences
Organizing Category - 3.1.A: Organisms and Cells
Grade Level - 3.1.K.A: GRADE K

3.1.K.A1: Identify the similarities and differences of living and non-living things.
3.1.K.A3: Observe, compare, and describe stages of life cycles for plants and/or animals.
3.1.K.A5: Observe and describe structures and behaviors of a variety of common animals.
3.1.K.A9: Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

Grade Level - 3.1.1.A: GRADE 1

3.1.1.A1: Categorize living and nonliving things by external characteristics.
3.1.1.A2: Investigate the dependence of living things on the sun's energy, water, food/nutrients, air, living space, and shelter.
3.1.1.A5: Identify and describe plant parts and their function.
3.1.1.A9: Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

Grade Level - 3.1.2.A: GRADE 2

3.1.2.A3: Identify similarities and differences in the life cycles of plants and animals.
3.1.2.A5: Explain how different parts of a plant work together to make the organism function.
3.1.2.A9: Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

Subject Area- Mathematics

Standard Area - 2.3: Measurement and Estimation
Grade Level - 2.3.K: GRADE K

2.3.K.A: Identify similarities and differences in measurement of objects.
2.3.K.B: Use concrete objects as non-standard units to estimate and measure.

Grade Level - 2.3.1: GRADE 1

2.3.1.A: Demonstrate that a single object has attributes that can be measured.
2.3.1.B: Use concrete objects to measure length by repeating and the number of nonstandard or standard units.

Grade Level - 2.3.2: GRADE 2

2.3.2.A: Demonstrate that a single object has different attributes that can be measured in multiple ways.
2.3.2.B: Use tools to estimate and measure in standard units.
2.3.2.F: Estimate and verify measurements of length, weight, and capacity.

3-5 Band

Subject Area – 3: Science and Technology and Engineering Education

Standard Area - 3.1: Biological Sciences
Grade Level - 3.1.3.A: GRADE 3

Standard - 3.1.3.A1: Describe characteristics of living things that help to identify and classify them.
Assessment Anchor - S3.A.1: Reasoning and Analysis
Anchor Descriptor - S3.A.1.1: Identify the applications of scientific, environmental, or technological knowledge to possible solutions to problems.
S3.A.1.1.1: Distinguish between fact and opinion.

Assessment Anchor - S3.A.2: Processes, Procedures, and Tools of Scientific Investigations
Anchor Descriptor - S3.A.2.1: Apply skills necessary to conduct an experiment or design a solution to solve a problem.
S3.A.2.1.1: Generate questions about objects, organisms, or events that can be answered through scientific investigations.
S3.A.2.1.2: Make predictions based on observations.
S3.A.2.1.3: Identify the variables in a simple investigation.
Anchor Descriptor - S3.A.2.2: Identify appropriate instruments for a specific task.
S3.A.2.2.1: Identify appropriate tools or instruments for specific tasks, and describe the information they provide (i.e., measuring [length—ruler; mass— balance scale] and making observations [hand lenses—very small objects]).

Subject Area - Family and Consumer Science

Standard Area -11.3: Food Science and Nutrition
Grade Level 11.3.3: GRADE 3

11.3.3.C: Explain the importance of eating a varied diet in maintaining health.
11.3.3.D: Classify foods by food group within the food guide pyramid including the serving size and nutrient function within the body.
11.3.3.E: Define energy-yielding nutrients and calories.

Subject Area – Mathematics

Grade Level- GRADE 3

Standard - 2.3.3.B: Identify a measurable characteristic of an object, select an appropriate standard or non-standard unit of measure and tool, and determine the measurement to a specified level of accuracy.
Assessment Anchor - M3.B.2: Apply appropriate techniques, tools and formulas to determine measurements.
Anchor Descriptor - M3.B.2.1: Determine the measurement of objects with non-standard and standard units.
M3.B.2.1.1: Use a ruler (provided) to measure to the nearest ½ inch.

Standard - 2.3.3.D: Identify equivalent measurements within the same system.
Anchor Descriptor - M3.B.1.2: Use the attributes of length, area, volume and weight of objects.
M3.B.1.2.1: Select an appropriate unit for the attribute being measured.
M3.B.1.2.2: Compare and/or order objects according to length, area, or weight.

