Test Specifications Appendix 1.3

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Introduction

The *Pennsylvania Alternate System of Assessment* (*PASA*) is a statewide alternate assessment designed for students with the most significant cognitive disabilities. It is administered on a one-to-one basis to students who are unable to participate in the *Pennsylvania System of School Assessment* (*PSSA*) as determined by their Individualized Education Plan (IEP). Administration of the *PASA* achieves compliance with several federal laws and Pennsylvania School Code. The *PASA-Science* is part of the *PASA* and is designed to assess science content knowledge.

This *Test Specifications* document provides a reference for test developers to help build tests which remain consistent across years. This reference provides a blueprint for the number of skills per assessment anchor and clarifications or restrictions for how skills should be written for the tests. It is not intended to inform instruction other than to outline the academic content prioritized for this student population. Teachers are still responsible for providing instruction across the entire range of grade level eligible content to the fullest appropriate extent.

Purpose

Administration of the *PASA* serves 3 main purposes, it:

1. Keeps the state in compliance with federal laws and state codes requiring all students to be part of the statewide accountability system,
2. Promotes access to the general education curriculum for students with the most significant cognitive disabilities,
3. Provides evidence of progress by students with the most significant cognitive disabilities toward proficiency in state academic content standards in science to relevant stakeholders.

Content

The *PASA-Science* is administered to students in grades 4, 8, and 11 and is aligned to the appropriate grade level Pennsylvania academic content standards in science through the Alternate Eligible Content in science. The Alternate Eligible Content in science represent a reduction in breadth, depth, and/or level of complexity in the associated grade level standards. This supports increased access to the general education curriculum at an entry point appropriate for this student population.

The Alternate Eligible Content was developed by a team of university faculty, special education teachers, science teachers, science content experts, and experts in the field of special education. Alternate Eligible Content were designed to specify essential learning outcomes in science and conceive a population-appropriate learning progression across grade levels. A separate document entitled *Understanding the Alternate Eligible Content* is available which outlines the Alternate Eligible Content and the overall sequence of the framework.

Test Levels

Students with significant cognitive disabilities are a diverse population with a range in level of communication, level of independence, and ability to function at an abstract level. Many researchers believe that this diversity requires more than one level of test to fairly accommodate the wide range of abilities. For this reason, two tests are constructed per grade level; a Tier 1 test and a Tier 2 test.

Tier 1

Tier 1 tasks are predominately basic recall and application tasks, whether targeting concrete or abstract concepts requiring a limited degree of discrimination. Stimuli for item contexts and answer choices for these items tend to be simple and present only one picture for each. At this level, abstract refers mostly to the association of simple, basic scientific terminology with iconic exemplars that students are most likely to encounter in their everyday life or during classroom instruction. Items also are almost exclusively 1-step problems. Some basic application tasks targeting a concrete concept can be Tier 1 tasks as long as the distractors are unrelated to the correct answer (i.e., low degree of discrimination).

Tier 2

Tier 2 tasks are predominately application and strategic thinking problems. The tasks also require a higher level of discrimination in that stimuli for item contexts and answer choices can be complex pictures of places and groups of objects. Demonstrated understanding of more sophisticated scientific vocabulary is expected and most tasks will involve some 2-step processes. Tasks involving the application of concrete concepts should require a complex degree of discrimination and involve more than 1-step in order to be considered a Tier 2 item.

Table 1. PASA-Science tier descriptions

Materials are not provided by *PASA* for science tasks. However, it is highly recommended that assessors encourage students to use materials that are regularly used during science instruction to maintain consistency between the assessment environment and the instructional environment. As with other *PASA* assessments, changing everyday language and using consistent and necessary supports is encouraged as long as care is taken to ensure that the correct answer is not 'given away' during the administration of any item.	
Tier 1	**Tier 2**
Tasks are predominately basic recall tasks targeting both concrete and abstract concepts. However, basic application tasks are appropriate. Picture support is used for all tasks. Images used require a lower level of discrimination in that they tend to be simple and present only one or two objects for each choice. At this level, basic scientific terminology with iconic exemplars that students are most likely to encounter in a science class is used. Tasks mostly involve 1-step processes.	Tasks are predominately application and strategic thinking problems targeting both concrete and abstract concepts. Picture support is used for all tasks. Images used require a higher level of discrimination in that pictures can be more complex pictures of places, scenes, and groups of objects. For some tasks, more sophisticated scientific vocabulary is used. Tasks may involve 2-step processes.

General Performance Descriptions

The *PASA* assessment reports results in terms of 4 performance categories for both tiers; Emerging, Novice, Proficient, and Advanced. General outlines for each of the performance categories that guide test development are listed in the following paragraphs.

Advanced

Using their primary mode of communication, appropriate supports and accommodations, the student demonstrates a consistent academic awareness and excellent understanding of the knowledge, skills and process as outlined by the Pennsylvania Alternate Eligible Content and tier designation.

Proficient

Using their primary mode of communication, appropriate supports and accommodations, the student demonstrates an essential academic awareness and satisfactory understanding of the knowledge, skills and process as outlined by the Pennsylvania Alternate Eligible Content and tier designation.

Novice

Using their primary mode of communication, appropriate supports and accommodations, the student demonstrates an improving academic awareness and partial understanding of the knowledge, skills and process as outlined by the Pennsylvania Alternate Eligible Content and tier designation.

Emerging

Using their primary mode of communication, appropriate supports and accommodations, the student demonstrates a preliminary academic awareness and limited understanding of the knowledge, skills and process as outlined by the Pennsylvania Alternate Eligible Content and tier designation.

Test Item Format

The *PASA-Science* is an individually administered multiple-choice test. Each item consists of a context, an item prompt, and 3 answer choices. The items are standardized through the scripting of each part of the item. Test assessors are given a script which specifies what to say to; 1) present the item context, 2) ask the target question, 3) present the answer choices. Assessors are permitted to change everyday language in the item to vocabulary more familiar to the student and consistent with daily instruction.

Item stimuli and answer choices are predominately presented as images. In some cases, picture answer choices are accompanied by cue words. Even though the test is available in both digital and paper format, both formats present the same 2-dimensional images. In other words, the same

graphics are displayed on a computer screen or in print in a test booklet and the student chooses their answer from the available pictures. At this time, students do NOT interact with the computer to respond to items.

Student Responses

Students with the most severe cognitive disabilities do not communicate necessarily in traditional ways. On the *PASA-Science* assessment, students are allowed to indicate their answer choice in different ways, including but not limited to:

- saying/signing the letter associated with their choice,
- saying/signing a word or words associated with their choice,
- pointing to their answer choice,
- touching the picture of their answer choice,
- gazing at their answer choice,
- nodding their head or gesturing in some other way at their answer choice

Scoring

The assessor enters student responses for each *PASA-Science* item directly into the *PASA-Digital* system. Assessors record a student's response to an item by entering the letter that matches the answer choice indicated by the student into the computer before moving on to the next item. Student responses consist of a letter that corresponds to the answer choice indicated by the student during the assessment or a 'no response' option for students who did not respond to a particular prompt. After the test administration closes, student responses are assigned a score of correct or incorrect for scoring or scaling.

Test Design

Each year two tests, a Tier 1 and a Tier 2, are administered per grade level for a total of 6 operational tests. Each operational administration of the *PASA-Science* consists of 34 multiple-choice items; 30 operational items and 4 field test items. Only the 30 operational items count toward a student's total score on the test and the items are the same for all students taking the tests. Twelve of the operational items form a placement test and are given at the beginning of the test administration to determine the tier test for which the student will take items for the remainder of the administration.

