



INVESTIGATE THE WORLD

What is the evidence that the student uses scientific procedures and disciplines to investigate natural and/or human global phenomena?

	Emerging	Developing	Proficient	Advanced
SCI11-12.INV1.QUSTN	Formulates questions about a significant global science issue.	Formulates questions about a significant global science issue and develops a hypothesis or research thesis.	Formulates and refines questions about a significant global science issue and develops a specific, focused hypothesis or research thesis.	Formulates and refines questions about a significant global science issue and develops a challenging, provocative hypothesis or research thesis that takes a defensible stand, justifies discussion, and introduces new ideas.
SCI11-12.INV2.SOURC	Gathers background information from a variety of secondary sources and compares and analyzes it, with results beginning to support the hypothesis or research thesis.	Gathers relevant background information from a combination of primary and secondary global sources and compares and analyzes it, providing support for most issues raised by the hypothesis or research thesis.	Gathers relevant background information from a combination of primary and secondary global sources and compares, analyzes, and evaluates it, providing clear support for the hypothesis or research thesis	Gathers extensive relevant background information from a variety of primary and secondary global sources and provides a detailed comparison, analysis, and evaluation of it, providing full and convincing support for the hypothesis or research thesis.

	Emerging	Developing	Proficient	Advanced
SCI11-12.INV3.MODEL	Identifies an existing theory and/or model related to an experimental hypothesis or research thesis and begins to question the credibility and reliability of the theories and/or models, identifying limited evidence to support or refute them.	Identifies an existing theory and/or model related to an experimental hypothesis or research thesis and questions and analyzes the credibility and reliability of the theories and/or models, identifying evidence to support or refute them.	Identifies multiple existing theories and/or models related to an experimental hypothesis or research thesis and questions, analyzes, and evaluates the credibility and reliability of theories and/or models, providing strong evidence to support or refute them.	Identifies most significant existing theories and/or models related to an experimental hypothesis or research thesis, researches the proponents of the various theories and models as an aid to judging their credibility, and fully evaluates the credibility and reliability of theories and models for valid contributions and limitations.
SCI11-12.INV4.XPRMT	Designs an experiment that is related to the stated problem and bases conclusions on observations, measurements, and empirical data.	Designs an experiment that is relevant to the stated problem and partially tests the hypothesis or research thesis, bases conclusions on empirical evidence, and the data are discussed in support of the hypothesis or research thesis.	Designs an experiment that offers a detailed method for investigating and testing the hypothesis or research thesis using appropriate technology, analyzes data from multiple sources, and conclusions follow logically from the evidence to support the hypothesis or research thesis.	Designs a comprehensive experiment using multiple methods and technologies to test the hypothesis or research thesis, synthesizes data from multiple sources, including the student's own, develops a comparative analysis, and defends the hypothesis or research thesis creatively.

RECOGNIZE PERSPECTIVES

What is the evidence that the student interprets and discusses scientific data in the context of complex global systems?

	Emerging	Developing	Proficient	Advanced
SCI11-12.PERS1.CNTXT	Identifies and uses two contexts to interpret a global science issue and discusses alternate viewpoints.	Identifies and compares two or more contexts to analyze a global science issue, with discussion of the interrelationships and contrasts one or more alternate views.	Uses multiple contexts to evaluate how competing interests or interrelationships affect a global science issue and presents and analyzes both a supporting and an opposing view as a way to understand alternate positions.	Uses multiple contexts to evaluate a global science issue as a result of the complex interrelationships among scientific, cultural, social, economic, political, and historical pressures or interests and explores in depth several alternate views and discusses their strengths and weaknesses.
SCI11-12.PERS2.DATA	Identifies patterns or relationships in the data with limited mathematical or statistical analysis or minor errors, identifies and discusses experimental error, outliers, and/or inconsistencies in the data, and refers to the hypothesis or research thesis in the conclusion.	Analyzes patterns and relationships in the data by mostly correct application of mathematical or statistical techniques, identifies and interprets experimental error, outliers, and/or inconsistencies in the data, and concludes by evaluating the hypothesis or research thesis based on evidence from the data.	Evaluates patterns and relationships in the data by correctly applying mathematical or statistical techniques, identifies and interprets experimental error, outliers, and/or inconsistencies in the data, and concludes by evaluating the hypothesis or research thesis based on evidence from the data.	Interprets complex patterns and relationships among multiple variables using sophisticated mathematical or statistical techniques, discusses experimental error, outliers and/or inconsistencies in the data, and offers solutions to minimize future errors, and concludes by evaluating the hypothesis or thesis based on evidence from the data and explores intended and unintended consequences.
SCI11-12.PERS3.QUSTN	Poses new questions with clear relevance to the research findings.	Poses relevant new questions that extend the original research question.	Poses and discusses relevant new questions in response to the implications of experimental or research findings from differing perspectives and in the context of a global issue.	Develops relevant new questions and suggestions for further research, designed to explore implications related to the question from differing perspectives and in the context of complex global systems.