Grade Level- GRADE 4

Standard - 2.3.4.B: Select and use appropriate tools and units for measuring quantities (e.g., length, time, weight, temperature).
Assessment Anchor - M4.B.2: Apply appropriate techniques, tools and formulas to determine measurements.
Anchor Descriptor - M4.B.2.1: Select and/or use appropriate tools and/or attributes for measuring quantities.
M4.B.2.1.1: Use or read a ruler (provided) to measure to the nearest 1/4 inch or centimeter.

Grade Level - GRADE 5

Standard - 2.3.5.A: Use concrete objects to demonstrate the meaning of measurement quantities (e.g., perimeter, area, weight, capacity).
Standard - 2.3.5.B: Select and use appropriate instruments and units for measuring quantities to a specified level of accuracy.
Assessment Anchor - M5.B.1: Demonstrate an understanding of measurable attributes of objects and figures, and the units, systems and processes of measurement.
Anchor Descriptor - M5.B.1.1: Select appropriate units (customary or metric) to measure specific attributes of objects.
M5.B.1.1.1: Select the appropriate unit for measuring weight (mass), capacity, length, perimeter and area.

6-8 Band

Subject Area – 3: Science and Technology and Engineering Education

Standard Area - 3.1: Biological Sciences
Grade Level - 3.1.3.A: GRADE 6

Standard – 3.1.6.A1: Describe the similarities and differences of major physical characteristics in plants, animals, fungi, protists, and bacteria.
Assessment Anchor – S6.A.1: Reasoning and Analysis
Anchor Descriptor - S6.A.1.1: Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (visuals, scenarios, graphs).
S6.A.1.1.1: Explain how certain questions can be answered through scientific inquiry and/or technological design (e.g., consumer product testing, common usage of simple machines, modern inventions).
S6.A.1.1.2: Use evidence to support inferences and claims about an investigation or relationship (e.g., common usage of simple machines).
S6.A.1.1.3: Predict the outcome of an experiment based on previously collected data.
S6.A.1.2.1: Use evidence, observations, or explanations to make inferences about changes in systems over time.
S6.A.1.2.2: Identify variables that cause changes in natural or human-made systems.
Assessment Anchor – S6.A.2: Processes, Procedures, and Tools of Scientific Investigations
Anchor Descriptor – S6.A.2.1: Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.
S6.A.2.1.1: Use evidence, observations, or a variety of scales to describe relationships.
S6.A.2.1.2: Identify variables that cause changes in natural or human-made systems.
S6.A.2.2.1: Describe ways technology extends and enhances human abilities for specific purposes (e.g., make observations of cells with a microscope and planets with a telescope).
S6.A.3.1.1: Describe a system as a group of related parts with specific roles that work together to achieve an observed result.
S6.A.3.1.2: Explain how components of natural and human-made systems play different roles in a working system.
Anchor Descriptor- S6.A.3.2: Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.
S6.A.3.2.1: Describe how scientists use models to explore relationships and make predictions about natural systems (e.g., weather conditions, the solar system).

Standard – 3.1.6.A9: Understand how theories are developed. Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions. Design and conduct a scientific investigation and understand that current knowledge guides scientific investigations. Describe relationships using inferences and prediction. Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations. Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories. Analyze alternative explanations and understanding that science advances through legitimate skepticism. Use mathematics in all aspects of scientific inquiry. Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.
Assessment Anchor- S6.A.1: Reasoning and Analysis
Anchor Descriptor- S6.A.1.1: Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (visuals, scenarios, graphs).
S6.A.1.1.1: Explain how certain questions can be answered through scientific inquiry and/or technological design (e.g., consumer product testing, common usage of simple machines, modern inventions).
S6.A.1.1.2: Use evidence to support inferences and claims about an investigation or relationship (e.g., common usage of simple machines).
S6.A.1.1.3: Predict the outcome of an experiment based on previously collected data.

