

Alternate Assessment for Students with the Most Significant Cognitive Disabilities (AASCD)

Test Specifications



High School Science

Introduction

The Test Specifications provide an overview of the structure and content of Ohio’s Alternate Assessment for Students with the Most Significant Cognitive Disabilities (AASCD). This overview includes a description of the test design as well as information on the items that will appear on the test. Also included is a test blueprint, a document that identifies the range and distribution of items grouped into various reporting categories. The specifications also provide specific guidelines for the development of all items used for Ohio’s AASCD. This document is a resource not only for item writers and test designers, but also for Ohio educators and other stakeholders who are interested in a deeper understanding of the test.

Test Design Overview

The AASCD is an online assessment designed to maximize access for students with the most significant cognitive disabilities and ensure that all students are included in Ohio’s statewide assessment and accountability programs. A student who qualifies for the AASCD is unable to participate in the state’s regular assessment, even with allowable accommodations. However, it is expected that the majority of students who take the AASCD will require supports and accessibility features to access or respond to the test. This is considered in the test design and the AASCD does allow for most student accommodations of any type. Accommodations are considered to be adjustments to the standard testing conditions, test format or test administration that provide equitable access to a student.

There are three test modes for the AASCD; online, supplemental and full paper. Supplemental braille materials are also available to be used with the supplemental and full paper test modes. Regardless of test mode, questions cannot be skipped and must be administered in the order they are presented. Tests are given at each individual grade level and consist of 50 questions per test. The questions are of varying complexity levels and all questions created for the AASCD align to Ohio’s Learning Standards-Extended.

Complexity Levels

The Ohio Learning Standards-Extended (OSL-E) include three levels from “most complex” to “least complex”. The complexity levels are comprised of three targets of varying difficulty aligned to each standard from the Ohio Learning Standards (OLS). The extensions are codified individually for clear designation. The last letter in the extension code indicates the complexity level: “a” denotes the highest level of complexity, “b” denotes the middle complexity level and “c” denotes the lowest complexity level. In some instances, the verb of the extension is tiered to increase or decrease the complexity level. In other cases, the concept or skill within the OLS is tiered across the three complexity levels. **It is important to move from left to right when reading the extensions.** To determine where instruction should begin, educators should start with the general standard and then progress down through the complexity levels until finding the optimum starting point. **It’s important to note that no one should categorize students according to an extension level.** Instead, instruction should build skills across the extensions to the highest level possible based on individual student strengths which may vary across standards. Ideally, when educators apply these extensions within each grade level, one should see instruction occurring at all ranges of complexity. When citing standards for lesson and/or assessment design, educators should include the full complexity range, including the general standard. Citing standards in this way acknowledges a range of entry points and a range of learning progressions.

Blueprints

Test blueprints serve as a guide for test construction and provide an outline of the content and skills to be measured on the test. They contain information about individual tests, including the reporting category, the learning standards included for each reporting category, the item range for each reporting category and total test items for each test.

High School Science			
Reporting Categories	Learning Standards*	Point Range	Total Test Points
Biology	B.H.1, B.H.2, B.H.3, B.H.4, B.H.5, B.E.1, B.E.2, B.DI.1, B.DI.2, B.DI.3, B.C.1, B.C.2	10 - 15	40
Physical Science	PS.M.1.1, PS.M.1.2, PS.M.1.3, PS.M.2, PS.M.3, PS.M.4, PS.EW.1, PS.EW.2, PS.EW.4.1, PS.EW.4.2, PS.FM.1, PS.FM.2.1, PS.FM.2.2, PS.FM.3, PS.U.1, PS.U.2, PS.U.3	10 - 15	
Environmental Science	ENV.ES.1, ENV.ES.2, ENV.ES.3, ENV.ES.4, ENV.ER.1, ENV.ER.2, ENV.ER.3, ENV.ER.4, ENV.ER.5, ENV.GP.1, ENV.GP.2, ENV.GP.3, ENV.GP.4, ENV.GP.5, ENV.GP.6, ENV.GP.7, ENV.GP.8, ENV.GP.9	10 - 15	

*All of the extensions for each learning standard are eligible for inclusion in the assessment.

Access Limitations

Blind and visually impaired students can be administered the AASCD online. These students should be marked in TIDE with a test mode of online (O) and also flagged in TIDE or the TA Interface as Yes under the Access Limited – Blind setting. Indicating Yes under this setting will prevent these students from receiving items on the online test that are flagged as access limited for blind or visually impaired students.

Items are flagged as access limited for blind or visually impaired students if a visual element that cannot be described with words is critical to answering the question. Items should only depend on visual elements where that is necessary to assess the extended standard.

Early-Stopping Rule

There may be instances where the district has not yet determined a student's mode of communication. For students that are unable to provide a discernible response to an item, the test administrator can select the "Mark as No Response" option from the context menu within the Student Interface for online and supplemental testers or in the Data Entry Interface (DEI) for paper testers.

The Student Interface and DEI have a built-in early stopping rule, which will automatically stop the test if the "Mark as No Response" option is submitted as the response for all four of the first four items for that test subject. Test administrators are still required to administer all other applicable subjects to a student even if the early stopping rule was enacted for another subject. If the student is able to provide a discernible response to at least one of the first four items for a test subject, the administrator should continue the assessment.

The first four items on every test mode are fixed and are low complexity items. Low complexity items are selected for the first four items to give students a chance to demonstrate that they can provide a response.

Nature of Science

One goal of science education is to help students become scientifically literate citizens that are able to use science as a way of knowing about the natural and material world. All students should have sufficient understanding of scientific knowledge and scientific processes to enable them to distinguish what is science from what is not science and to make informed decisions about career choices, health maintenance, quality of life, community and other decisions that impact both themselves and others.

