



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 |
|---------------------------|--|---|---|---|
| SCI9-10.INV1.QUSTN | Raises questions about a science issue. | 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. |
| SCI9-10.INV2.SOURC | Gathers background information from a limited number of sources and begins to analyze these sources. | 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 |
| SCI9-10.INV3.MODEL | Identifies existing theories and/or models related to a scientific question. | 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. |

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|---------------------------|--|--|--|---|
| SCI9-10.INV4.XPRMT | Designs an experiment that is related to the stated question and bases conclusions on opinions as well as some observation, measurement, and data. | 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. |

RECOGNIZE PERSPECTIVES

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

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|---------------------|--|---|---|---|
| SCI9-10.PERS1.CNTXT | Identifies and uses a single context to explain a global science issue. | 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. |
| SCI9-10.PERS2.DATA | Organizes and restates experimental data, begins to identify patterns, and refers back to the original question in the conclusion. | 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. |
| SCI9-10.PERS3.QUSTN | Poses new questions with some relevance to the research findings. | 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. |

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 |
|---------------------|--|--|---|---|
| SCI9-10.COMM1.PRCDR | Describes experimental and/or research procedures generally, but cannot replicate them and bibliographic format for references or citations is inconsistent. | 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. |
| SCI9-10.COMM2.VSULS | Presents data with visual representations, demonstrating a basic understanding of the science issue and experimental or research presentation partially follows the conventions of scientific communication. | 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. |
| SCI9-10.COMM3.TECHL | Uses technology and media to express ideas and collaborate within the classroom. | 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. |
| SCI9-10.COMM4.FORMT | Selects from limited communication choices, indicating a basic understanding of a science issue. | 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. |

TAKE ACTION

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

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|---------------------------|---|--|--|---|
| SCI9-10.ACT1.PLAN | Develops a basic action plan that describes positive actions or policy. | 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. |
| SCI9-10.ACT2.IMPCT | Identifies available technology for selected actions. | 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. |
| SCI9-10.ACT3.IMPLT | Implements and discusses an action plan. | 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. |
| SCI9-10.ACT4.RFLCT | Mentions in a reflection how feelings and thinking about the issue was informed by the project. | 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. |