Grade Level - GRADE 7

Standard- 3.1.7.A1: Describe the similarities and differences of physical characteristics in diverse organisms.
Assessment Anchor- S7.A.1: Reasoning and Analysis
Anchor Descriptor- S7.A.1.1: Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (visuals, scenarios, graphs).
S7.A.1.1.1: Distinguish between a scientific theory and a general opinion, explaining how a theory is supported with evidence.
S7.A.1.1.2: Develop questions that can be answered through scientific inquiry and/or technological design.
S7.A.1.1.3: Use evidence such as observations or experimental results to support inferences.
S7.A.1.1.4: Use evidence to develop descriptions, explanations, and models.
Anchor Descriptor- S7.A.1.3: Identify and analyze evidence that certain variables may have caused measurable changes in natural or human-made systems.
S7.A.1.3.1: Describe how variables can cause changes in a system over time.
S7.A.1.3.2: Use evidence, observations, or explanations to make inferences about changes in systems over time (e.g., carrying capacity, succession, fossil evidence in the geologic time scale).
Assessment Anchor- S7.A.2: Processes, Procedures, and Tools of Scientific Investigations
Anchor Descriptor – S7.A.2.1: Apply knowledge of scientific investigation or technological design in different contexts to make inferences, solve problems, and/or answer questions.
S7.A.2.1.1: Use evidence from investigations to clearly describe relationships and communicate and support conclusions.
S7.A.2.1.2: Identify a design flaw in a simple technological system and devise possible working solutions.
Anchor Descriptor- S7.A.2.2: Select and safely use appropriate tools and describe the information provided by each tool.
S7.A.2.2.1: Describe the safe and appropriate use of instruments and scales to accurately and safely make measurements under a variety of conditions.
S7.A.2.2.2: Apply measurement systems to record and interpret observations under a variety of conditions.
S7.A.2.2.3: Describe ways technology is used to enhance scientific study and/or human life.

Anchor Descriptor- S7.A.3.2: Apply knowledge of models to make predictions, draw inferences, or explain technological concepts.
S7.A.3.2.1: Make inferences based on scientific models (e.g., charts, graphs, diagrams).
S7.A.3.2.2: Describe how engineers use models to develop new and improved technologies to improve scientific study and/or human life.

Grade Level - GRADE 8

Standard- 3.1.8.A9: Compare and contrast scientific theories. Know that both direct and indirect observations are used by scientists to study the natural world and universe. Identify questions and concepts that guide scientific investigations. Formulate and revise explanations and models using logic and evidence. Recognize and analyze alternative explanations and models. Explain the importance of accuracy and precision in making valid measurements.
Assessment Anchor- S8.A.1: Reasoning and Analysis
Anchor Descriptor- S8.A.1.1: Explain, interpret, and apply scientific, environmental, or technological knowledge presented in a variety of formats (e.g., visuals, scenarios, graphs).
S8.A.1.1.1: Distinguish between a scientific theory and an opinion, explaining how a theory is supported with evidence or how new data/information may change existing theories and practices.
S8.A.1.1.2: Explain how certain questions can be answered through scientific inquiry and/or technological design.
S8.A.1.1.3: Use evidence, such as observations or experimental results, to support inferences about a relationship.
S8.A.1.1.4: Develop descriptions, explanations, predictions, and models using evidence.
Anchor Descriptor- S8.A.1.3: Identify and analyze evidence that certain variables may have caused measureable changes in natural or human-made systems.
S8.A.1.3.1: Use ratio to describe change (e.g., percents, parts per million, grams per cubic centimeter, mechanical advantage).
S8.A.1.3.2: Use evidence, observations, or explanations to make inferences about change in systems over time (e.g., carrying capacity, succession, population dynamics, loss of mass in chemical reactions, indicator fossils in geologic time scale) and the variables affecting these changes.
S8.A.1.3.3: Examine systems changing over time, identifying the possible variables causing this change, and drawing inferences about how these variables affect this change.
Assessment Anchor- S8.A.2: Processes, Procedures, and Tools of Scientific Investigations.
Anchor Descriptor- S8.A.2.1: Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.
S8.A.2.1.1: Use evidence, observations, or a variety of scales (e.g., mass, distance, volume, temperature) to describe relationships.
S8.A.2.1.2: Use space/time relationships, define concepts operationally, raise testable questions, or formulate hypotheses.
S8.A.2.1.3: Design a controlled experiment by specifying how the independent variables will be manipulated, how the dependent variable will be measured, and which variables will be held constant.
S8.A.2.1.4: Interpret data/observations; develop relationships among variables based on data/observations to design models as solutions
S8.A.2.1.5: Use evidence from investigations to clearly communicate and support conclusions.
S8.A.2.1.6: Identify a design flaw in a simple technological system and devise possible working solutions
Anchor Descriptor- S8.A.2.2: Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.