Categories	High School
<p>Scientific Inquiry, Practice and Applications</p> <p>All students must use these scientific processes with appropriate laboratory safety techniques to construct their knowledge and understanding in all science content areas.</p>	<ul style="list-style-type: none">• Identify questions and concepts that guide scientific investigations.• Design and conduct scientific investigations using a variety of methods and tools to collect empirical evidence, observing appropriate safety techniques.• Use technology and mathematics to improve investigations and communications.• Formulate and revise explanations and models using logic and scientific evidence (critical thinking).• Recognize and analyze explanations and models.• Communicate and support scientific arguments.
<p>Science is a Way of Knowing</p> <p>Science assumes the universe is a vast single system in which basic laws are consistent. Natural laws operate today as they did in the past and they will continue to do so in the future. Science is both a body of knowledge that represents a current understanding of natural systems and the processes used to refine, elaborate, revise and extend this knowledge.</p>	<ul style="list-style-type: none">• Various science disciplines use diverse methods to obtain evidence and do not always use the same set of procedures to obtain and analyze data (i.e., there is no one scientific method).<ul style="list-style-type: none">○ Make observations and look for patterns.○ Determine relevant independent variables affecting observed patterns.○ Manipulate an independent variable to affect a dependent variable.○ Conduct an experiment with controlled variables based on a question or hypothesis.○ Analyze data graphically and mathematically.• Science disciplines share common rules of evidence used to evaluate explanations about natural phenomenon by using empirical standards, logical arguments, and peer reviews.<ul style="list-style-type: none">○ Empirical standards include objectivity, reproducibility, and honest and ethical reporting of findings.○ Logical arguments should be evaluated with open-mindedness, objectivity and skepticism.• Science arguments are strengthened by multiple lines of evidence supporting a single explanation.• The various scientific disciplines have practices, methods, and modes of thinking that are used in the process of developing new science knowledge and critiquing existing knowledge.

Nature of Science (continued)

One goal of science education is to help students become scientifically literate citizens that are able to use science as a way of knowing about the natural and material world. All students should have sufficient understanding of scientific knowledge and scientific processes to enable them to distinguish what is science from what is not science and to make informed decisions about career choices, health maintenance, quality of life, community and other decisions that impact both themselves and others.

Categories	High School
<p>Science is a Human Endeavor</p> <p>Science has been, and continues to be, advanced by individuals of various races, genders, ethnicities, languages, disabilities, family backgrounds and incomes.</p>	<ul style="list-style-type: none">• Science depends on curiosity, imagination, creativity, and persistence.• Individuals from different social, cultural, and ethnic backgrounds work as scientists and engineers.• Science and engineering are influenced by technological advances and society; technological advances and society are influenced by science and engineering.• Science and technology might raise ethical, social and cultural issues for which science, by itself, does not provide answers and solutions.
<p>Scientific Knowledge is Open to Revision in Light of New Evidence</p> <p>Science is not static. Science is constantly changing as we acquire more knowledge.</p>	<ul style="list-style-type: none">• Science can advance through critical thinking about existing evidence.• Science includes the process of comparing patterns of evidence with current theory.• Some science knowledge pertains to probabilities or tendencies.• Science should carefully consider and evaluate anomalies (persistent outliers) in data and evidence.• Improvements in technology allow us to gather new scientific evidence

Content Area	Biology		
Strand	Heredity		
Reporting Category	Biology		
Gen-Ed Standard	B.H.1 Cellular Genetics		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.H.1a. Describe that different genes code for proteins that determine different traits.	B.H.1b Communicate that genes code for specific traits (e.g., eye color, hair color).	B.H.1c Recognize that genes are made up of DNA.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams indicating how genes code for different traits. • Items may include images and diagrams of DNA, genes, and gene sequences. • Items may include the relationships among DNA, genes, chromosomes, RNA, amino acids, and proteins. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Here are two different gene sequences. How will this show up in the body?
Moderate Complexity Level B	Genes make a code in our body. What does that code determine?
Low Complexity Level C	What material makes up genes?

Content Area	Biology		
Strand	Heredity		
Reporting Category	Biology		
Gen-Ed Standard	B.H.2 Structure and Function of DNA in Cells		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.H.2a Recognize that changing the segments of DNA molecules can alter genes.	B.H.2b Recognize that genes are made up of DNA, so changing the segments of DNA can alter genes.	B.H.2c When given a representation of individuals from the same parents, identify variations in physical traits.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams indicating how segments of DNA code for traits in parents and offspring. • Items may include images and diagrams of DNA, genes, and gene sequences. • Items may include how a change in the gene sequence causes mutations and the different results that may arise from those mutations. • Items may include how sexual reproduction produces different gene sequences, and thus, different traits. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	What can cause a change to genes?
Moderate Complexity Level B	What may change after a change to the DNA?
Low Complexity Level C	Here is a picture of two brothers. How do the genes differ between the two brothers?

Content Area	Biology		
Strand	Heredity		
Reporting Category	Biology		
Gen-Ed Standard	B.H.3 Genetic Mechanisms and Inheritance		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.H.3a Predict the possible phenotypes of an offspring when given the genotype of the parents (e.g., using a Punnett square).	B.H.3b Recognize that genes combine during sexual reproduction which causes the traits of offspring to not be exact replicas of either parent.	B.H.3c Identify X and Y as female and male chromosomes.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include Punnett squares, pedigrees, or diagrams showing the cross of parents and resulting offspring. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Here is a Punnett square. What color fur will most of the offspring have?
Moderate Complexity Level B	Why does the offspring of an animal look slightly different from its parent?
Low Complexity Level C	Which group of people contains a Y chromosome?

