| **Science Grade 4**  **The Nature of Science** | **Alignment**  List items by #. Notes go in far right column | | | **Source of Challenge** | **Notes**  List items by # |
| --- | --- | --- | --- | --- | --- |
| **PA**  **DOK** | **Content**  **“F-P” coding** | **DOK**  **“F-P-No” coding** | **Describe Partial or NO Match** |
| **S4.A.1: Reasoning and Analysis** | | | | | |
| **S4.A.1.1.1**  Distinguish between a scientific fact and an opinion, providing clear explanations that connect observations and results (e.g., a scientific fact can be supported by making observations). | 2a, 2b | #  # | #  # |  |  |
| **S4.A.1.1.2**  Identify and describe examples of common technological changes past to present in the community (e.g., energy production, transportation, communications, agriculture, packaging materials) that have either positive or negative impacts on society or the environment. | 2a, 2b | #  # | #  # |  |  |
| **S4.A.1.3.1**  Observe and record change by using time and measurement. | 1f, 1i  2e | #  # | #  # |  |  |
| **S4.A.1.3.2**  Describe relative size, distance, or motion. | 1a, 1b | #  # | #  # |  |  |
| **S4.A.1.3.3**  Observe and describe the change to objects caused by temperature change or light. | 2a, 2i | #  # | #  # |  |  |
| **S4.A.1.3.4**  Explain what happens to a living organism when its food supply, access to water, shelter, or space is changed (e.g., it might die, migrate, change behavior, eat something else). | 2a | #  # | #  # |  |  |
| **A--- Nature of Science Page totals** |  | F  P | F  P  No |  |  |
| **S4.A.1.3.5**  Provide examples, predict, or describe how everyday human activities (e.g., solid waste production, food production and consumption, transportation, water consumption, energy production and use) may change the environment. | 2a, 2b | #  # | #  # |  |  |
| **S4.A.2: Processes, Procedures, and Tools of Scientific Investigations** | | | | | |
| **S4.A.2.1.1**  Generate questions about objects, organisms, or events that can be answered through scientific investigations. | 1a, 1b | #  # | #  # |  |  |
| **S4.A.2.1.2**  Design and describe an investigation (a fair test) to test one variable. | 3e | #  # | #  # |  |  |
| **S4.A.2.1.3**  Observe a natural phenomenon (e.g., weather changes, length of daylight/night, movement of shadows, animal migrations, growth of plants), record observations, and then make a prediction based on those observations. | 2i | #  # | #  # |  |  |
| **S4.A.2.1.4**  State a conclusion that is consistent with the information/data. | 3h | #  # | #  # |  |  |
| **S4.A.2.2.1**  Identify appropriate tools or instruments for specific tasks and describe the information they can provide (e.g., measuring: length - ruler, mass - balance scale, volume - beaker, temperature - thermometer; making observations: hand lens, binoculars, telescope). | 1a, 1b | #  # | #  # |  |  |
| **A--- Nature of Science Page totals** |  | F  P | F  P  No |  |  |
| **S4.A.3: Systems, Models, and Patterns** | | | | |  |
| **S4.A.3.1.1**  Categorize systems as either natural or human-made (e.g., ballpoint pens, simple electrical circuits, plant anatomy, water cycle). | 1a, 1b  2g?? | #  # | #  # |  |  |
| **S4.A.3.1.2**  Explain a relationship between the living  and nonliving components in a system  (e.g., food web, terrarium). | 2a | #  # | #  # |  |  |
| **S4.A.3.1.3**  Categorize the parts of an ecosystem as  either living or nonliving and describe their  roles in the system. | 2g | #  # | #  # |  |  |
| **S4.A.3.1.4**  Identify the parts of the food and fiber  systems as they relate to agricultural  products from the source to the consumer. | 1a, 1b | #  # | #  # |  |  |