Of the 12 placement test items, 6 are Tier 1 questions and 6 are Tier 2 questions. The 12 placement test items are representative of the range of difficulty across both tier tests. Cut scores were determined based on empirical study of item functioning over 3 years and simulation studies design to help minimize false negative placement into Tier 2. Of the remaining test items

counting toward a student's score, approximately half will be 'easy' items from the designated tier and the other half will be 'difficult' items from the designated tier. This will help to ensure differentiation among students across their respective 'ability' continuum.

The tables below present outlines by grade level of the number of skills that can be expected by Reporting Category and Assessment Anchor.

Table 2. Grade 4 Test Specifications

Grade 4 Reporting Category and Assessment Anchor	Number of Alternate Eligible Content	Number of Skills
A. The Nature of Science	7	6-8
A.1. Reason and Analysis	2	1-2
A.2. Processes, Procedures and Tools of Scientific Investigation	3	3-4
A.3. Systems, Models and Patterns	2	2
B. Biological Sciences	7	11
B.1. Structure and Function of Organisms	3	4
B.2. Continuity of Life	1	2
B.3. Ecological Behavior and Systems	3	5
C. Physical Sciences	4	5
C.1. Structure, Properties and Interactions of Matter and Energy	2	3
C.3. Principles of Motion and Force	2	2
D. Earth and Space Sciences	5	7-8
D.1. Earth Features and Processes that change Earth and Its Resources	3	5
D.2. Weather, Climate and Atmospheric Processes	2	2-3

Table 3. Grade 8 Test Specifications

Grade 8 Reporting Category and Assessment Anchor	Number of Alternate Eligible Content	Number of Skills
A. The Nature of Science		10
A.1. Reason and Analysis	1	1
A.2. Processes, Procedures and Tools of Scientific Investigation	3	4
A.3. Systems, Models and Patterns	3	5
B. Biological Sciences	7	9
B.1. Structure and Function of Organisms	1	2
B.2. Continuity of Life	1	2
B.3. Ecological Behavior and Systems	5	5
C. Physical Sciences	3	5
C.1. Structure, Properties and Interactions of Matter and Energy	1	2
C.2. Forms, Sources, Conversions and Transfer of Energy	1	2
C.3. Principles of Motion and Force	1	1
D. Earth and Space Sciences	4	6
D.1. Earth Features and Processes that change Earth and Its Resources	3	5
D.2. Weather, Climate and Atmospheric Processes	1	1

Commented [GT1]: Doesn't' add

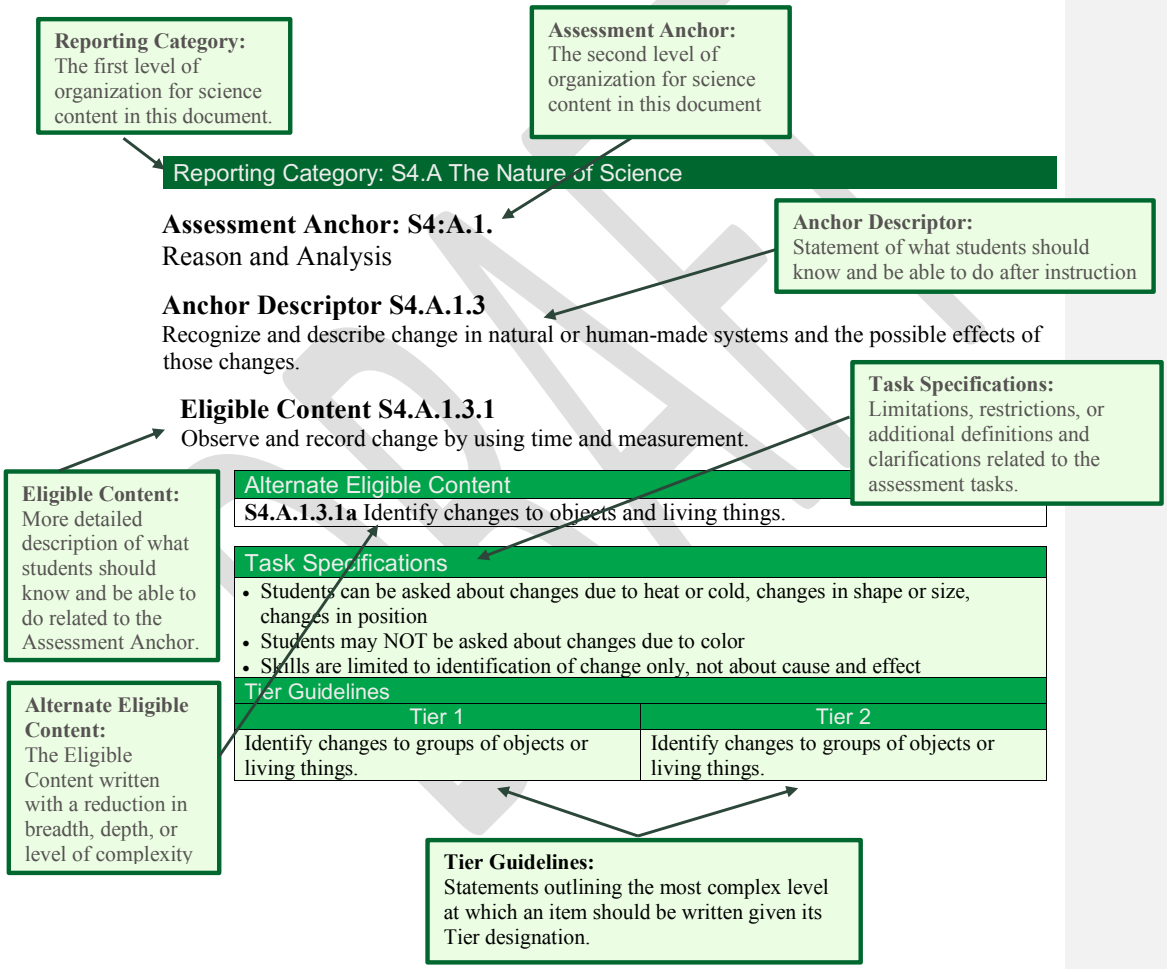
Table 4. Grade 11 Test Specifications

Grade 11 Reporting Category and Assessment Anchor	Number of Alternate Eligible Content	Number of Skills
A. The Nature of Science	7	11
A.1. Reason and Analysis	1	2
A.2. Processes, Procedures and Tools of Scientific Investigation	4	5
A.3. Systems, Models and Patterns	2	4
B. Biological Sciences	6	8
B.1. Structure and Function of Organisms	1	2
B.3. Ecological Behavior and Systems	4	6
C. Physical Sciences	4	6
C.1. Structure, Properties and Interactions of Matter and Energy	1	1
C.2. Forms, Sources, Conversions and Transfer of Energy	1	2
C.3. Principles of Motion and Force	2	3
D. Earth and Space Sciences	3	5
D.1. Earth Features and Processes that change Earth and Its Resources	2	3
D.2. Weather, Climate and Atmospheric Processes	1	2

Task Specifications

Task specifications clarify, define, and limit how standards are tested for this unique student population. These specifications do NOT dictate what content is to be taught or how the content is to be taught. They indicate only what is assessed. Teachers are still responsible for providing instruction across the entire range of eligible content to the greatest appropriate extent.

Guide to Reading the Specifications Table



Explanation of Terms used in Specifications Table

The **Reporting Category** is the first level of organization for the collection of assessment anchors and associated eligible content related to the academic standards in science. There are four reporting categories in science:

1. The Nature of Science
2. Biological Sciences
3. Physical Sciences
4. Earth and Space Sciences

The total number of skills that will test this reporting category is included in parentheses at the right hand side of the bar.

The **Assessment Anchor** is the second level of organization for this same collection of assessment anchors and eligible content. Each reporting category has 3 sub-categories.

The **Anchor Descriptor** is a general statement about what students should know and be able to do after instruction related to the reporting category and assessment anchor.