Content Area	Biology		
Strand	Heredity		
Reporting Category	Biology		
Gen-Ed Standard	B.H.4 Mutations		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.H.4a Describe how some mutations can be helpful and some can be harmful to organisms.	B.H.4b Recognize that genes can be altered and that those changed genes may then be passed to offspring.	B.H.4c Identify traits that can vary among a population (e.g., eye color, beak shape, etc.).
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams indicating traits in parents and offspring. • Items may include images and diagrams of DNA, genes, and protein codes. • Items may include examples of mutations that cause no change in the organism, of mutations that may be harmful to an organism, or of mutations that may be helpful by producing an advantageous trait in a certain condition. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	<p>A mutation caused a change in the plant. The plant needs less water now.</p> <p>How will this change affect the plant during a drought?</p>
Moderate Complexity Level B	<p>A mutation occurs in a parent that is passed to the offspring.</p> <p>In what type of cell did the mutation occur?</p>
Low Complexity Level C	<p>Here is a population of rabbits.</p> <p>What trait is different among the rabbits?</p>

Content Area	Biology		
Strand	Heredity		
Reporting Category	Biology		
Gen-Ed Standard	B.H.5 Modern Genetics		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.H.5a Describe specific ways in which scientists have used DNA to help people or the environment (e.g., sweeter fruit, etc.).	B.H.5b Identify one reason DNA would be purposely altered by humans.	B.H.5c Identify a model of DNA.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams of DNA, genes, and protein codes. • Items should focus on common uses of DNA-altered organisms (e.g., GMO foods, seedless varieties of fruits, disease resistant plants, or higher yield grains). • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which situation is an example of how scientists have changed the DNA of an organism to help society?
Moderate Complexity Level B	Why might a scientist change the DNA of a plant?
Low Complexity Level C	Which diagram shows a model of DNA?

Content Area	Biology		
Strand	Evolution		
Reporting Category	Biology		
Gen-Ed Standard	B.E.1 Mechanisms <ul style="list-style-type: none"> o Natural selection o Mutation o Genetic drift o Gene flow (immigration, emigration) o Sexual selection 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.E.1a Describe how the presence or absence of traits may help some individuals in a plant or animal population survive and reproduce in their environment (e.g., natural selection).	B.E.1b When given a population of animals or plants, identify how variation in traits impacts their ability to survive and reproduce (e.g., populations of endangered species).	B.E.1c When given a plant or animal, identify traits that help it to survive in its environment.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images or descriptions of plants and animals with traits that allow them to survive in their environment. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	After a large fire, only hard-shelled seeds are found in a forest. Which type of beak is best-suited for this changed environment?
Moderate Complexity Level B	In a population of birds, some have sharper beaks than others. How does this difference in beak shape affect their ability to survive?
Low Complexity Level C	Which trait of a tiger helps it to hide in tall grass?

Content Area	Biology		
Strand	Evolution		
Reporting Category	Biology		
Gen-Ed Standard	B.E.2 Speciation o Biological classification expanded to molecular evidence o Variation of organisms within a species due to population genetics and gene frequency		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.E.2a Identify evolutionary changes to a given species that have allowed the species to continue to survive and reproduce.	B.E.2b Diagram and describe the evolutionary change in a species.	B.E.2c Given a visual representation, identify a species that has changed over the course of many generations (e.g., cladogram diagram).
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may provide diagrams, images, or illustrations showing the ancestral relationships among organisms or comparing living organisms with their ancestors. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Based on the diagram, which change allowed the species to survive after the wetlands dried up?
Moderate Complexity Level B	Lizards have lungs, but they do not have fur. Where should we put lizards on this diagram?
Low Complexity Level C	Look at the differences between whales and their ancestors. How are whales today different from their ancestors?

Content Area	Biology		
Strand	Diversity and Interdependence of Life		
Reporting Category	Biology		
Gen-Ed Standard	B.DI.1 Biodiversity o Genetic diversity o Species diversity		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.DI.1a Explain how low genetic diversity impacts population size, energy flow or the cycle of matter in a given environment (e.g., Isle Royale Wolf population).	B.DI.1b When given two examples of an animal or plant in a given environment, describe which one would have the higher chance to survive or reproduce based on traits (e.g., fur coat thickness, coloration).	B.DI.1c When given an environment, recognize a plant or an animal that could survive in that environment.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images or descriptions of plants and animals with adaptations that allow them to survive in their environment. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	A small population of birds live on an island. The birds have very similar genes. A change occurs in the environment. How could this change affect the population of birds?
Moderate Complexity Level B	Which plant will survive best if a drought occurs?
Low Complexity Level C	Which animal will survive best in a hot, dry environment?

Content Area	Biology		
Strand	Diversity and Interdependence of Life		
Reporting Category	Biology		
Gen-Ed Standard	B.DI.2 Ecosystems o Equilibrium and disequilibrium o Carrying capacity		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.DI.2a Identify how both populations will change in a predator/prey relationship, when given a model of an ecosystem that is not in balance (e.g., carrying capacity).	B.DI.2b Identify how a human or natural change to an ecosystem results in a change to a predator or prey population.	B.DI.2c When given a set of before and after pictures of an ecosystem, (e.g., meadow changed to farm, forest changed to apartment buildings) observe the human caused changes.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include a population’s response to resources such as plants or prey, water, shelter, space, sunlight, and nutrients. • Items may include the positive and negative impacts human actions have on ecosystems and populations. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	The number of predators increases dramatically. What will happen to the predators and the prey in this area?
Moderate Complexity Level B	In a meadow, owls eat snakes. The meadow changed into land with houses and streets. What likely happened to the food source for the owls?
Low Complexity Level C	Which change was caused by humans?