S8.A.2.2.1: Describe the appropriate use of instruments and scales to accurately and safely measure time, mass, distance, volume, or temperature under a variety of conditions.
S8.A.2.2.2: Apply appropriate measurement systems (e.g., time, mass, distance, volume, temperature) to record and interpret observations under varying conditions.
S8.A.2.2.3: Describe ways technology (e.g., microscope, telescope, micrometer, hydraulics, barometer) extends and enhances human abilities for specific purposes.

Subject Area- Family and Consumer Science

Standard Area -11.3: Food Science and Nutrition
Grade Level 11.3.3: GRADE 6

11.3.6.C: Analyze factors that effect food choices.
11.3.6.D: Describe a well-balanced daily menu using the dietary guidelines and the food guide pyramid.
11.3.6.E: Explain the relationship between calories, nutrient and food input versus energy output; describe digestion.

Subject Area- Mathematics

Standard Area - 2.6: Statistics and Data Analysis
Grade Level - 2.6.6: GRADE 6

Standard - 2.6.6.A: Gather data from a variety of appropriate sources.
Standard - 2.6.6.B: Select an appropriate method to organize data; select an appropriate format to display data.
Assessment Anchor - M6.E.1: Formulate questions that can be addressed with data and/or collect, organize, display, and analyze data.
Anchor Descriptor - M6.E.1.1: Interpret data shown in frequency tables, histograms, circle, bar or double bar graphs, line or double line graphs or line plots.
M6.E.1.1.1: Analyze data and/or answer questions pertaining to data represented in frequency tables, circle graphs, double bar graphs, double line graphs or line plots (for circle graphs, no computation with percents).
M6.E.1.1.2: Choose the appropriate representation for a specific set of data (choices should be the same type of graph).
M6.E.1.1.3: Display data in frequency tables, circle graphs, double-bar graphs, double line graphs or line plots using a title, appropriate scale, labels and a key when needed. Circle graphs for open-ended items must show a center point and tic marks.
Assessment Anchor - M8.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
Anchor Descriptor - M8.E.1.1: Choose, display or interpret data (tables, charts, graphs, etc.).
M8.E.1.1.1: Choose and/or explain the correct representation (graph) for a set of data.
M8.E.1.1.2: Analyze data and/or answer questions pertaining to data shown in multiple line graphs, circle graphs or histograms.

Standard - 2.6.6.C: Select and use, as appropriate, the mean, median, mode, and/or range to describe sets of data.
Assessment Anchor - M6.E.2: Select and use appropriate statistical methods to analyze data.

Anchor Descriptor - M6.E.2.1: Describe data sets using mean, median, mode and/or range.
M6.E.2.1.1: Determine/calculate the mean, median, mode and/or range of displayed data (data can be displayed in a table or line plot – use whole numbers only up to 2 digits).
Standard - 2.6.6.D: Use measures of central tendency to compare two sets of data.
Standard - 2.6.6.E: Interpret data displayed in a table, histogram, graph, or data summarized by numerical measures.
Assessment Anchor - M6.E.1: Formulate questions that can be addressed with data and/or collect, organize, display, and analyze data.
Anchor Descriptor - M6.E.1.1: Interpret data shown in frequency tables, histograms, circle, bar or double bar graphs, line or double line graphs or line plots.
M6.E.1.1.1: Analyze data and/or answer questions pertaining to data represented in frequency tables, circle graphs, double bar graphs, double line graphs or line plots (for circle graphs, no computation with percents).
M6.E.1.1.2: Choose the appropriate representation for a specific set of data (choices should be the same type of graph).
M6.E.1.1.3: Display data in frequency tables, circle graphs, double-bar graphs, double line graphs or line plots using a title, appropriate scale, labels and a key when needed. Circle graphs for open-ended items must show a center point and tic marks.
Assessment Anchor - M8.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
Anchor Descriptor - M8.E.1.1: Choose, display or interpret data (tables, charts, graphs, etc.).
M8.E.1.1.1: Choose and/or explain the correct representation (graph) for a set of data.
M8.E.1.1.2: Analyze data and/or answer questions pertaining to data shown in multiple line graphs, circle graphs or histograms.