The **Eligible Content** is a more detailed description of individual skills that students should know and be able to do as a result of instruction to demonstrate proficiency on the state's academic standards in science.

The **Alternate Eligible Content** is a reduction in breadth, depth, and level of complexity of the Eligible Content.

The **Code** is a numeric tag for each alternate eligible content statement that associates the alternate eligible content with the other organizational levels of the state academic standards.

Task Specifications are definitions, clarifications, and limitations to the skills designed to assess the alternate eligible content.

Tier Guidelines are additional statements outlining the highest level of complexity to which an item should be written given its Tier designation.

Grade 4

Reporting Category: S4.A The Nature of Science

Assessment Anchor S4.A.1.1
Identify and explain the pros and cons of applying scientific, environmental, or technological knowledge to possible solutions to problems.

Eligible Content 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.

Alternate Eligible Content
S4.A.1.1.2a Identify common technologies that benefit society.

Task Specifications	
• Students will be asked to identify a technology by name • Students can be asked to choose a technology given a scenario	
Tier Guidelines	
Tier 1	**Tier 2**
Choose the correct picture of a specific technology.	Choose the correct picture of a specific technology given a scenario.

Reporting Category: S4.A The Nature of Science

Assessment Anchor S4.A.1.3
Recognize and describe change in natural or human-made systems and the possible effects of those changes.

Eligible Content S4.A.1.3.1
Observe and record change by using time and measurement.

Alternate Eligible Content
S4.A.1.3.1a Identify changes to objects and living things.

Task Specifications	
• Students can be asked about changes due to heat or cold, changes in shape or size, changes in position • Students should NOT be asked about changes due to color • Skills are limited to identification of change only, not about cause and effect	
Tier Guidelines	
Tier 1	**Tier 2**
Identify changes to groups of objects or living things.	Identify changes to groups of objects or living things.

Reporting Category: S4.A The Nature of Science

Assessment Anchor S4.A.2.1
Apply skills necessary to conduct an experiment or design a solution to solve a problem.

Eligible Content S4.A.2.1.4
State a conclusion that is consistent with the information/data.

Alternate Eligible Content
S4.A.2.1.4a Recognize the observation that supports a scientific fact.

Task Specifications	
• Observations can be in the form of pictures, tables, or graphs	
Tier Guidelines	
Tier 1	**Tier 2**
Match an observation to the scientific fact it supports.	Match observations to the scientific fact they support.

Reporting Category: S4.A The Nature of Science

Assessment Anchor S4.A.2.2
Identify appropriate instruments for a specific task and describe the information the instrument can provide.

Eligible Content S4.A.2.2.1
Identify appropriate tools or instruments for specific skills 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).

Alternate Eligible Content
S4.A.2.2.1a Select appropriate tools to perform basic measurement tasks (limited to length, weight, volume, and temperature).
S4.A.2.2.1b Select appropriate tools for making observations (limited to hand lens, binoculars, microscope, and telescope).

Task Specifications	
• Measuring tools are limited to rulers, balance scales, scales, beakers, thermometers, hand lens, binoculars, microscope • Measuring units are limited to standard units • Students can be asked to identify the tool to use for studying an object in a simple experiment • Students may be asked which tool to use for a specific task	
Tier Guidelines	
Tier 1	**Tier 2**
Match appropriate measuring tool(s) to intended purpose.	Select appropriate measuring tool(s) that provide the information needed to solve a problem.

Reporting Category: S4.A The Nature of Science

Assessment Anchor S4.A.3.1
Identify systems and describe relationships among parts of a familiar system (e.g., digestive system, simple machines, water cycle).

Eligible Content S4.A.3.1.1
Categorize systems as either natural or human-made (e.g., ballpoint pens, simple electrical circuits, plant anatomy, water cycle).

Alternate Eligible Content
S4.A.3.1.1a Identify whether a system is natural or human-made (e.g., plants vs. electrical).

Task Specifications
• Human-made systems should be common everyday systems such as lamps, flashlights, transportation systems (railroads, highway), computers • Natural systems should be limited to those used for other alternate eligible content such as plant anatomy, ecosystems, life cycles, water cycle, organ systems, and the solar system.

Tier Guidelines	
Tier 1	Tier 2
Distinguish between natural and human-made systems.	Distinguish between natural and human-made systems.

Reporting Category: S4.A The Nature of Science

Assessment Anchor S4.A.3.3
Identify and make observations about patterns that regularly occur and reoccur in nature.

Eligible Content S4.A.3.3.2
Predict future conditions/events based on observable patterns (e.g., day/night, seasons, sunrise/sunset, lunar phases).

Alternate Eligible Content
S4.A.3.3.2a Identify patterns, cycles, or trends seen in nature (e.g., seasonal, day/night, life cycles).

Task Specifications
• Patterns should be those found elsewhere in the content strands of the alternate eligible content • Students can be asked about patterns related to their everyday life such as sunrise/sunset and phases of the moon • Skills should NOT ask about specific components of a system

Tier Guidelines	
Tier 1	Tier 2
Identify basic naturally occurring patterns (e.g., seasons).	Identify more advanced naturally occurring patterns (e.g., lunar phases).

Reporting Category: S4.B Biological Sciences

Assessment Anchor S4.B.1.1
Identify and describe similarities and differences between living things and their life processes.

Eligible Content S4.B.1.1.3
Describe basic needs of plants and animals (e.g., air, water, food).

Alternate Eligible Content
S4.B.1.1.3a Identify basic needs of plants and animals (limited to air, water, nutrients, sun, and shelter).

Task Specifications
• Basic needs are limited to sunlight, air, water, shelter and food • Students can be asked which food that a specific animal eats.

Tier Guidelines	
Tier 1	Tier 2
Identify basic needs of plants and animals.	Identify basic needs of plants and animals given a panoramic scene.

Reporting Category: S4.B Biological Sciences

Assessment Anchor S4.B.1.1
Identify and describe similarities and differences between living things and their life processes.

Eligible Content 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).

Alternate Eligible Content
S4.B.1.1.4a Identify how parts of plants or animals work together to meet basic needs (e.g., roots and leaves or appendages and coverings).

Task Specifications
• Animal structures can be eyes, ears, mouths, noses, appendages (arms, wings, feet, legs), coverings (feathers, scales, fur, hair, skin), pattern of coloring/markings, size, shape • Plant structures can be roots, stems, branches, leaves, needles, flower, fruit, seeds

Tier Guidelines	
Tier 1	Tier 2
Identify the function of a specific structure of a plant or animal.	Identify how specific structures of plants and animals function together.

Reporting Category: S4.B Biological Sciences

Assessment Anchor S4.B.1.1
Identify and describe similarities and differences between living things and their life processes.

Eligible Content S4.B.1.1.5
Describe the life cycles of different organisms (e.g., moth, grasshopper, frog, seed producing plant).

Alternate Eligible Content
S4.B.1.1.5a Recognize the stages of development of an organism (limited to butterfly, ladybug, frog, grasshopper, and seed producing plant).

Task Specifications
• Skills may ask students to match the correct life cycle with an animal or plant, to put the life cycle into the correct sequence or to identify the previous or next stage

Tier Guidelines	
Tier 1	Tier 2
Identify a life cycle of an organism Sequence the stages (3) in life cycles	Sequence the stages (4) in life cycles Identify specific stages in life cycles

Reporting Category: S4.B Biological Sciences

Assessment Anchor S4.B.2.1
Identify and explain how adaptations help organisms to survive.

Eligible Content S4.B.2.1.1
Identify characteristics for plant and animal survival in different environments (e.g., wetland, tundra, desert, prairie, deep ocean, forest).