Content Area	Biology		
Strand	Diversity and Interdependence of Life		
Reporting Category	Biology		
Gen-Ed Standard	B.DI.3 Loss of Diversity o Climate change o Anthropocene effects o Extinction o Invasive species		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.DI.3a Describe how drought, flood, volcanic eruption, habitat loss, or introduction of a new species may affect the diversity in an ecosystem.	B.DI.3b Match the cause (e.g., drought, flood, habitat loss, new species) to its effect on organisms in an ecosystem.	B.DI.3c Identify factors that can harm organisms in an environment (e.g., drought, floods, volcanic eruption, habitat loss, new species etc.).
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items should focus on common plants and animals in an ecosystem. • Items may include images, diagrams, charts, and tables with information regarding populations and environmental factors. • Items may include the positive and negative impacts human actions have on biodiversity. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	A new plant species begins to grow in a forest. No animal eats this plant. What effect will this have on the ecosystem?
Moderate Complexity Level B	The number of deer in a forest decreases. What could cause this decrease?
Low Complexity Level C	What could harm deer in a forest?

Content Area	Biology		
Strand	Cells		
Reporting Category	Biology		
Gen-Ed Standard	B.C.1 Cell Structure o Structure, function and interrelatedness of cell organelles o Eukaryotic cells and prokaryotic cells		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.C.1a Compare and contrast a prokaryotic cell and a eukaryotic cell.	B.C.1.b Match the organelle with the process it helps to execute (e.g., chloroplast, photosynthesis).	B.C.1.c Identify the function of the cell membrane.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include diagrams or descriptions of prokaryotic and eukaryotic cells, and varying organelles within a cell. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	What is different between a prokaryotic cell and a eukaryotic cell?
Moderate Complexity Level B	Which organelle helps the cell conduct photosynthesis?
Low Complexity Level C	What does the cell membrane do?

Content Area	Biology		
Strand	Cells		
Reporting Category	Biology		
Gen-Ed Standard	B.C.2 Cellular Processes <ul style="list-style-type: none"> ○ Characteristics of life regulated by cellular processes ○ Photosynthesis, chemosynthesis, cellular respiration, biosynthesis of macromolecules 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	B.C.2a Describe how the cell needs specific conditions (e.g., temperature, pH) in order to perform its essential functions (e.g., respiration, photosynthesis).	B.C.2b Complete a diagram that depicts the process of photosynthesis.	B.C.2c Identify photosynthesis and cellular respiration as occurring in a cell.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include the reactants and products of photosynthesis (i.e., carbon dioxide, water, sunlight, oxygen, and glucose). • Items may include the purpose of photosynthesis and cellular respiration. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Scientists design an experiment to test how the temperature of a cell affects the rate of photosynthesis in that cell. The data table shows the results. Which cell temperature produces the greatest rate of photosynthesis?
Moderate Complexity Level B	The diagram shows what plants need for photosynthesis. It also shows what photosynthesis produces. What else is needed for photosynthesis to happen?
Low Complexity Level C	Where in a plant does cellular respiration happen?

Content Area	Physical Science		
Strand	Study of Matter		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.M.1 Classification of matter <ul style="list-style-type: none"> o Heterogeneous vs. homogeneous o Properties of matter o States of matter and its changes 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.M.1a1 Recognize the difference between a solution and mixture.	PS.M.1b1 Identify a method to separate a mixture.	PS.M.1c1 Create a mixture.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may use images to show how a mixture can be separated, and how the individual parts of a mixture are often visible, whereas a solution is homogeneous. Solutions should be common, such as salt and water. • Items may focus on using filters, magnets, distillation, density, or hands to separate a mixture. • Objects used to make a mixture should be common and accessible, such as sand or other solids, and water. Two solids, such as paper clips and sand, may also be mixed. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Salt poured into water makes a solution. Which sentence explains why pouring salt into sand does not make a solution?
Moderate Complexity Level B	What tool can be used to separate a mixture of sand and water?
Low Complexity Level C	Which picture shows a mixture?

Content Area	Physical Science		
Strand	Study of Matter		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.M.1 Classification of matter <ul style="list-style-type: none"> ○ Heterogeneous vs. homogeneous ○ Properties of matter ○ States of matter and its changes 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.M.1a2 Classify objects by their physical properties (e.g., weight, melting and boiling points).	PS.M.1b2 Describe physical properties of matter (e.g., size, weight, shape, magnetic, melting and boiling points).	PS.M.1c2 Identify a physical property of matter.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may focus on the physical properties of common substances. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which list contains only magnetic objects?
Moderate Complexity Level B	Which physical properties match the object?
Low Complexity Level C	Which word describes a physical property of this rock?

Content Area	Physical Science		
Strand	Study of Matter		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.M.1 Classification of matter o Heterogeneous vs. homogeneous o Properties of matter o States of matter and its changes		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.M.1a3 Describe how thermal energy moves (e.g., thermal energy as ice melts).	PS.M.1b3 Identify heat as thermal energy.	PS.M.1c3 Identify heat as the cause of a phase change.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may focus on water as it is heated from ice to liquid water to steam. • Items may focus on how thermal energy moves in common situations and objects. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Where does the thermal energy travel when ice is placed into a cup of warm water?
Moderate Complexity Level B	What is the source of thermal energy?
Low Complexity Level C	What causes ice to melt?

Content Area	Physical Science		
Strand	Study of Matter		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.M.2 Atoms <ul style="list-style-type: none"> o Models of the atom (components) o Ions (cations and anions) o Isotopes 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.M.2a Identify parts of an atom (protons, neutrons, electrons).	PS.M.2b Identify a diagram or model of an atom.	PS.M.2c Identify that all matter is made of atoms.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include diagrams or models of atoms that can include information about the location and charge of protons, neutrons and electrons. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	In this model, which part is an electron?
Moderate Complexity Level B	Which diagram shows a model of an atom?
Low Complexity Level C	What makes up all matter?