| **S4.A.3.2.1**  Identify what different models represent  (e.g., maps show physical features,  directions, distances; globes represent  Earth; drawings of watersheds depict  terrain; dioramas show ecosystems;  concept maps show relationships of ideas). | 1a, 1b, 1e, 1j | #  # | #  # |  |  |
| **S4.A.3.2.2**  Use models to make observations to  explain how systems work (e.g., water  cycle, Sun-Earth-Moon system). | 1a, 1d, 1k  2a | #  # | #  # |  |  |
| **A--- Nature of Science Page totals** |  | F  P | F  P  No |  |  |
| **S4.A.3.2.3**  Use appropriate, simple modeling tools and  techniques to describe or illustrate a system  (e.g., two cans and string to model a  communications system, terrarium to model  an ecosystem). | 1d | #  # | #  # |  |  |
| **S4.A.3.3.1**  Identify and describe observable patterns  (e.g., growth patterns in plants, weather,  water cycle). | 2a, 2e, 2j | #  # | #  # |  |  |
| **S4.A.3.3.2**  Predict future conditions/events based on  observable patterns (e.g., day/night,  seasons, sunrise/sunset, lunar phases). | 1a, 1b  2a, 2i | #  # | #  # |  |  |
| **Items related to Content Strand A Nature of Science but NO Match** | | #  # |  |  |  |
| **A--- Nature of Science Page totals** | | F  P | F  P  No |  |  |

| **Science Grade 4**  **Biological Sciences** | **Alignment**  List items by #. Notes go in far right column. | | | **Source of Challenge** | **Notes**  List items by # |
| --- | --- | --- | --- | --- | --- |
| **PA**  **DOK** | **Content**  **“F-P” coding** | **DOK**  **“F-P-No” coding** | **Describe Partial or NO Match** |
| **S4.B.1: Structure and Function of Organisms** | | | | | |
| **S4.B.1.1.1**  Identify life processes of living things (e.g., growth, digestion, respiration). | 1a, 1b | #  # | #  # |  |  | |
| **S4.B.1.1.2**  Compare similar functions of external characteristics of organisms (e.g., anatomical characteristics: appendages, type of covering, body segments). | 2a, 2h | #  # | #  # |  |  | |
| **S4.B.1.1.3**  Describe basic needs of plants and animals (e.g., air, water, food). | 1a, 1b | #  # | #  # |  |  | |
| **S4.B.1.1.4**  Describe how different parts of a living thing work together to provide what the organism needs (e.g., parts of plants: roots, stems, leaves). | 1a, 1b  2a | #  # | #  # |  |  | |
| **S4.B.1.1.5**  Describe the life cycles of different organisms (e.g., moth, grasshopper, frog, seed-producing plant). | 1a, 1b, 1d | #  # |  |  |  | |
| **S4.B.2: Continuity of Life** | | | | | |
| **S4.B.2.1.1**  Identify characteristics for plant and animal survival in different environments (e.g., wetland, tundra, desert, prairie, deep ocean, forest). | 2a, 2b | #  # | #  # |  |  | |
| **S4.B.2.1.2**  Explain how specific adaptations can help a living organism survive (e.g., protective coloration, mimicry, leaf sizes and shapes, ability to catch or retain water). | 2a, 2b | #  # | #  # |  |  | |
| **B--- Biological Sciences Page totals** |  | F  P | F  P |  |  | |
| **S4.B.2.2.1**  Identify physical characteristics (e.g., height, hair color, eye color, attached earlobes, ability to roll tongue) that appear in both parents and could be passed on to offspring. | 1a, 1b, 1d | #  # | #  # |  |  | |
| S4.B.3: Ecological Behavior and Systems | | | | | | |
| **S4.B.3.1.1**  Describe the living and nonliving components of a local ecosystem (e.g., lentic and lotic systems, forest, cornfield, grasslands, city park, playground). | 2b, 2g | #  # | #  # |  |  | |
| **S4.B.3.1.2**  Describe interactions between living and nonliving components (e.g. plants – water, soil, sunlight, carbon dioxide, temperature; animals – food, water, shelter, oxygen, temperature) of a local ecosystem. | 1a, 1b  2a | #  # | #  # |  |  | |
| **S4.B.3.2.1**  Describe what happens to a living thing when its habitat is changed. | 1a, 1b  2a | #  # | #  # |  |  | |