Alternate Eligible Content
S4.B.2.1.1a Identify plants or animals that live in different environments (limited to grasslands, tundra, desert, aquatic, forest, and rainforest).

Task Specifications
• Skills may ask students where specific animals and plants live • Biomes should be limited to forest, rainforest, desert, tundra, grasslands, oceans, rivers and lakes

Tier Guidelines	
Tier 1	Tier 2
Match an iconic animal to their specific habitat.	Match groups of animals and plants to their specific habitat.

Reporting Category: S4.B Biological Sciences

Assessment Anchor S4.B.3.1
Identify and describe living and nonliving things in the environment and their interaction.

Eligible Content 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 or playground).

Alternate Eligible Content
S4.B.3.1.1a Categorize the parts of an ecosystem as either living or non-living (e.g., forest, city, park).

Task Specifications	
• Skills may ask students to identify a living or non-living thing with no context or in the context of a common environment with which students taking the PASA would be familiar	
Tier Guidelines	
Tier 1	**Tier 2**
Distinguish between living and non-living things.	Distinguish between groups of living and non-living things given a background scene.

Reporting Category: S4.B Biological Sciences

Assessment Anchor S4.B.3.2
Describe, explain, and predict change in natural or human-made systems and the possible effects of those changes on the environment.

Eligible Content 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).

Alternate Eligible Content
S4.B.3.2.3a Identify how seasons affect trees or animals (e.g., temperature, migration, hibernation).

Task Specifications	
• Skills should be limited to one impact	
Tier Guidelines	
Tier 1	**Tier 2**
Match the effect of natural, non-catastrophic, environmental changes with the impact on trees and animals.	Match the effect of natural, non-catastrophic, environmental changes with the impact on trees and animals using specific scientific vocabulary.

Reporting Category: S4.B Biological Sciences

Assessment Anchor S4.B.3.3
Identify or describe human reliance on the environment at the individual or the community level.

Eligible Content S4.B.3.3.5
Describe the effects of pollution (e.g., litter) in the community.

Alternate Eligible Content
S4.B.3.3.5a Identify the impact of one type of pollution on a community.

Task Specifications
• Pollution can be litter, smog, water pollution, oil spill • Skills will ask students to match the type of pollution with the impact on the community or vice versa • Skills are limited to one impact

Tier Guidelines	
Tier 1	Tier 2
Match the effect of pollution with its source.	Match a source of pollution with its impact.

Reporting Category: S4.C Physical Sciences

Assessment Anchor S4.C.1.1
Describe observable physical properties of matter.

Eligible Content S4.C.1.1.1
Use physical properties [e.g., mass, shape, size, volume, color, texture, magnetic property, state (solid, liquid, or gas), conductivity (electrical or heat)] to describe matter.

Alternate Eligible Content
S4.C.1.1.1a Identify solid or liquid states of matter.

Task Specifications
• States of matter are limited to solid and liquid • Changes in states of matter are limited to melting and freezing • Skills can include options in which no change in state occur • Materials used in prompts should be limited to common objects with which students taking the PASA would be familiar

Tier Guidelines	
Tier 1	Tier 2
Distinguish between an object in different states of matter or changing states.	Distinguish between groups of objects or real world examples in different states of matter or changing states.

Reporting Category: S4.C Physical Sciences

Assessment Anchor S4.C.1.1
Describe observable physical properties of matter.

Eligible Content S4.C.1.1.2
Categorize/group objects using physical characteristics.

Alternate Eligible Content
S4.C.1.1.2a Compare objects by shape, size, weight, or texture.

Task Specifications	
• Students may NOT be asked to sort or identify based on color • Skills can ask students to match an identified object, select an object which matches a one or two word description, or choose an object to complete a task	
Tier Guidelines	
Tier 1	**Tier 2**
Match objects based on a single physical characteristic.	Match objects based on physical characteristics to solve a problem.

Reporting Category: S4.C Physical Sciences

Assessment Anchor S4.C.3.1
Identify and describe different types of force and motion, or the effect of the interaction between force and motion.

Eligible Content S4.C.3.1.1
Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).

Alternate Eligible Content
S4.C.3.1.1a Identify the relationship between force and motion (limited to push and pull).

Task Specifications	
• Students will NOT be asked to do calculations • Forces are limited to push and pull • Skills will be limited to unbalanced forces acting on an object • Skills are limited to the context of common situations and objects with wheels	
Tier Guidelines	
Tier 1	**Tier 2**
Determine the final position of an object given a specific force and direction.	Determine the starting position of an object given a specific force and direction.

Reporting Category: S4.C Physical Sciences

Assessment Anchor S4.C.3.1
Identify and describe different types of force and motion, or the effect of the interaction between force and motion.

Eligible Content S4.C.3.1.3
Describe the position of an object by locating it relative to another object or the background (e.g., geographic direction, left, up).

Alternate Eligible Content
S4.C.3.1.3a Identify the position of an object relative to another object (limited to in front of, behind, above, below, to the right, and to the left).

Task Specifications	
• Students can be asked to locate relative position of two objects or asked for relative position in contexts with which students taking the PASA would be familiar	
Tier Guidelines	
Tier 1	**Tier 2**
Identify the position of an object in relative to another object given a background scene.	Identify the position of an object relative to two other objects given a background scene.

Reporting Category: S4.D Earth and Space Sciences

Assessment Anchor S4.D.1.1
Describe basic landforms in Pennsylvania.

Eligible Content S4.D.1.1.1
Describe how prominent Earth features in Pennsylvania (e.g., mountains, valleys, beaches, caves, sinkholes, lakes, rivers) were formed.

Alternate Eligible Content
S4.D.1.1.1a Identify prominent Earth features (limited to mountains, valleys, oceans, beaches, lakes, and rivers).

Task Specifications	
• Prominent Earth features are limited to mountains, valleys, oceans, beaches, lakes and rivers	
Tier Guidelines	
Tier 1	**Tier 2**
Distinguish between pictures of Earth's geological features.	Distinguish between Earth's geological features displayed on a map.

Reporting Category: S4.D Earth and Space Sciences

Assessment Anchor S4.D.1.2
Identify the types and uses of Earth's resources.

Eligible Content 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).

Alternate Eligible Content
S4.D.1.2.1a Identify food or clothing products that come from plants or animals.

Task Specifications	
• Products should be limited to those with which students taking the PASA would be familiar	
Tier Guidelines	
Tier 1	**Tier 2**
Identify the source (plant or animal) for food.	Identify the source (plant or animal) for food and clothing.

Reporting Category: S4.D Earth and Space Sciences

Assessment Anchor S4.D.1.2
Identify the types and uses of Earth's resources.

Eligible Content 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, metal, fabrics, buildings, highways).

Alternate Eligible Content
S4.D.1.2.2a Identify products that can be recycled or reused (e.g., paper, plastic, cans, fabrics, and lumber).

Task Specifications	
• Products should be limited to those with which students taking the PASA would be familiar	
Tier Guidelines	
Tier 1	**Tier 2**
Identify groups of products that can be recycled or reused.	Identify products that can be made from other recycled products.

Reporting Category: S4.D Earth and Space Sciences

Assessment Anchor S4.D.2.1
Identify basic weather conditions and how they are measured.

Eligible Content 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).

Alternate Eligible Content
S4.D.2.1.2a Identify weather conditions using symbols or pictures (limited to temperature, types of precipitation, visibility, and sunlight).

Task Specifications	
• Symbols are limited to those for temperature, rain, sleet, snow, freezing rain, cloudy, sunny, partly sunny • Students may be asked to identify a symbol, identify the weather expected by a symbol, or asked to read and interpret up to a 5-day forecast.	
Tier Guidelines	
Tier 1	**Tier 2**
Match a weather forecast symbol with the correct background scene.	Predict the effect of weather forecasts.