Content Area	Physical Science		
Strand	Study of Matter		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.M.3 Periodic trends of the elements <ul style="list-style-type: none"> o Periodic law o Representative groups 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.M.3a Use a Periodic Table to answer questions (e.g., number of outer electrons, groupings).	PS.M.3b Recognize that elements are organized on the Periodic Table by their properties, number of protons, and number of outer electrons.	PS.M.3c Identify an element(s) on the periodic table.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include a part of or an entire periodic table. • Items may cover information obtained from a periodic table such as the electron configurations, groupings (e.g., alkali earth, nonmetal, halogen), atomic numbers, atomic mass, number of valence electrons, and energy levels for an element. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	How many electrons are in the outer shell of carbon?
Moderate Complexity Level B	How are elements organized on the Periodic Table?
Low Complexity Level C	Which substance is an element on the Periodic Table?

Content Area	Physical Science		
Strand	Study of Matter		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.M.4 Bonding and compounds <ul style="list-style-type: none"> o Bonding (ionic and covalent) o Nomenclature 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.M.4a Recognize that atoms can bond ionically or covalently.	PS.M.4b Recognize that atoms can bond (interact).	PS.M.4c Identify a chemical compound.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include diagrams or models of simple and common chemical compounds (e.g., CO₂, HCl, H₂) without polyatomic ions. • Items may include the empirical formula of compounds (e.g., CO₂, HCl, H₂). • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	How are these two atoms bonded together?
Moderate Complexity Level B	How do hydrogen and oxygen create water?
Low Complexity Level C	Which substance is a chemical compound?

Content Area	Physical Science		
Strand	Energy and Waves		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.EW.1 Conservation of energy <ul style="list-style-type: none"> ○ Quantifying kinetic energy ○ Quantifying gravitational potential energy 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.EW.1a Describe the requirement(s) to change an object's energy from kinetic to potential (or potential to kinetic).	PS.EW.1b When given a situation identify if the change in energy was to kinetic or potential energy.	PS.EW.1c Identify a situation that demonstrates a change to the kinetic or the potential energy of an object.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may focus on how kinetic and potential energies change based on speed, height, and mass of objects. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	What is needed to change the toy car's potential energy into kinetic energy?
Moderate Complexity Level B	How did the energy change in this situation?
Low Complexity Level C	When does the kinetic energy of a car change?

Content Area	Physical Science		
Strand	Energy and Waves		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.EW.2 Transfer and transformation of energy (including work)		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.EW.2a Describe how heat energy can be transferred (e.g., radiation, conduction, convection).	PS.EW.2b Identify the transformation of energy in a given scenario (e.g., light bulb).	PS.EW.2c Identify that energy can be transferred (e.g., electricity is transferred to light energy in a light bulb).
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include simple thermal energy transfer, as from a lamp to surrounding air or from the sun to an ice cube. • Items may include images, diagrams, and models of energy transfer. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	How is heat transferred through conduction?
Moderate Complexity Level B	How is energy changed in a light bulb?
Low Complexity Level C	Which image shows a transfer of energy?

Content Area	Physical Science		
Strand	Energy and Waves		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.EW.4 Thermal energy		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.EW.4a1 Describe how thermal energy moves from a warmer object to a cooler object.	PS.EW.4b1 Identify heat as thermal energy.	PS.EW.4c1 Identify heat as the cause of a phase change.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may focus on water as it is heated from ice to liquid water to steam. • Items may focus on how thermal energy moves in common situations and objects. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Fran places ice in a cup of room temperature water. How will thermal energy move inside the cup?
Moderate Complexity Level B	Students measure the amount of heat in different objects. Which form of energy are the students testing?
Low Complexity Level C	What causes solid ice to change into liquid water?

Content Area	Physical Science		
Strand	Energy and Waves		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.EW.4 Thermal energy		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.EW.4a2 Describe how different colors of objects absorb thermal energy differently.	PS.EW.4b2 Explore how thermal energy can be absorbed by objects.	PS.EW.4c2 Follow the path of thermal energy transfer in a diagram.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may focus on how darker colors absorb more thermal energy than lighter colors. • Items may focus on how thermal energy is absorbed, causing a cooler object to turn warmer. • Diagrams may include simple thermal energy transfer, as from a lamp to surrounding air or from the sun to an ice cube. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which object will absorb the most thermal energy?
Moderate Complexity Level B	In which situation is an object absorbing thermal energy?
Low Complexity Level C	A lamp is on in a room. Where does some of the thermal energy from the lamp go?

Content Area	Physical Science		
Strand	Forces and Motion		
Reporting Category	Physical Science		
Gen-Ed Standard	<p>PS.FM.1 Motion</p> <ul style="list-style-type: none"> o Introduction to one-dimensional vectors o Displacement, velocity (constant, average and instantaneous) and acceleration o Interpreting position vs. time and velocity vs. time graphs 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.FM.1a Describe the motion of an object given its placement on a graph (position vs. time graph).	PS.FM.1b Identify the force (balanced or an unbalanced force) of a moving object.	PS.FM.1c Apply an unbalanced force to an object to change its motion (e.g., accelerate it, stop it, start it).
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Graphs should have the axes labeled and be clear and simple. • Items may focus on how unbalanced forces occur when an object is speeding up or slowing down. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Here is a position vs. time graph for a person walking. When is the person standing still?
Moderate Complexity Level B	A car is moving at a constant speed on a road. What kind of force is the car experiencing?
Low Complexity Level C	Which action causes an unbalanced force?

