4th Grade Science — Performance Level Descriptors

Reporting Categories | Needs Support | Close | Ready | Exceeding
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**Interpretation of Data**

Students apply science knowledge, skills, and practices to understand the results of data analysis and to evaluate conclusions and predictions from simple data presentations, graphs, and diagrams of varying complexity.

A student performing at the Needs Support level:
- selects one piece of data from a simple data presentation.
- identifies features of a simple table, graph, or diagram (e.g., axis labels, units of measure).

A student performing at the Close level:
- selects one piece of data from a moderately complex data presentation.
- identifies features of a moderately complex table, graph, or diagram (e.g., axis labels, units of measure).
- understands common scientific terminology, symbols, and units of measure used in a moderately complex scientific context.
- translates moderately complex information into a table, graph, or diagram.
- determines how the value of a variable changes as the value of another variable changes in a moderately complex data presentation.
- compares data from a moderately complex data presentation (e.g., find the highest/lowest value, order data from a table).
- compares data from two or more moderately complex data presentations (e.g., compare a value in a table to a value in a graph).
- combines data from two or more moderately complex data presentations (e.g., combine categories data from a table using a scale from another table).
- determines and/or uses a mathematical relationship that exists between simple data (e.g., averaging, data, unit conversions).
- performs an extrapolation using data in a moderately complex table or graph.
- evaluates the design or methods of a moderately complex experiment.
- explains how to perform an analysis of a moderately complex data presentation.
- selects one piece of data from a complex data presentation.
- translates complex information into a table, graph, or diagram.
- determines the value of a variable changes as the value of another variable changes in a complex data presentation.
- compares data from a complex data presentation (e.g., find the highest/lowest value, order data from a table).
- compares data from two or more complex data presentations (e.g., compare a value in a table to a value in a graph).
- combines data from two or more complex data presentations (e.g., combine categories data from a table using a scale from another table).
- determines and/or uses a mathematical relationship that exists between simple data (e.g., averaging, data, unit conversions).
- performs an extrapolation using data in a complex table or graph.
- evaluates the design or methods of a complex experiment.
- explains how to perform an analysis of a complex data presentation.

**Introduction of Data**

A student performing at the Needs Support level:
- finds information in text that describes a simple experiment.
- identifies similarities and differences between simple experiments.
- determines which simple experiments utilize a given tool, method, or aspect of design.
- understands a simple experimental design.
- determines the scientific question that is the basis for a simple experiment (e.g., the hypothesis).
- predicts the results of an additional trial or measurement in a simple experiment.

A student performing at the Close level:
- finds information in text that describes a moderately complex experiment.
- identifies similarities and differences between moderately complex experiments.
- determines which moderately complex experiments utilized a given tool, method, or aspect of design.
- understands the methods, tools, and functions of tools used in a simple complex experiment.
- understands a moderately complex experimental design.
- determines the scientific question that is the basis for a moderately complex experiment (e.g., the hypothesis).
- evaluates the design or methods of a simple complex experiment (e.g., possible flaws or inconsistencies; precision and accuracy issues).
- predicts the results of an additional trial or measurement in a moderately complex experiment.
- selects one piece of data from a moderately complex data presentation and/or pieces of information in text.
- identifies features of a moderately complex table, graph, or diagram (e.g., axis labels, units of measure).

A student performing at the Ready level:
- finds information in text that describes a complex experiment.
- identifies similarities and differences between complex experiments.
- determines which complex experiments utilized a given tool, method, or aspect of design.
- understands the methods, tools, and functions of tools used in a moderately complex experiment.
- understands a complex experimental design.
- determines the scientific question that is the basis for a complex experiment (e.g., the hypothesis).
- evaluates the design or methods of a complex experiment (e.g., possible flaws or inconsistencies; precision and accuracy issues).
- predicts the results of an additional trial or measurement in a complex experiment.
- selects one piece of data from a complex data presentation and/or pieces of information in text.
- identifies features of a complex table, graph, or diagram (e.g., axis labels, units of measure).

A student performing at the Exceeding level:
- finds information in text that describes a more complex experiment.
- identifies similarities and differences between complex experiments.
- determines which complex experiments utilized a given tool, method, or aspect of design.
- understands the methods, tools, and functions of tools used in a moderately complex experiment.
- understands a complex experimental design.
- determines the scientific question that is the basis for a more complex experiment (e.g., the hypothesis).
- evaluates the design or methods of a complex experiment (e.g., possible flaws or inconsistencies; precision and accuracy issues).
- predicts the results of an additional trial or measurement in a complex experiment.
- selects one piece of data from a complex data presentation and/or pieces of information in text.

**Scientific Investigation**

A student applies science knowledge, skills, and practices to understand the tools, procedures, and design of scientific experiments and to compare, extend, and modify these theories.