Reporting Category: S4.D Earth and Space Sciences

Assessment Anchor S4.D.2.1
Identify basic weather conditions and how they are measured.

Eligible Content S4.D.2.1.3
Identify appropriate instruments (thermometer, rain gauge, weather vane, anemometer, barometer) to study weather and what they measure.

Alternate Eligible Content
S4.D.2.1.3a Select the appropriate tool to measure the weather (limited to temperature, wind direction, an precipitation)

Task Specifications	
• Tools are limited to a thermometer, a rain gauge, a wind sock, and a weather vane • Skills may ask students to identify the tool that should be used or understand the information that is provided by the tool	
Tier Guidelines	
Tier 1	**Tier 2**
Match appropriate measuring tool(s) to intended purpose.	Select appropriate measuring tool(s) that provide the information needed to solve a problem.

Grade 8

Reporting Category: S8.A The Nature of Science

Assessment Anchor S8.A.1.3
Identify evidence that certain variables may have caused measurable changes in natural or human-made systems.

Eligible Content 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.

Alternate Eligible Content
S8.A.1.3.2a Identify the results of a specific change to a stable system (e.g., food webs, biological systems, electrical systems).

Task Specifications
• Skills are limited to one change in a system • Systems can be natural or human-made • Systems should be limited to those found elsewhere in the content strands of the alternate eligible content or to those with which the students taking the PASA would be familiar

Tier Guidelines	
Tier 1	Tier 2
Identify the effect a specific change will have on a system.	Identify the effect a specific change will have on a system.

Reporting Category: S8.A The Nature of Science

Assessment Anchor S8.A.2.1
Apply knowledge of scientific investigation or technological design in different contexts to make inferences to solve problems.

Eligible Content S8.A.2.1.1
Use evidence, observations, or a variety of scales (e.g., time, mass, distance, volume, temperature) to describe relationships.

Alternate Eligible Content
S8.A.2.1.1a Use observations (limited to duration, weight, distance, or temperature) to identify relationships (e.g., bigger/smaller, faster/slower, higher/lower,).

Task Specifications
• Measuring tools are NOT limited to only those from grade 4 but include a larger range of options including tools such as clocks, timers, stop watch, yardsticks, tape measure, telescope • Measuring units will be limited to standard units • Comparisons will be limited to one or two characteristics

Tier Guidelines	
Tier 1	Tier 2
Identify a specified relationship based on observations provided.	Identify a specified relationship based on observations provided.

Reporting Category: S8.A The Nature of Science

Assessment Anchor S8.A.2.2
Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.

Eligible Content S8.A.2.2.1
Describe the appropriate use of instruments and scales to accurately measure time, mass, distance, volume, or temperature safely under a variety of conditions.

Alternate Eligible Content
S8.A.2.2.1a Identify the appropriate instrument and unit of measure to accurately record time, weight, distance, volume, or temperature.

Task Specifications
• Measuring tools are NOT limited to only those from grade 4 but include a larger range of options including tools such as clocks, timers, stop watch, yardsticks, tape measure, telescope • Measuring units will be limited to standard units • Students can be asked to identify the tool to use for measuring a variable in a simple experiment • Students can be asked to compare the measurements that would come from different tools measuring the same phenomenon

Tier Guidelines	
Tier 1	Tier 2
Select tool(s) that will measure with the appropriate units.	Select tool(s) that will measure with the appropriate units to solve a problem.

Reporting Category: S8.A The Nature of Science

Assessment Anchor S8.A.2.2
Apply appropriate instruments for a specific purpose and describe the information the instrument can provide.

Eligible Content S8.A.2.2.3
Describe ways technology extends and enhances human abilities for specific purposes (e.g., microscope, telescope, micrometer, hydraulics, and barometer).

Alternate Eligible Content
S8.A.2.2.3a Identify ways a specific technology enhances human abilities or senses (e.g., computer, microwave).

Task Specifications
• Skills should be limited to one technology or one specific enhancement and its use

Tier Guidelines	
Tier 1	Tier 2
Match a familiar technology with its use.	Match a familiar technology with the use it replaces.

Reporting Category: S8.A The Nature of Science

Assessment Anchor S8.A.3.1
Explain the parts of a simple system, their roles, and their relationships to the system as a whole.

Eligible Content S8.A.3.1.5
Explain how components of a natural and human-made system play different roles in a working system.

Alternate Eligible Content
S8.A.3.1.5a Identify the components of a simple human-made system based on function (e.g., electrical systems, transportation systems). **S8.A.3.1.5b** Identify how the components of natural systems affect one another (e.g., water cycle, weather systems, organ systems).

Task Specifications
• Systems should be limited to those found elsewhere in the content strands of the alternate eligible content or to those with which the students taking the PASA would be familiar • Skills may ask students to sequence the components in the system or identify the component of the system that is not functioning, or the result of a component not functioning

Tier Guidelines	
Tier 1	Tier 2
Identify a component of a human-made system by its function. Identify the missing component of a naturally-occurring system.	Identify the missing component of a human-made system by the resulting malfunction. Sequence the components of a naturally-occurring system.

Reporting Category: S8.A The Nature of Science

Assessment Anchor S8.A.3.3
Describe repeated processes or recurring elements in scientific and technological patterns.

Eligible Content S8.A.3.3.2
Describe repeating structure patterns in nature (e.g., veins in a leaf, tree rings, crystals, water waves) or periodic patterns (e.g., daily, monthly, annually).

Alternate Eligible Content
S8.A.3.3.2a Sequence recurring patterns, cycles, or trends found in nature (e.g., water cycle, lunar phases, organ systems).

Task Specifications
• Systems should be limited to those found elsewhere in the content strands of the alternate eligible content or to those with which the students taking the PASA would be familiar • Skills may ask students to sequence the steps, identify one missing step, or identify a precursor or successive step

Tier Guidelines	
Tier 1	Tier 2
Determine the next step in naturally occurring patterns.	Sequence naturally occurring patterns based on observations.

Reporting Category: S8.B Biological Sciences Science

Assessment Anchor S8.B.1.1
Describe and compare structural and functional similarities and differences that characterize diverse living things.

Eligible Content S8.B.1.1.3
Apply knowledge of characteristic structures to identify or categorize organisms (i.e., plants, animals, fungi, bacteria, and protista).

Alternate Eligible Content
S8.B.1.1.3a Categorize plants or animals based on characteristic structures (e.g., seeds, leaves, fruits or mammals, invertebrates, birds).

Task Specifications	
• Skills will NOT ask students to identify the scientific classification of any animal	
Tier Guidelines	
Tier 1	**Tier 2**
Classify groups of animals based on distinguishing or shared physical characteristics using basic science vocabulary.	Classify groups of plants or animal based on distinguishing or shared physical characteristics using advanced science vocabulary.

Reporting Category: S8.B Biological Sciences Science

Assessment Anchor S8.B.2.1
Explain the basic concepts of natural selection.

Eligible Content S8.B.2.1.1
Explain how inherited structures or behaviors help organisms survive and reproduce in different environments.

Alternate Eligible Content
S8.B.2.1.1a Identify structures or behaviors that enable plants and animals to survive in their environment (e.g., size of plant, leaf shape or appendages coverings, nocturnal behavior).

Task Specifications	
• Structures are limited to exterior structures • Skills will NOT ask students about reproduction or natural selection	
Tier Guidelines	
Tier 1	**Tier 2**
Recognize structures of animals that allow them to survive in their environment.	Recognize structures of plants and animals that allow them to survive in their environment.

Reporting Category: S8.B Biological Sciences Science

Assessment Anchor S8.B.3.1
Explain the relationships among and between organisms in different ecosystems and their abiotic and biotic components.

Eligible Content S8.B.3.1.1
Explain the flow of energy through an ecosystem (e.g., food chains, food webs).