Grade Level - 2.6.7: GRADE 7

Standard - 2.6.7.A: Identify different ways of selecting a sample and choosing an appropriate sampling technique for a given situation.
Standard - 2.6.7.B: Organize and display data using an appropriate data display, such as circle graphs, histograms, line graphs, double bar graphs, and stem-and-leaf plots, Venn diagrams, tables, and charts.
Assessment Anchor - M7.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
Anchor Descriptor - M7.E.1.1: Interpret data shown in complex data displays.
M7.E.1.1.1: Analyze data and/or answer questions pertaining to data represented in histograms, double bar graphs, multiple line graphs or stem-and-leaf plots.

Standard - 2.6.7.C: Use numerical summaries to describe different sets of data.
Assessment Anchor - M7.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
Anchor Descriptor - M7.E.1.1: Interpret data shown in complex data displays.
M7.E.1.1.1: Analyze data and/or answer questions pertaining to data represented in histograms, double bar graphs, multiple line graphs or stem-and-leaf plots.
Assessment Anchor - M7.E.2: Select and/or use appropriate statistical methods to analyze data.
Anchor Descriptor - M7.E.2.1: Describe, compare and/or contrast data using measures of mean, median, mode or range.
M7.E.2.1.1: Identify/calculate the mean (average), median, mode or range of a set of data.
M7.E.2.1.2: Decide/choose which measure of central tendency (mean, median, mode or range) would be most appropriate for a given situation.

Standard - 2.6.7.D: Use measures of central tendency and spread to compare data sets.
Assessment Anchor - M7.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
Anchor Descriptor - M7.E.1.1: Interpret data shown in complex data displays.
M7.E.1.1.1: Analyze data and/or answer questions pertaining to data represented in histograms, double bar graphs, multiple line graphs or stem-and-leaf plots.
Assessment Anchor - M7.E.2: Select and/or use appropriate statistical methods to analyze data.
Anchor Descriptor - M7.E.2.1: Describe, compare and/or contrast data using measures of mean, median, mode or range.
M7.E.2.1.1: Identify/calculate the mean (average), median, mode or range of a set of data.
M7.E.2.1.2: Decide/choose which measure of central tendency (mean, median, mode or range) would be most appropriate for a given situation.

Standard - 2.6.7.E: Interpret trends and make predictions based on data displayed in a graph.
Assessment Anchor - M7.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
Anchor Descriptor - M7.E.1.1: Interpret data shown in complex data displays.
M7.E.1.1.1: Analyze data and/or answer questions pertaining to data represented in histograms, double bar graphs, multiple line graphs or stem-and-leaf plots.
Assessment Anchor - M7.E.4: Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.
Anchor Descriptor - M7.E.4.1: Draw conclusions and/or make predictions based on data displays.
M7.E.4.1.1: Formulate predictions and/or draw conclusions based on data displays (bar graphs, circle graphs or line graphs) or probability.
Assessment Anchor - M8.E.4: Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.
Anchor Descriptor - M8.E.4.1: Draw conclusions, make inferences and/or evaluate hypotheses based on statistical and data displays.
M8.E.4.1.1: Fit a line to a scatter plot and/or describe any correlation between the two variables (positive, negative, strong, weak or none).
M8.E.4.1.2: Make predictions based on survey results or graphs (bar, line, circle, scatterplots, etc.).

Grade Level - 2.6.8: GRADE 8

Standard - 2.6.8.A: Understand and apply sampling techniques to gather data including simple random sampling and convenience sampling.
Assessment Anchor - M8.E.4: Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.
Anchor Descriptor - M8.E.4.1: Draw conclusions, make inferences and/or evaluate hypotheses based on statistical and data displays.
M8.E.4.1.1: Fit a line to a scatter plot and/or describe any correlation between the two variables (positive, negative, strong, weak or none).
M8.E.4.1.2: Make predictions based on survey results or graphs (bar, line, circle, scatterplots, etc.).

Standard - 2.6.8.B: Organize and display one-variable data using appropriate data display, such as stem-and-leaf and box-and-whisker plots, and two variable data with scatterplots.

