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High School

	SI- Forming a Question or Hypothesis *Based on observations and science principles, formulate a question or hypothesis that can be investigated through the collection and analysis of relevant information.*	SI- Designing an Investigation *Design a controlled experiment, field study, or other systematic investigation that provides sufficient data to answer a question or test a hypothesis about the natural world.*	
5/6**	• Forms a question or hypothesis that can be investigated through collection and analysis of relevant empirical data and generally points toward a broader understanding of existing scientific relationships (e.g. interaction, dependency, correlation, causation) and/or has the potential to lead to new scientific knowledge. • Provides comprehensive (well documented) background science knowledge and observations to establish a detailed context for this investigation. • The question or hypothesis clearly guides the design of an effective or innovative investigation.	• Proposes scientifically logical, safe, and ethical procedure in a precise and efficient design. • Thoroughly identifies, controls, and monitors relevant variables and describes a systematic investigative process that is clear and adaptable if necessary. • Presents a design that will provide data of exceptional quality and quantity to address the question or hypothesis and to investigate possible relationships.	**5/6****
4	• Forms a question or hypothesis that can be investigated through collection and analysis of relevant evidence. • Provides sufficient background science knowledge and/or preliminary observations to establish an appropriate context for this investigation. • The question or hypothesis is specific enough to guide the design of an effective investigation.	• Proposes a scientifically logical, safe, and ethical procedure that can be easily followed. • Identifies relevant variables and defines a systematic, investigative process that has clearly defined procedures. • Presents a design that will provide data of sufficient quality and quantity to address the question or hypothesis.	**4**
3	• Forms a question or hypothesis that cannot be adequately investigated through collection and analysis of evidence. • Provides relevant but insufficient background information and/or preliminary observations. • The question or hypothesis is not specific enough to guide the design of an effective investigation.	• Proposes a scientifically logical, safe, and ethical procedure that can be easily followed but includes scientific or logical errors or omissions. • Identifies relevant variables but does not clearly define a systematic investigative procedure. • Presents a design that will provide data of insufficient quality or insufficient quantity to fully address the question or hypothesis.	**3**
1/2*	• Forms a question or hypothesis that cannot be investigated using data and available resources. • Provides background science knowledge or preliminary observations that are not relevant to the investigation. • The question or hypothesis cannot guide the design of an effective investigation.	• Proposes a limited scientifically logical, safe, or ethical procedure that cannot be easily followed. • Partially identifies variables or presents an investigative procedure that lacks enough detail to be followed. • Presents a design that will provide data of neither sufficient quality nor quantity to fully address the question or hypothesis.	**1/2***

**5 for preponderance (most) completed, 6 for all completed.
* 2 for preponderance (most) completed, 1 for less completed or missing.
A hypothesis may be stated as a claim.

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	SI- Collecting and Presenting Data *Collect, organize, and display sufficient and appropriate data to facilitate scientific analysis and interpretation.*	SI- Analyzing and Interpreting Results *Summarize and analyze data, and identify uncertainties. Draw a valid conclusion, explain how it is supported by the evidence and communicate the findings of the scientific investigation.*	
5/6**	• Collects comprehensive, complete and detailed data that are consistent with the planned investigative design. • Records accurate raw data using appropriate units with quantity and quality consistent with the designed procedure and reports anomalous data. • Displays appropriate data in a manner that utilizes formats that clarify and highlight relationships to be analyzed and explained.	• Draws a valid and comprehensive conclusion that addresses the question or hypothesis, identifies relationships in the data, and explicitly explains how the conclusion is supported by the data. • Uses the results to analyze and critique the design and procedures providing significant sources of uncertainties and discuss how these might affect the results, and suggest insightful improvements, revisions or extensions. • Communicates the findings using relevant terminology to report results, explain possible patterns within the data, and if needed justifies alternate reasonable explanations.	**5/6****
4	• Collects data that are consistent with the planned investigation design. • Records accurate raw data using appropriate units and labels. • Displays appropriate data in a manner that communicates results in an organized format to facilitate scientific analysis and interpretation.	• Draws a valid conclusion that addresses the question or hypothesis and supports the conclusion explicitly using the data. • Provides evidence that the design, procedures, and data have been reviewed to identify sources of uncertainties and discuss how these might affect the results. • Communicates the findings using relevant terminology to report results, identify possible patterns within the data, and propose reasonable explanations.	**4**
3	• Collects data that are consistent with the planned investigation design, but may be incomplete. • Records accurate raw data with incorrect or some missing units or labels. • Displays appropriate data in a manner that communicates results understandably, but may be somewhat incomplete or disorganized.	• Draws a conclusion that addresses the question or hypothesis but is only partially supported by the evidence. • Provides minimal evidence that the design, procedures, and data have been reviewed to identify sources of uncertainties. • Communicates the findings using overly general terminology to report results and propose reasonable but incomplete explanations.	**3**
1/2*	• Records data that are inconsistent with the planned investigation design. • Records inaccurate data and is missing units and labels. • Displays inaccurate, incomplete or disorganized data.	• Draws a conclusion that is not clearly related to the question or hypothesis and is minimally supported by the evidence. • Provides incorrect evidence that the design, procedures, data have been reviewed to identify uncertainties. • Communicates the findings with inaccurate terminology to report results or proposes inaccurate explanations.	**1/2***

**5 for preponderance (most) completed, 6 for all completed.
* 2 for preponderance (most) completed, 1 for less completed or missing.
Data means evidence or record which may or may not require transformation to communicate results.