Alternate Eligible Content
S8.B.3.1.1a Sequence the flow of energy through a food chain or a food web.

Task Specifications	
• Skills may ask students to sequence the flow of energy • Skills may ask students to identify a missing organism in a food chain	
Tier Guidelines	
Tier 1	Tier 2
Identify the correct sequence of energy flow through a food chain.	Sequence the energy flow through a food chain.

Reporting Category: S8.B Biological Sciences Science

Assessment Anchor S8.B.3.1
Explain the relationships among and between organisms in different ecosystems and their abiotic and biotic components.

Eligible Content S8.B.3.1.2
Identify major biomes and describe abiotic and biotic components (e.g., abiotic: different soil types, air, water sunlight).

Alternate Eligible Content
S8.B.3.1.2a Recognize the association between different environments and their characteristics (e.g., climate, precipitation, vegetation).

Task Specifications	
• Biomes are limited to those found elsewhere in the content strands of the alternate eligible content • Characteristics can include climate, availability of sunlight and water, and types of vegetation • Skills may ask students to identify biomes based on their characteristics or identify characteristics of specific biomes	
Tier Guidelines	
Tier 1	Tier 2
Identify pictures of basic habitats.	Match basic habitats with their defining characteristics.

Reporting Category: S8.B Biological Sciences Science

Assessment Anchor S8.B.3.1
Explain the relationships among and between organisms in different ecosystems and their abiotic and biotic components.

Eligible Content S8.B.3.1.3
Explain relationships among organisms (e.g., producers/consumers, predator/prey, in an ecosystem).

Alternate Eligible Content
S8.B.3.1.3a Identify the role of different organisms in an ecosystem (limited to producers, consumers, predator, and prey).

Task Specifications	
• Roles are limited to producers, consumers, predator and prey	
Tier Guidelines	
Tier 1	Tier 2
Identify predator and prey in a food chain.	Identify specific relationships between elements in a food web.

Reporting Category: S8.B Biological Sciences Science

Assessment Anchor S8.B.3.2
Identify evidence of change to infer and explain the ways different variables may affect change in natural or human-made systems.

Eligible Content S8.B.3.2.1
Use evidence to explain factors that affect changes in populations (e.g., deforestation, disease, land use, natural disaster, invasive species).

Alternate Eligible Content
S8.B.3.2.1a Recognize the impact that humans have on habitats and the animals or plants living there (e.g., deforestation and deer habitats).

Task Specifications	
• Impacts are limited to those caused by human activities	
Tier Guidelines	
Tier 1	Tier 2
Match a specific human activity with the impact on plants and animals.	Match a specific human activity with the impact on plants and animals.

Reporting Category: S8.B Biological Sciences Science

Assessment Anchor S8.B.3.3
Explain how renewable and non-renewable resources provide for human needs or how these needs impact the environment.

Eligible Content S8.B.3.3.3
Describe how waste management affects the environment (e.g., recycling, composting, landfills, incineration, sewage treatment).

Alternate Eligible Content
S8.B.3.3.3a Identify ways to reduce pollution through waste management (e.g., recycling, composting).

Task Specifications	
• Skills should be limited to one reduction strategy and one impact	
Tier Guidelines	
Tier 1	**Tier 2**
Identify the impact of recycling.	Identify the impact of waste management techniques.

Reporting Category: S8.C Physical Sciences

Assessment Anchor S8.C.1.1
Explain concepts about the structure and properties (physical and chemical) of matter.

Eligible Content S8.C.1.1.2
Use characteristic physical or chemical properties to distinguish one substance from another (e.g., density, thermal expansion/contraction, freezing/melting points, streak test).

Alternate Eligible Content
S8.C.1.1.2a Use physical observations or measurements to compare density or phase changes of substances (limited to sinking/floating or freezing, melting, or boiling points) of substances.

Task Specifications	
• States of matter are limited to solid, liquid, and gas • Physical characteristics are limited to density and melting/freezing and boiling points	
Tier Guidelines	
Tier 1	**Tier 2**
Compare the differences in the physical properties of substances using scientific vocabulary.	Compare the differences in the physical properties of substances using scientific vocabulary.

Reporting Category: S8.C Physical Sciences

Assessment Anchor S8.C.2.2
Compare the environmental impact of different energy sources chosen to support human endeavors.

Eligible Content S8.C.2.2.3
Describe the waste (quantity, kind, and potential to cause environmental impacts) derived from the use of renewable and nonrenewable energy sources and their potential impact on the environment.

Alternate Eligible Content
S8.C.2.2.3a Identify energy resources as either renewable (limited to wind, solar, hydroelectric) or non-renewable (limited to coal, oil, natural gas).

Task Specifications	
• Skills are limited to identification and classification of the energy sources • Task should not ask students about the environmental impact of the energy sources	
Tier Guidelines	
Tier 1	**Tier 2**
Identify energy sources as renewable or non-renewable.	Identify energy sources as renewable or non-renewable.

Reporting Category: S8.C Physical Sciences

Assessment Anchor S8.C.3.1
Describe the effect of multiple forces on the movement, speed, or direction of an object.

Eligible Content S8.C.3.1.1
Describe forces acting on objects (e.g., friction, gravity, balanced versus unbalanced, inertia, momentum).

Alternate Eligible Content
S8.C.3.1.1a Compare the impact of one or more forces acting on an object (limited to friction, gravity, balanced, and unbalanced).

Task Specifications	
• Students will NOT be asked to do calculations • Contexts should be limited to those found elsewhere in the content strands of the alternate eligible content or to those with which the students taking the *PASA* would be familiar	
Tier Guidelines	
Tier 1	**Tier 2**
Determine the motion of an object based on the forces acting on it.	Determine the motion of objects based on the forces acting on it.

Reporting Category: S8.D Earth and Space Sciences

Assessment Anchor S8.D.1.1
Describe constructive and destructive natural processes that form different geologic structures and resources.

Eligible Content S8.D.1.1.2
Compare and contrast (geological processes, length of time over which change occurs, factors affecting the rate of change) different types of changes in Earth's surface (e.g., landslides, volcanic eruptions, earthquakes, mountain building, new land being formed, weathering, erosion, sedimentation, soil formation).

Alternate Eligible Content
S8.D.1.1.2a Identify the natural processes that change the Earth's surface (e.g., landslides, earthquakes, weathering).

Task Specifications	
• Skills are limited to identification of processes and what happens during that process	
Tier Guidelines	
Tier 1	**Tier 2**
Recognize the natural processes that change the Earth's surface using basic scientific vocabulary (e.g., volcanic eruption, landslide).	Recognize the natural processes that change the Earth's surface using advanced scientific vocabulary (e.g., erosion, weathering).

Reporting Category: S8.D Earth and Space Sciences

Assessment Anchor S8.D.1.2
Describe the potential impact of human made processes on changes to Earth's resources and how they affect everyday life.

Eligible Content S8.D.1.2.2
Describe potential impacts of human-made processes (e.g., manufacturing, agriculture, transportation, mining on Earth's resources, both nonliving (air, water, or earth materials) and living (plants and animals).

Alternate Eligible Content
S8.D.1.2.2a Identify the products that are made from different renewable or nonrenewable sources (e.g., lumber from trees, cans from metal, gasoline from oil).

Task Specifications	
• Skills may ask students to identify a product as being made from a renewable or non-renewable resource • Products should be limited to those found elsewhere in the content strands of the alternate eligible content or to those with which the students taking the PASA would be familiar	
Tier Guidelines	
Tier 1	**Tier 2**
Identify the source of a group of products.	Identify the source of a group of products and whether the source is renewable or non-renewable.

Reporting Category: S8.D Earth and Space Sciences

Assessment Anchor S8.D.1.3
Describe characteristic features of Earth's water systems or their impact on resources.