Standard - 2.6.8.C: Calculate quartiles for one-variable data and describe the correlation coefficient for two-variable data displayed in a scatterplot.
Assessment Anchor - M8.E.4: Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.
Anchor Descriptor - M8.E.4.1: Draw conclusions, make inferences and/or evaluate hypotheses based on statistical and data displays.
M8.E.4.1.1: Fit a line to a scatter plot and/or describe any correlation between the two variables (positive, negative, strong, weak or none).
M8.E.4.1.2: Make predictions based on survey results or graphs (bar, line, circle, scatterplots, etc.).

9-12 Band

Subject Area – 3: Science and Technology and Engineering Education

Standard Area - 3.1: Biological Sciences
Grade Level - 3.1.3.A: GRADE 10

Standard - 3.4.10.E7: Evaluate structure design as related to function, considering such factors as style, convenience, safety, and efficiency.
Assessment Anchor - S11.A.2: Processes, Procedures, and Tools of Scientific Investigations
Anchor Descriptor - S11.A.2.1: Apply knowledge of scientific investigation or technological design to develop or critique aspects of the experimental or design process.
S11.A.2.1.1: Critique the elements of an experimental design (e.g., raising questions, formulating hypotheses, developing procedures, identifying variables, manipulating variables, interpreting data, and drawing conclusions) applicable to a specific experimental design.
S11.A.2.1.2: Critique the elements of the design process (e.g. identify the problem, understand criteria, create solutions, select solution, test/evaluate, communicate results) applicable to a specific technological design.
S11.A.2.1.3: Use data to make inferences and predictions, or to draw conclusions, demonstrating understanding of experimental limits.
S11.A.2.1.4: Critique the results and conclusions of scientific inquiry for consistency and logic.
S11.A.2.1.5: Communicate results of investigations using multiple representations.
Anchor Descriptor - S11.A.2.2: Evaluate appropriate technologies for a specific purpose, or describe the information the instrument can provide
S11.A.2.2.1: Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality)
S11.A.2.2.2: Explain how technology (e.g., GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.

Subject Area - Family and Consumer Science

Standard Area -11.3: Food Science and Nutrition
Grade Level - 11.3.9: GRADE 9

11.3.9.A: Explain how scientific and technological developments enhance our food supply (e.g., food preservation techniques, packaging, nutrient fortification).

11.3.9.D: Analyze relationship between diet and disease and risk factors (e.g., calcium and osteoporosis; fat, cholesterol and heart disease; folate and birth defects; sodium and hypertension).
11.3.9.E: Analyze the energy requirements, nutrient requirements and body composition for individuals at various stages of the life cycle.

Grade Level - 11.3.12: GRADE 12

11.3.12.B: Evaluate the role of Government agencies in safeguarding our food supply (e.g., USDA, FDA, EPA and CDC).
11.3.12.C: Evaluate sources of food and nutrition information.
11.3.12.D: Critique diet modifications for their ability to improve nutritionally-related health conditions (e.g., diabetes, lactose-intolerance, iron deficiency).
11.3.12.E: Analyze the breakdown of foods, absorption of nutrients and their conversion to energy by the body.
11.3.12.F: Evaluate the application of nutrition and meal planning principles in the selection, planning, preparation and serving of meals that meet the specific nutritional needs of individuals across their lifespan.

Subject Area – Health, Safety, and Physical Education

Standard Area -10.1: Concepts of Health
Grade Level: GRADE 9 and 12

10.1.9.C:
Analyze factors that impact nutritional choices of adolescents.

- body image
- advertising
- dietary guidelines
- eating disorders
- peer influence
- athletic goals

10.1.12.C:
Analyze factors that impact nutritional choices of adults.

- cost
- food preparation (e.g., time, skills)
- consumer skills (e.g., understanding food labels, evaluating fads)
- nutritional knowledge
- changes in nutritional requirements (e.g., age, physical activity level)

Subject Area- Mathematics

Standard Area - 2.6: Statistics and Data Analysis
Grade Level - 2.6.11: GRADE 11

Standard - 2.6.11.A: Design and conduct an experiment using random sampling.

Assessment Anchor - M11.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.
Anchor Descriptor - M11.E.1.1: Appropriately display and/or use data in problem-solving settings.
M11.E.1.1.1: Create and/or use appropriate graphical representations of data, including box-and-whisker plots, stem-and-leaf plots or scatter plots.
M11.E.1.1.2: Analyze data and/or answer questions based on displayed data (box-and-whisker plots, stem-and leaf plots or scatter plots).