Content Area	Physical Science		
Strand	Forces and Motion		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.FM.2 Forces o Force diagrams o Types of forces (gravity, friction, normal, tension) o Field model for forces at a distance		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.FM.2a1 Create a force diagram by indicating the location and direction of the normal force.	PS.FM.2b1 Label forces and/or directions of forces on a force diagram.	PS.FM.2c1 Identify a force on an object in a force diagram.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may have simple force diagrams with no more than four forces shown at right angles to each other. • Forces should include the force of friction, gravitational force, normal force, and pushes or pulls. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which force diagram correctly shows the normal force on the book?
Moderate Complexity Level B	The picture shows an object moving to the right. Which arrow on the force diagram causes this motion?
Low Complexity Level C	Here is a force diagram. Which force pushes the book into the table?

Content Area	Physical Science		
Strand	Forces and Motion		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.FM.2 Forces o Force diagrams o Types of forces (gravity, friction, normal, tension) o Field model for forces at a distance		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.FM.2a2 Organize the surface types from “causes the most friction” (most difficult to push) to “causes the least amount of friction” (easiest to push).	PS.FM.2b2 Investigate friction and normal force as it relates to moving an object (sliding furniture over different types of flooring).	PS.FM.2c2 Recognize that diverse surface types cause friction differently.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may use descriptive words or images to demonstrate different surfaces. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which flooring surface would be the most difficult to slide a box across?
Moderate Complexity Level B	What does friction do to an object as it moves across a floor?
Low Complexity Level C	What can cause the friction of a moving object to change?

Content Area	Physical Science		
Strand	Forces and Motion		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.FM.3 Dynamics (how forces affect motion) <ul style="list-style-type: none"> o Objects at rest o Objects moving with constant velocity o Accelerating objects 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.FM.3a Describe a motion of an object given its position vs. time graph.	PS.FM.3b Apply an unbalanced force to an object to change its motion (e.g., accelerate it, stop it, start it).	PS.FM.3c Identify an unbalanced force.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Graphs should have the axes labeled and be clear and simple. • Items may focus on how unbalanced forces occur when an object is speeding up or slowing down. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Here is a position vs. time graph for a person walking. When is the person standing still?
Moderate Complexity Level B	A car moves at a constant speed on a road. Which force will slow down the car?
Low Complexity Level C	A student uses a toy car to show forces. When is there an unbalanced force acting on the toy car?

Content Area	Physical Science		
Strand	The Universe		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.U.1 History of the universe		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.U.1a Create a model that shows how the universe is expanding (e.g., blowing up a balloon).	PS.U.1b Identify a model that illustrates the Big Bang theory.	PS.U.1c Recognize that the universe is expanding.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and models of the universe spreading out or models of expansion, such as a balloon or a tire expanding. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which materials can model how the universe expands?
Moderate Complexity Level B	Which model demonstrates the Big Bang theory?
Low Complexity Level C	How is the universe changing?

Content Area	Physical Science		
Strand	The Universe		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.U.2 Galaxies		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.U.2a Classify a galaxy based on its shape (e.g., spiral, barred-spiral, elliptical, irregular).	PS.U.2b Match two galaxies of the same type (e.g., spiral, elliptical).	PS.U.2c Recognize that many stars make up a galaxy.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and models of the different galaxy types. Images should be clear and show a distinct shape. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Here is a picture of a galaxy. Which shape is this galaxy?
Moderate Complexity Level B	The Milky Way is a spiral galaxy. Which other galaxy is the same shape as the Milky Way?
Low Complexity Level C	How many stars make up a galaxy?

Content Area	Physical Science		
Strand	The Universe		
Reporting Category	Physical Science		
Gen-Ed Standard	PS.U.3 Stars o Formation; stages of evolution o Fusion in stars		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	PS.U.3a Match a star of a specific relative mass (e.g., low, medium, high) with its life cycle.	PS.U.3b Identify “mass” as the property that determines the life cycle of a star.	PS.U.3c Recognize that stars form from clouds of gas.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may focus on how the more massive a star, the shorter its lifespan or life cycle. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which star will have the longest life cycle?
Moderate Complexity Level B	Which property of a star determines how long it will shine brightly?
Low Complexity Level C	How are stars formed?

Content Area	Environmental Science		
Strand	Earth Systems: Interconnected Spheres of Earth		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ES.1 Biosphere <ul style="list-style-type: none"> ○ Evolution and adaptation in populations ○ Biodiversity ○ Ecosystems (equilibrium, species interactions, stability) ○ Population dynamics 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ES.1a Predict the effects on the biosphere based on changes in a given population.	ENV.ES.1b Identify cause and effect of population change(s) within the biosphere.	ENV.ES.1c Recognize that the biosphere is occupied by living organisms.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams of common organisms and environments. • Items may include articles, diagrams, graphs, data tables, and charts of population data. • Items may include the cause or effect of population change in an ecosystem. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	The deer population increases quickly. What change is likely to happen after the deer population increases?
Moderate Complexity Level B	According to the data table, what likely caused the squirrel population to decrease?
Low Complexity Level C	What makes up the biosphere?

Content Area	Environmental Science		
Strand	Earth Systems: Interconnected Spheres of Earth		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ES.2 Atmosphere <ul style="list-style-type: none"> ○ Atmospheric properties and currents 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ES.2a Analyze how greenhouse gases affect atmospheric properties.	ENV.ES.2b Identify atmospheric properties (e.g., temperature, humidity, density and pressure).	ENV.ES.2c Recognize air currents on a map.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams of the atmosphere and weather maps. • Items may include articles, diagrams, graphs, data tables, and charts of atmospheric data. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	The graph shows how some atmospheric properties are affected by greenhouse gases. Which sentence describes the relationship shown in the graph?
Moderate Complexity Level B	Which property describes Earth's atmosphere?
Low Complexity Level C	Which map shows air currents over the United States?