Eligible Content S8.D.1.3.1
Describe the water cycle and the physical processes on which it depends (i.e., evaporation, condensation, precipitation, transpiration, runoff, infiltration, energy inputs, and phase changes).

Alternate Eligible Content
S8.D.1.3.1a Recognize processes in the water cycle (limited to evaporation, condensation, precipitation, transpiration, runoff, and infiltration).

Task Specifications
• Processes should be limited to evaporation, condensation, precipitation, transpiration, runoff, and infiltration • Skills should be limited to identification of one process

Tier Guidelines	
Tier 1	Tier 2
Identify the components of the water cycle with which precipitation, evaporation and condensation are associated.	Identify the component of the water cycle with which any phase change is associated.

Reporting Category: S8.D Earth and Space Sciences

Assessment Anchor S8.D.2.1
Explain how pressure, temperature, moisture, and wind are used to describe atmospheric conditions that affect regional weather or climate.

Eligible Content S8.D.2.1.3
Identify how cloud types, wind directions and barometric pressure changes are associated with weather patterns in different regions of the country.

Alternate Eligible Content
S8.D.2.1.3a Identify how wind direction or cloud types (limited to cumulus, cirrus, stratus, nimbostratus, cumulonimbus) are associated with weather patterns.

Task Specifications
• Skills can ask about cloud types, wind patterns, or both

Tier Guidelines	
Tier 1	Tier 2
Predict movement of weather system based on wind direction. Identify cloud types using scientific vocabulary.	Predict type of weather and movement of weather system based on cloud type and wind direction.

Grade 11

Reporting Category: S11.A The Nature of Science

Assessment Anchor S11.A.1.3
Describe and interpret patterns of change in natural and human-made systems.

Eligible Content S11.A.1.3.2
Describe or interpret dynamic changes to stable systems (e.g., chemical reactions, human body, food webs, tectonics, homeostasis).

Alternate Eligible Content
S11.A.1.3.2a Identify the variable that causes a specific change to a stable system (e.g., human body, food webs).

Task Specifications
• Systems should be limited to those found elsewhere in the content strands of the alternate eligible content or to those with which the students taking the PASA would be familiar • Skills should be limited to one change and one variable

Tier Guidelines	
Tier 1	Tier 2
Identify the variable that causes a specific change.	Identify the variable that causes a specific change.

Reporting Category: S11.A The Nature of Science

Assessment Anchor S11.A.2.1
Apply knowledge of scientific investigation or technological design to develop or critique aspects of the experimental or design process.

Eligible Content 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).

Alternate Eligible Content
S11.A.2.1.1a Identify the experimental design that tests a specific scientific question.

Task Specifications
• Skills may ask students to choose the BEST experimental design • Skills may ask students to identify a problem with an experimental design

Tier Guidelines	
Tier 1	Tier 2
Choose the experimental set-up that will test a specific question.	Identify a potential problem with an experimental design.

Reporting Category: S11.A The Nature of Science

Assessment Anchor S11.A.2.1
Apply knowledge of scientific investigation or technological design to develop or critique aspects of the experimental or design process.

Eligible Content S11.A.2.1.3
Use data to make inferences and predictions, or to draw conclusions, demonstrating understanding of experimental limits.

Alternate Eligible Content
S11.A.2.1.3a Interpret graphs or charts to make inferences or predictions, or to draw conclusions (limited to line graph, bar graph, pie chart, and tables).

Task Specifications
• Analysis skills should be limited to no more than 4 data points • Analysis skills should be limited to no more than 2 different types of data in the same item

Tier Guidelines	
Tier 1	Tier 2
Interpret information from graphs and tables with 3 observations.	Interpret information from graphs and tables with more than 4 observations.

Reporting Category: S11.A The Nature of Science (5-8 skills)

Assessment Anchor S11.A.2.2
Evaluate appropriate technologies for a specific purpose, or describe the information the instrument can provide.

Eligible Content 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).

Alternate Eligible Content
S11.A.2.2.1a Choose the appropriate method, instrument, and scale for making precise quantitative or qualitative observations.

Task Specifications
• Measuring units will be limited to standard units • Students can be asked to identify the tool to use for measuring a variable in a simple experiment including the appropriate units of measurement • Students can be asked to identify the appropriate tool for a measurement task including the appropriate units of measurement

Tier Guidelines	
Tier 1	Tier 2
Select tool that will measure with the appropriate units.	Select tool that will measure with the appropriate units and scale to solve a problem.

Reporting Category: S11.A The Nature of Science

Assessment Anchor S11.A.2.2
Evaluate appropriate technologies for a specific purpose, or describe the information the instrument can provide.

Eligible Content S11.A.2.2.2
Explain how technology is used to extend human abilities and precision (e.g., GPS, spectroscope, scanning electron microscope, pH meters, probes, interfaces, imaging technologies, telescope).

Alternate Eligible Content
S11.A.2.2.2a Identify how a specific technology extends human abilities and enhances precision (limited to GPS, x-rays, microscope, telescope).

Task Specifications	
• Skills should be limited to one technology or one specific enhancement and its use	
Tier Guidelines	
Tier 1	**Tier 2**
Match a technology with its use.	Match a technology with the use.

Reporting Category: S11.A The Nature of Science

Assessment Anchor S11.A.3.1
Analyze the parts of a simple system, their roles, and their relationships to the system as a whole.

Eligible Content S11.A.3.1.2
Analyze and predict the effect of making a change in one part of a system on the system as a whole.

Alternate Eligible Content
S11.A.3.1.2a Predict the results of a specific change to one part of a system on the system as a whole (e.g., organ systems, ecosystems, electrical systems).

Task Specifications	
• Systems should be limited to those found elsewhere in the content strands of the alternate eligible content or to those with which the students taking the *PASA* would be familiar • Skills should be limited to one prediction	
Tier Guidelines	
Tier 1	**Tier 2**
Predict the outcome when a specific change is made to a system.	Identify the cause of an outcome when a change in a system occurs.

Reporting Category: S11.A The Nature of Science

Assessment Anchor S11.A.3.3
Compare and analyze repeated processes or recurring elements in patterns.

Eligible Content S11.A.3.3.3
Analyze physical patterns of motion to make predictions or draw conclusions (e.g., solar system, tectonic plates, weather systems, atomic motion, waves).

Alternate Eligible Content
S11.A.3.3.3a Use observations about recurring patterns, cycles, or trends in nature to make predictions or draw conclusions (e.g., solar system, weather systems, organ systems).

Task Specifications	
• Patterns should be limited to those found elsewhere in the content strands of the alternate eligible content • Skills should be limited to one prediction	
Tier Guidelines	
Tier 1	**Tier 2**
Predict the next observation based on a recurring pattern.	Identify the missing observation in a recurring pattern or sequence a recurring pattern.

Reporting Category: S11.B Biological Sciences

Assessment Anchor S11.B.1.1
Explain structure and function at multiple levels of organization.

Eligible Content S11.B.1.1.2
Compare and contrast the structural and functional similarities and differences among living things (e.g., classify organisms into existing classification groups, compare systems).

Alternate Eligible Content
S11.B.1.1.2a Compare how different animals use different structures for the same or similar functions.

Task Specifications	
• Skills should be limited to 2 functions • Skills can compare structures for up to 3 animals • Structures can be external or internal	
Tier Guidelines	
Tier 1	**Tier 2**
Match an external structure from an animal to structure of another animal with similar function.	Match structures from an animal to the structures of another animal with similar function.

Reporting Category: S11.B Biological Sciences

Assessment Anchor S11.B.3.1
Use evidence or examples to explain the characteristics of and interactions within an ecosystem.