| **S4.B.3.2.2**  Describe and predict how changes in the environment (e.g., fire, pollution, flood, building dams) can affect systems. | 2a, 2i | #  # | #  # |  |  | |
| **S4.B.3.2.3**  Explain and predict how changes in seasons affect plants, animals, or daily human life (e.g., food availability, shelter, mobility). | 2a, 2i | #  # | #  # |  |  | |
| **B--- Biological Sciences Page totals** |  | F  P | F  P  No |  |  | |
| **S4.B.3.3.1**  Identify everyday human activities (e.g., driving, washing, eating, manufacturing, farming) within a community that depend on the natural environment. | 1a, 1b | #  # | #  # |  |  | |
| **S4.B.3.3.2**  Describe the human dependence on the food and fiber systems from production to consumption (e.g., food, clothing, shelter, products). | 1a, 1b, 1d | #  # | #  # |  |  | |
| **S4.B.3.3.3**  Identify biological pests (e.g., fungi – molds, plants – foxtail, purple loosestrife, Eurasian water milfoil; animals – aphides, ticks, zebra mussels, starlings, mice) that compete with humans for resources. | 1a, 1b, 1d | #  # | #  # |  |  | |
| **S4.B.3.3.4**  Identify major land uses in the urban, suburban and rural communities (e.g., housing, commercial, recreation). | 1a, 1b | #  # | #  # |  |  | |
| **S4.B.3.3.5**  Describe the effects of pollution (e.g., litter) in the community. | 2a | #  # | #  # |  |  | |
| **Items related to Content Strand B - Biological Sciences but NO Match** | | #  # |  |  |  | |
| **B--- Biological Sciences Page totals** | | F  P | F  P  No |  |  | |

| **Science Grade 4**  **Physical Sciences** | **Alignment**  List items by #. Notes go in far right column. | | | **Source of Challenge** | **Notes**  List items by # |
| --- | --- | --- | --- | --- | --- |
| **PA**  **DOK** | **Content**  **“F-P” coding** | **DOK**  **“F-P-No” coding** | **Describe Partial or NO Match** |
| S4.C.1: Structure, Properties, and Interaction of Matter and Energy | | | | | |
| **S4.C.1.1.1**  Use physical properties [e.g., mass, shape, size, volume, color, texture, magnetism, state (i.e., solid, liquid, and gas), conductivity (i.e., electrical and heat)] to describe matter. | 1a, 1b | #  # | #  # |  |  | |
| **S4.C.1.1.2**  Categorize/group objects using physical characteristics. | 2g, 2i | #  # | #  # |  |  | |
| **S4.C.2: Forms, Sources, Conversion, and Transfer of** **Energy** | | | | | |
| **S4.C.2.1.1**  Identify energy forms, energy transfer, and energy examples (e.g., light, heat, electrical). | 1a, 1b | #  # | #  # |  |  | |
| **S4.C.2.1.2**  Describe the flow of energy through an  object or system (e.g., feeling radiant heat  from a light bulb, eating food to get energy,  using a battery to light a bulb or run a fan). | 1d | #  # | #  # |  |  | |
| **S4.C.2.1.3**  Recognize or illustrate simple direct current series and parallel circuits composed of batteries, light bulbs (or other common loads), wire, and on/off switches. | 1a, 1b, 1d | #  # | #  # |  |  | |
| **S4.C.2.1.4**  Identify characteristics of sound (e.g., pitch, loudness, reflection). | 1a, 1b | #  # | #  # |  |  | |
| **C---- Physical Sciences Page totals** |  | F  P | F  P  No |  |  | |
| S4.C.3: Principles of Motion and Force | | | | | | |
| S4.C.3.1.1Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction). | 1a, 1b  2a | #  # | #  # |  |  | |
| S4.C.3.1.2 Compare the relative movement of objects or describe types of motion that are evident (e.g., bouncing ball, moving in a straight line, back and forth, merry-go-round). | 2a, 2i, 2h | #  # | #  # |  |  | |
| **S4.C.3.1.3**  Describe the position of an object by locating it relative to another object or a stationary background (e.g., geographic direction, left, up). | 1k  2i | #  # | #  # |  |  | |
| **Items related to Content Strand C - Physical Sciences but NO Match** | | #  # |  |  |  | |