Content Area	Environmental Science		
Strand	Earth Systems: Interconnected Spheres of Earth		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ES.3 Lithosphere <ul style="list-style-type: none"> ○ Geologic events and processes 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ES.3a Describe how a geologic event can impact the other spheres (e.g., volcano eruption into the air, mudslide into water, etc.).	ENV.ES.3b List events that can occur within the lithosphere.	ENV.ES.3c Recognize that the lithosphere is the outer most layer (crust) of the surface of the Earth.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams of the lithosphere. • Items may include articles, diagrams, graphs, data tables, and charts showing lithosphere’s effect on other spheres. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	How does a volcanic eruption on the lithosphere affect another sphere on Earth?
Moderate Complexity Level B	Which event occurs within the lithosphere?
Low Complexity Level C	Where is the lithosphere located?

Content Area	Environmental Science		
Strand	Earth Systems: Interconnected Spheres of Earth		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ES.4 Hydrosphere <ul style="list-style-type: none"> ○ Oceanic currents and patterns (as they relate to climate) ○ Surface and ground water flow patterns and movement ○ Cryosphere 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ES.4a Describe how ocean currents and patterns relate to climate.	ENV.ES.4b Follow surface and ground water flow patterns and movement.	ENV.ES.4c Recognize that the hydrosphere is the water portion of Earth.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include images and diagrams of the hydrosphere. • Items may include articles, diagrams, graphs, data tables, and charts showing the hydrosphere’s effect on climate. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	The map shows some major ocean currents in the world. How do these currents affect the climate in Location A?
Moderate Complexity Level B	According to the map, how does ground water flow?
Low Complexity Level C	What part of Earth is in the hydrosphere?

Content Area	Environmental Science		
Strand	Earth's Resources		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ER.1 Energy resources <ul style="list-style-type: none"> ○ Renewable and nonrenewable energy sources and efficiency ○ Alternate energy sources and efficiency ○ Resource availability ○ Mining and resource extraction 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ER.1a Describe the source and benefit of renewable and nonrenewable energy as it relates to resources.	ENV.ER.1b Compare renewable and nonrenewable sources of energy (e.g., effectiveness, cost to produce).	ENV.ER.1c Sort sources of energy as renewable and nonrenewable.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may reference all common types of energy and their sources. • Items may include articles, diagrams, graphs, data tables, and charts comparing renewable and nonrenewable energy. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which sentence describes a benefit of using renewable resources?
Moderate Complexity Level B	The table lists different sources of energy and some advantages to each type. What advantage does solar energy have over fossil fuels?
Low Complexity Level C	Which source of energy is renewable?

Content Area	Environmental Science		
Strand	Earth's Resources		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ER.2 Air and air pollution <ul style="list-style-type: none"> ○ Primary and secondary contaminants ○ Greenhouse gases ○ Clean Air Act 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ER.2a Identify a consequence and solution to air pollution (e.g., Clean Air Act).	ENV.ER.2b Identify a greenhouse gas and how humans have impacted the level of greenhouse gases.	ENV.ER.2c Identify types of air pollution.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may reference common types of air pollution, including sources and impact on humans and the environment. • Items may include articles, diagrams, graphs, data tables, and charts of air pollution data. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	What is one way that people have tried to limit the amount of air pollution on Earth?
Moderate Complexity Level B	How have humans changed the amount of greenhouse gases in the air?
Low Complexity Level C	Which action can pollute the air?

Content Area	Environmental Science		
Strand	Earth's Resources		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ER.3 Water and water pollution <ul style="list-style-type: none"> ○ Potable water and water quality ○ Hypoxia, eutrophication ○ Clean Water Act ○ Point source and non-point source contamination 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ER.3a Identify a consequence and solution to water pollution (e.g., Clean Water Act).	ENV.ER.3b Identify ways that humans have changed the global water supply (e.g., water quality).	ENV.ER.3c Identify types of water pollution.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may reference common types of water pollution, including sources and impact on humans and the environment. • Items may include articles, diagrams, graphs, data tables, and charts of water pollution data. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	What is one way that people have tried to limit the amount of water pollution on Earth?
Moderate Complexity Level B	How have humans changed the quality of water available for humans?
Low Complexity Level C	Which action can pollute water?

Content Area	Environmental Science		
Strand	Earth's Resources		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ER.4 Soil and land <ul style="list-style-type: none"> ○ Desertification ○ Mass movement and erosion ○ Sediment contamination ○ Land use and land management (including food production, agriculture, and zoning) ○ Solid and hazardous waste 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ER.4a Identify a consequence and solution of soil pollution (e.g., land use, zoning).	ENV.ER.4b Identify ways that humans have contributed to changes in the land (e.g., deforestation, strip mining, waste, etc.).	ENV.ER.4c Identify types of soil pollution.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may reference common types of soil and land pollution, including sources and impact on humans and the environment. • Items may include articles, diagrams, graphs, data tables, and charts of land pollution data. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	What is one way that people have tried to limit the amount of soil pollution on Earth?
Moderate Complexity Level B	How have humans caused pollution to the land?
Low Complexity Level C	Which action can pollute Earth's soil?