Eligible Content S11.B.3.1.2
Explain the biotic (i.e., plant, animal, and microbial communities) and abiotic (i.e., soil, air, temperature, and water) components of an ecosystem and their interaction.

Alternate Eligible Content
S11.B.3.1.2a Identify the interactions among the living components of an ecosystem (limited to competition, predation, and mutualism).

Task Specifications
• Living components of an ecosystem are limited to plants and animals • Non-living components of an ecosystem are limited to soil, temperature and water • Interactions between components are limited to competition, predation, symbiosis, and mutualism

Tier Guidelines	
Tier 1	Tier 2
Identify an interaction among factors in a specific ecosystem.	Identify an interaction among factors in a specific ecosystem.

Reporting Category: S11.B Biological Sciences

Assessment Anchor S11.B.3.1
Use evidence or examples to explain the characteristics of and interactions within an ecosystem.

Eligible Content S11.B.3.1.4
Explain the similarities and differences in the major biomes (e.g., desert, tropical rain forest, temperate forest, coniferous forest, tundra) and the communities that inhabit them.

Alternate Eligible Content
S11.B.3.1.4a Compare the similarities and differences of the Earth's major biomes (i.e., tropical rainforest vs. tundra, tundra vs. desert). **S11.B.3.1.4b** Identify the similarities and differences in animals or plants that inhabit the major biomes (e.g., tropical rain forest, tundra, desert.

Task Specifications
• Skills should be limited to comparing communities in two different biomes • Biomes are limited to the tropical rainforest, forest, desert, arctic tundra, grasslands and ocean

Tier Guidelines	
Tier 1	Tier 2
Recognize that animals living in different environments will look different.	Recognize that plants and animals living in different environments will have similarities and differences.

Reporting Category: S11.B Biological Sciences

Assessment Anchor S11.B.3.2
Analyze patterns of change in natural or human-made systems over time.

Eligible Content S11.B.3.2.3
Explain how natural processes (e.g., seasonal change, catastrophic events, habitat alterations) impact the environment over time.

Alternate Eligible Content
S11.B.3.2.3a Recognize the result of catastrophic events on habitats and the animals or plants living there (e.g., forest fire, volcanic eruption, tornado).

Task Specifications	
• Skills should be limited to one event or one impact	
Tier Guidelines	
Tier 1	Tier 2
Identify the result of a specific natural disaster.	Identify the results of natural disasters on the habitats.

Reporting Category: S11.C Physical Sciences

Assessment Anchor S11.C.1.1
Explain the relationship between the structure and properties of matter.

Eligible Content S11.C.1.1.1
Explain that matter is made of particles called atoms and that atoms are composed of even smaller particles (e.g., proton, neutrons, electrons).

Alternate Eligible Content
S11.C.1.1.1a Recognize that matter is made of particles.

Task Specifications	
• Skills should be limited to elemental materials, not mixtures • Skills may or may not use scientific vocabulary (i.e., atoms)	
Tier Guidelines	
Tier 1	Tier 2
Recognize that elemental materials can be broken into smaller pieces and still be the same material.	Recognize that elemental materials can be broken into smaller pieces and still be the same material.

Reporting Category: S11.C Physical Sciences

Assessment Anchor S11.C.2.2
Demonstrate that different ways of obtaining, transforming, and distributing energy have different environmental consequences.

Eligible Content S11.C.2.2.3
Give examples of renewable energy resources (e.g., wind, solar, biomass) and nonrenewable resources (e.g., coal, oil, natural gas) and explain the environmental and economic advantages and disadvantages of their use.

Alternate Eligible Content
S11.C.2.2.3a Identify the impact of using renewable or non-renewable energy sources on the environment (e.g., impact of solar power, coal).

Task Specifications	
• Skills should be limited to one impact	
Tier Guidelines	
Tier 1	**Tier 2**
Identify environmental impact of different energy sources.	Identify environmental impact of different energy sources.

Reporting Category: S11.C Physical Sciences

Assessment Anchor S11.C.3.1
Use the principles of motion and force to solve real-world challenges.

Eligible Content S11.C.3.1.1
Explain common phenomena (e.g., motion of bowling ball, a rock in a landslide, an astronaut during a spacewalk, a car hitting a patch of ice on the road) using an understanding of conservation of momentum.

Alternate Eligible Content
S11.C.3.1.1a Identify the outcome in a common real-world situation based on an understanding of forces (limited to push, pull, friction, and gravity).

Task Specifications	
• Forces are limited to friction, gravity, push and pull • Situations can include events outside of the student's experience for Tier 2	
Tier Guidelines	
Tier 1	**Tier 2**
Predict the outcome based on the relationship between 2 applied forces and motion using situations common to *PASA* students.	Identify environmental impact of different energy sources.

Reporting Category: S11.C Physical Sciences

Assessment Anchor S11.C.3.1
Use the principles of motion and force to solve real-world challenges.

Eligible Content S11.C.3.1.3
Explain that acceleration is the rate at which the velocity of an object is changing.

Alternate Eligible Content
S11.C.3.1.3a Determine the relative speed, distance, or time an object travels.

Task Specifications	
• Analysis skills should be limited to no more than 4 data points • Analysis skills should be limited to no more than 2 different types of data in the same item	
Tier Guidelines	
Tier 1	Tier 2
Determine distance, time, or speed based on 3 observations	Determine distance, time, or speed based on 4 or more observations

Reporting Category: S11.D Earth and Space Sciences

Assessment Anchor S11.D.1.1
Explain and analyze the forces in the lithosphere that continually shape Earth.

Eligible Content S11.D.1.1.3
Analyze features created by the interaction of processes that change Earth's surface (e.g., wind and moving water help break down rock into soil; plate movement, earthquakes, and volcanic activity help cause mountains and valleys to form; flowing water and deposition of material help form deltas).

Alternate Eligible Content
S11.D.1.1.3a Recognize the relationship between natural processes and the resulting changes to the Earth's surface (e.g., volcanic eruptions and mountain building, erosion and changing coastlines).

Task Specifications	
• Skills should be limited to one process or one outcome	
Tier Guidelines	
Tier 1	Tier 2
Identify the change in the Earth's surface based on one natural process.	Choose the natural process producing a specific outcome or predict the outcome based on a specific natural process.

Reporting Category: S11.D Earth and Space Sciences

Assessment Anchor S11.D.1.2
Analyze how human-made systems impact the management and distribution of natural resources.

Eligible Content S11.D.1.2.2
Explain the impact of obtaining and using natural resources for the production of energy and materials (e.g., resource renewal, amount of pollution, deforestation).

Alternate Eligible Content
S11.D.1.2.2a Identify the impact of human-made processes on the Earth's resources (e.g., manufacturing and pollution).

Task Specifications	
• Skills should be limited to one impact or one process	
Tier Guidelines	
Tier 1	Tier 2
Identify a human activity that results in a specific resource use or impact on the environment.	Identify the impact of various human activities on resource use and/or the environment.

Reporting Category: S11.D Earth and Space Sciences

Assessment Anchor S11.D.2.1
Analyze how the transfer of energy and substances between Earth's atmosphere and its surface influences regional or global weather or climate.

Eligible Content S11.D.2.1.4
Analyze weather maps and weather data (e.g., air masses, fronts, temperature, air pressure, wind speed, wind direction, precipitation) to predict regional or global weather events.

Alternate Eligible Content
S11.D.2.1.4a Interpret weather data and predict weather events (e.g., temperature, wind direction, precipitation).

Task Specifications	
• Analysis skills should be limited to no more than 4 data points • Analysis skills should be limited to no more than 2 different types of data in the same item • Skills should be limited to one prediction	
Tier Guidelines	
Tier 1	Tier 2
Predict weather conditions based on one characteristic or up to three data points.	Predict weather conditions based on more than one characteristic and/or several data points.