COMMUNICATE IDEAS

How clearly and accurately does the student communicate and defend his/her mathematical thinking, approaches, representations, solution, and decisions?

	Emerging	Developing	Proficient	Advanced
SCI11-12.COMM1.PRCDR	Explains experimental and/or research procedures in detail, some steps required to replicate the experimental design may be incomplete, and bibliographic format is consistent for each type of reference or citation.	Demonstrates experimental and/or research procedures in sufficient detail to replicate and bibliographic format is consistent for each type of reference and includes multiple sources and citations.	Analyzes experimental and/or research procedures in sufficient detail to be replicated, accurately tests the experimental design, and bibliographic format is consistent for each type of reference and includes multiple sources and citations.	Describes experimental and/or research procedures in a detailed, complete, and replicable way, describes multiple methods used to test the experimental design, and bibliographic format is consistent for each type of reference and systematically incorporates a variety of sources and citations.
SCI11-12.COMM2.VSULS	Presents data with visual representations that mostly support explanation of the science issue and experimental or research presentation follows most conventions of scientific communication.	Presents data with visual representations that support explanation of the science issue and experimental or research presentation follows most conventions of scientific communication.	Presents data with visual representations that enhance understanding of the science issue and findings for diverse audiences and experimental or research presentation applies conventions of scientific communication to express ideas and learning.	Presents data in a professional format with visual representations that illustrate the relationships between the variables, supporting diverse audiences' ability to understand and interpret the science issue and findings, and experimental or research presentation consistently applies conventions of scientific communication to enhance audience understanding.

	Emerging	Developing	Proficient	Advanced
SCI11-12.COMM3.TECHL	Uses technology and media to express and discuss scientific ideas and collaboration within the classroom, as well as beyond the classroom at a limited level.	Uses technology and media to express and discuss scientific ideas and collaboration beyond the classroom.	Selects technology and media for specific purposes and applies them effectively to express and discuss scientific ideas and collaboration across global contexts and locations.	Selects technology and media for specific purposes and applies them effectively to express and discuss scientific ideas and collaboration across global contexts and locations.
SCI11-12.COMM4.FORMT	Selects communication format indicating a developing understanding of a science issue.	Selects communication formats to support discussion of scientific ideas and personal reflection.	Uses communication formats effectively, enhancing discussion of the significance of a science issue, including global implications and personal reflections.	Uses a variety of communication formats strategically, enhancing understanding and discussion of the significance of a science issue, including global implications and personal reflections.

TAKE ACTION

What is the evidence that the students translates scientific inquiry or research results into actions that increase awareness and improve global conditions?

	Emerging	Developing	Proficient	Advanced
SCI11-12.ACT1.PLAN	Develops an action plan that describes positive actions or policy relevant to scientific inquiry or research findings.	Develops an action plan that details collaborative actions or policy based on experimental or research findings that have the potential to improve conditions locally.	Develops an action plan that details individual and collaborative actions or policy based on experimental or research findings that increase awareness and improve local and/or global conditions.	Develops an action plan that recommends positive, collaborative actions and policies, explains its viability in relation to the experimental or research findings, and predicts the potential for positive local and/or global impact.
SCI11-12.ACT2.IMPCT	Identifies available technology and personal views for selected actions and begins to think about their impact.	Evaluates available technology and personal views for their impact on the choices made and actions selected.	Evaluates available technology and personal views to determine the impact on actions and to consider additional ways to address alternate viewpoints or solutions to the science issue.	Considers available technology and personal and alternate views in designing actions that address solutions to the science issue.
SCI11-12.ACT3.IMPLT	Implements an action plan, collects and discusses data, and begins to identify changes in a local or global science issue.	Implements an action plan and collects and discusses data to identify and analyze changes in the local or global science issue.	Implements an action plan in creative or innovative ways and collects data and analyzes it to determine the impact of actions on the local or global science issue and identify possible unintended consequences.	Implements an action plan in creative or innovative ways and collects and evaluates data to measure the impact of actions on the local or global science issue and designs responses to any unintended consequences.
SCI11-12.ACT4.RFLCT	Describes in a reflection how feelings and thinking about the issue was informed by the project.	Describes in a reflection specific ways feelings and thinking about the issue and future choices were influenced by the project.	Articulates in a reflection how the project influenced feelings, thinking, choices, actions, and awareness of alternative thoughts and ideas.	Integrates a discussion of the issue throughout the project and indicates in a reflection how thinking evolved, impacting choices, actions, and the awareness of alternative thoughts and ideas now and in the future.