Content Area	Environmental Science		
Strand	Earth's Resources		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.ER.5 Wildlife and wilderness <ul style="list-style-type: none"> ○ Wildlife and wilderness management <ul style="list-style-type: none"> ▪ Endangered species ○ Invasive species ○ Introduced species 		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.ER.5a Explain how a species can become endangered (e.g., deforestation, invasive species).	ENV.ER.5b Categorize species as “endangered” or “non-endangered.”	ENV.ER.5c Identify the meaning of “endangered” species.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include causes of being endangered such as over-hunting/fishing, pollution, invasive species, or habitat loss. • Items may include science articles or passages about endangered species. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which action can cause a species to become endangered?
Moderate Complexity Level B	According to the text, which species is endangered?
Low Complexity Level C	What does it mean if an animal is given an “endangered” label?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.1 Human population		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.1a Describe how the size of the human population can have harmful effects on the environment.	ENV.GP.1b Identify how the human population has changed over time.	ENV.GP.1c Recognize that humans can change their environment globally.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include articles, images, diagrams, charts, and tables with information regarding human population and environmental factors. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	How does a large human population affect the overall environment on Earth?
Moderate Complexity Level B	According to the graph, how has the human population changed over the last 200 years?
Low Complexity Level C	How can humans change the global environment?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.2 Potable water quality, use, and availability		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.2a Describe a way to preserve potable water on Earth.	ENV.GP.2b Identify a way humans have changed the global water quality.	ENV.GP.2c Identify a fresh water source.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include articles, images, diagrams, charts, and tables with information regarding fresh water sources and quality. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which action helps preserve Earth's fresh water?
Moderate Complexity Level B	According to the chart, how have humans changed water quality in the lake over the last 10 years?
Low Complexity Level C	Which water source provides fresh water?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.3 Climate change		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.3a Describe a way to preserve our global climates.	ENV.GP.3b Identify a possible factor of climate change.	ENV.GP.3c Recognize the characteristics of a climate change (e.g., melting glaciers).
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include articles, images, diagrams, charts, and tables with information regarding climate change. • Items may include the impacts of climate change in various locations across Earth. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	What is an action that humans can do to help preserve Earth's climates?
Moderate Complexity Level B	According to the table, which action may affect the global climate?
Low Complexity Level C	Which action is result of climate change?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.4 Sustainability		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.4a Explain how resources can be sustained to reduce the impact on Earth (e.g., planting new trees after chopping down others).	ENV.GP.4b Identify a resource that should be sustained to positively affect Earth.	ENV.GP.4c Sort resources into renewable or nonrenewable categories.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may reference all common resources, including their sources and the sustainability of each resource. • Items may include articles, diagrams, graphs, data table, and charts comparing renewable and nonrenewable resources. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which action can help preserve Earth's forests?
Moderate Complexity Level B	Which resource should be preserved on Earth to help humans?
Low Complexity Level C	Which resource is nonrenewable?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.5 Species depletion and extinction		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.5a Describe why species extinction is harmful to Earth.	ENV.GP.5b Identify the cause of a species extinction.	ENV.GP.5c Identify a species that has become extinct.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include causes of extinction such as natural or man-made environmental changes, over-hunting/fishing, pollution, invasive species, or habitat loss. • Items may include articles, diagrams, graphs, data tables, and charts with information about extinction. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	According to the chart, what effect did the extinction of Species A have on the local ecosystem?
Moderate Complexity Level B	What can cause an animal to become extinct?
Low Complexity Level C	Which animal is now extinct on Earth?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.6 Air quality		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.6a Describe the effect of air quality on humans.	ENV.GP.6b Describe the effect of a pollutant on air quality.	ENV.GP.6c Identify a type of air pollution.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may reference common types of air pollution, including sources and impact on humans and the environment. • Items may include articles, diagrams, graphs, data tables, and charts about air quality. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	How can polluted air affect human health?
Moderate Complexity Level B	According to the table, how have the pollutants from the factory affected the air nearby?
Low Complexity Level C	Which action can pollute the air?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.7 Food production and availability		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.7a Describe how a factor could limit the availability of food.	ENV.GP.7b Describe a factor that can affect food production (e.g., early frost, drought, etc.).	ENV.GP.7c Identify one food production method (e.g., farming, manufacturing).
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include articles, diagrams, graphs, data tables, and charts about food production and availability across the globe. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	How can a drought affect the amount of food available?
Moderate Complexity Level B	What can cause a decrease in the amount of food produced on a farm?
Low Complexity Level C	How is food produced for humans to eat?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.8 Deforestation and loss of biodiversity		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.8a Identify an effect of deforestation on an ecosystem.	ENV.GP.8b Describe the importance of a forest ecosystem.	ENV.GP.8c Recognize that having many different organisms in an ecosystem generally leads to a healthier ecosystem.
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may include articles, diagrams, graphs, data tables, and charts with information about forest ecosystems and deforestation. • Items may include maps of deforested areas. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	The images show an area of land before and after it was deforested. How has the deforestation affected the animals in the ecosystem?
Moderate Complexity Level B	Why are forests important to Earth?
Low Complexity Level C	What type of ecosystem is the healthiest?

Content Area	Environmental Science		
Strand	Global Environment Problems and Issues		
Reporting Category	Environmental Science		
Gen-Ed Standard	ENV.GP.9 Waste management (solid and hazardous)		
Extensions	Extension A: High Complexity	Extension B: Moderate Complexity	Extension C: Low Complexity
	ENV.GP.9a Describe a way to reduce solid and hazardous waste.	ENV.GP.9b Describe an effect of waste on the environment.	ENV.GP.9c Sort types of waste into solid or hazardous waste
<i>The Standard, Extensions and Text Characteristics support the following task demands:</i>			
Content Limits	<ul style="list-style-type: none"> • Items may reference all common sources of waste. • Items may include articles, diagrams, graphs, data tables, and charts with information about solid and hazardous waste. • Nature of Science skills and attributes related to this content. 		

Sample Items	
<i>Item Models</i>	
High Complexity Level A	Which action can reduce the amount of waste that humans make?
Moderate Complexity Level B	How does disposing of waste affect the local environment?
Low Complexity Level C	Which list shows only hazardous waste?