| **C---- Physical Sciences Page totals** | | F  P | F  P  No |  |  | |

| **Science Grade 4**  **Earth and Space Sciences** | **Alignment**  List items by #. Notes go in far right column. | | | **Source of Challenge** | **Notes**  List items by # |
| --- | --- | --- | --- | --- | --- |
| **PA**  **DOK** | **Content**  **“F-P” coding** | **DOK**  **“F-P-No” coding** | **Describe Partial or NO Match** |
| **S4.D.1: Earth Features and Processes that Change Earth** **and Its Resources** | | | | | |
| **S4.D.1.1.1**  Describe how prominent Earth features in Pennsylvania (e.g., mountains, valleys, caves, sinkholes, lakes, rivers) were formed. | 1a, 1b, 1d | #  # | #  # |  |  | |
| **S4.D.1.1.2**  Identify various Earth structures (e.g., mountains, watersheds, peninsulas, lakes, rivers, valleys) through the use of models. | 1a, 1d, 1k | #  # | #  # |  |  | |
| **S4.D.1.1.3**  Describe the composition of soil as weathered rock and decomposed organic remains. | 1a, 1b | #  # | #  # |  |  | |
| **S4.D.1.2.1**  Identify products and by-products of plants and animals for human use (e.g., food, clothing, building materials, paper products). | 1a, 1b | #  # | #  # |  |  | |
| **S4.D.1.2.2**  Identify the types and uses of Earth materials for renewable, nonrenewable, and reusable products (e.g., human-made products: concrete, paper, plastics, fabrics). | 2b | #  # | #  # |  |  | |
| **S4.D.1.2.3**  Recognize ways that humans benefit from the use of water resources (e.g., agriculture, energy, recreation), | 1a, 1b | #  # | #  # |  |  | |
| **S4.D.1.3.1**  Describe types of freshwater and saltwater bodies (e.g., lakes, rivers, wetlands, oceans). | 1a, 1b | #  # | #  # |  |  | |
| **D--- Earth /Space Sciences Page Totals** |  | F  P | F  P  No |  |  | |
| **S4.D.1.3.2**  Explain how water goes through phase changes (i.e., evaporation, condensation, freezing, and melting). | 1a, 1b, 1d | #  # | #  # |  |  | |
| **S4.D.1.3.3**  Describe or compare lentic systems (i.e., ponds, lakes, and bays) and lotic systems (i.e., streams, creeks, and rivers). | 1a, 1b  2b, 2h | #  # | #  # |  |  | |
| **S4.D.1.3.4**  Explain the role and relationship of a watershed or a wetland on water sources (e.g., water storage, groundwater recharge, water filtration, water source, water cycle). | 1a, 1b  2a | #  # | #  # |  |  | |
| S4.D.2: Weather, Climate, and Atmospheric Processes | | | | | |
| **S4.D.2.1.1**  Identify basic cloud types (i.e., cirrus, cumulus, stratus, and cumulonimbus) and make connections to basic elements of weather (e.g., changes in temperature, precipitation). | 1a, 1b  2a | #  # | #  # |  |  | |
| **S4.D.2.1.2**  Identify weather patterns from data charts or graphs of the data (e.g., temperature, wind direction, wind speed, cloud types, precipitation). | 2e, 2j | #  # | #  # |  |  | |
| **S4.D.2.1.3**  Identify appropriate instruments (i.e., thermometer, rain gauge, weather vane, anemometer, and barometer) to study weather and what they measure. | 1a, 1b | #  # | #  # |  |  | |
| **D--- Earth/ Space Sciences Page Totals** |  | F  P | F  P  No |  |  | |
| **S4.D.3: Composition and Structure of the Universe** | | | | | | |
| **S4.D.3.1.1**  Describe motions of the Sun - Earth - Moon system. | 1a, 1b, 1d | #  # | #  # |  |  | |
| **S4.D.3.1.2**  Explain how the motion of the Sun - Earth - Moon system relates to time (e.g., days, months, years). | 2a | #  # | #  # |  |  | |
| **S4.D.3.1.3**  Describe the causes of seasonal change as they relate to the revolution of Earth and the tilt of Earth’s axis | 2a | #  # | #  # |  |  | |
| **Related to Content Strand D but NO Match** | | #  # |  |  |  | |
| **D--- Earth and Space Sciences Page Totals** | | F  P | F  P  No |  |  | |