A student performing at the Needs Support level:
- class does not consistently demonstrate the science knowledge, skills, and practices measured by the Needs Support level of Models, Inferences, and Experimental Results.

A student performing at the Close level:
- class does not consistently demonstrate the science knowledge, skills, and practices measured by the Needs Support level of Models, Inferences, and Experimental Results.

A student performing at the Ready level:
- class consistently demonstrates the science knowledge, skills, and practices measured by the Needs Support level of Models, Inferences, and Experimental Results.

A student performing at the Exceeding level:
- class consistently demonstrates the science knowledge, skills, and practices measured by the Needs Support level of Models, Inferences, and Experimental Results.

**Evaluation of Models, Inferences, and Experimental Results**

Students apply science knowledge, skills, and practices to evaluate the validity of scientific information and formulate conclusions and predictions based on that information.

A student performing at the Needs Support level:
- finds information in text that describes a simple experiment.
- identifies similarities and differences between simple experiments.
- determines which simple experiments utilize a given tool, method, or aspect of design.
- understands a simple experimental design.
- determines the scientific question that is the basis for a simple experiment (e.g., the hypothesis).
- predicts the results of an additional trial or measurement in a simple experiment.

A student performing at the Close level:
- finds information in text that describes a moderately complex experiment.
- identifies similarities and differences between moderately complex experiments.
- determines which moderately complex experiments utilized a given tool, method, or aspect of design.
- understands the methods, tools, and functions of tools used in a simple complex experiment.
- understands a moderately complex experimental design.
- determines the scientific question that is the basis for a moderately complex experiment (e.g., the hypothesis).
- evaluates the design or methods of a simple complex experiment (e.g., possible flaws or inconsistencies; precision and accuracy issues).
- predicts the results of an additional trial or measurement in a moderately complex experiment.
- selects one piece of data from a moderately complex data presentation and/or pieces of information in text.
- identifies features of a moderately complex table, graph, or diagram (e.g., axis labels, units of measure).

A student performing at the Ready level:
- finds information in text that describes a complex experiment.
- identifies similarities and differences between complex experiments.
- determines which complex experiments utilized a given tool, method, or aspect of design.
- understands the methods, tools, and functions of tools used in a moderately complex experiment.
- understands a complex experimental design.
- determines the scientific question that is the basis for a complex experiment (e.g., the hypothesis).
- evaluates the design or methods of a complex experiment (e.g., possible flaws or inconsistencies; precision and accuracy issues).
- predicts the results of an additional trial or measurement in a complex experiment.
- selects one piece of data from a complex data presentation and/or pieces of information in text.
- identifies features of a complex table, graph, or diagram (e.g., axis labels, units of measure).

A student performing at the Exceeding level:
- finds information in text that describes a more complex experiment.
- identifies similarities and differences between complex experiments.
- determines which complex experiments utilized a given tool, method, or aspect of design.
- understands the methods, tools, and functions of tools used in a moderately complex experiment.
- understands a complex experimental design.
- determines the scientific question that is the basis for a more complex experiment (e.g., the hypothesis).
- evaluates the design or methods of a complex experiment (e.g., possible flaws or inconsistencies; precision and accuracy issues).
- predicts the results of an additional trial or measurement in a complex experiment.
- selects one piece of data from a more complex data presentation and/or pieces of information in text.
- identifies features of a more complex table, graph, or diagram (e.g., axis labels, units of measure).

**Simple Data Presentations and Experiments for the Elementary School Grade Band**

Concepts/questions encompassed in a simple data presentation or experiment:
- Concepts are likely to be familiar to or readily understood by elementary school students regardless of their exposure to rigorous science instruction even if not fully understood, such as temperature
- Concepts/quantities encompassed in a complex data presentation or experiment:
- Concepts are likely to be familiar to or readily understood by elementary school students regardless of their exposure to rigorous science instruction even if not fully understood, such as temperature

**Moderately Complex Data Presentations and Experiments for the Elementary School Grade Band**

Concepts/questions encompassed in a moderately complex data presentation or experiment:
- Concepts are likely to be familiar to or readily understood by elementary school students regardless of their exposure to rigorous science instruction even if not fully understood, such as temperature

**Complex Data Presentations and Experiments for the Elementary School Grade Band**

Concepts/questions encompassed in a complex data presentation or experiment:
- Concepts are likely to be familiar to or readily understood by elementary school students regardless of their exposure to rigorous science instruction even if not fully understood, such as temperature
- Concepts/quantities encompassed in a more complex data presentation or experiment:
- Concepts are likely to be familiar to or readily understood by elementary school students regardless of their exposure to rigorous science instruction even if not fully understood, such as temperature

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