

Science Grade Band Gr 3-5 SEP & CCC PLDs
Performance Level Descriptors (PLDs)

	Minimally Proficient	Partially Proficient	Proficient	Highly Proficient
	The Minimally Proficient student strives to	The Partially Proficient student is able to	The Proficient student is able to	The Highly Proficient student is able to
Science and Engineering Practices				
Asking Questions and Defining Problems (Q/P)	● identify questions about what would happen if a variable changed ● identify problems that can be solved	● apply questions about what would happen if a variable changed ● apply problems that can be solved ● define a simple design problem that can be solved that includes minimal criteria and constraints ● ask questions that can be investigated	● ask questions about what would happen if a variable is changed ● identify testable and non-testable questions ● ask questions that can be investigated and predict outcomes based on patterns ● describe problems that can be solved ● define a simple design problem that can be solved that includes several criteria for success and constraints	● analyze questions about what would happen if a variable changed ● use prior knowledge to analyze problems that can be solved ● ask questions and analyze predictions ● define and analyze a simple design problem that can be solved that includes several criteria for success and constraints
Developing and Using Models (MOD)	● revise, with support, a model that shows relationships among variables for frequent and regular occurring events ● identify a model that represents a phenomenon	● develop and revise, with support, a model that shows relationships among variables for frequent and regular occurring events ● identify a model that uses an analogy, example, or abstract representation to describe a scientific principle or design solution ● identify a model that predicts a phenomenon ● identify a model to explain cause-and-effect relationships in a system	● identify limitations of models ● develop and/or revise, with support, a model based on evidence ● develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution ● develop and/or use models to describe and/or predict phenomena ● develop a diagram and explain a proposed object, tool, or process ● use a model to explain cause-and-effect relationships in a system	● analyze limitations of models ● independently develop and/or revise a model based on evidence ● analyze models using an analogy, example, or abstract representation to describe a scientific principle or design solution

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Planning and Carrying Out Investigations (INV)	● identify appropriate methods and/or tools for collecting data ● plan and conduct an investigation, with support, to produce data to serve as the basis for evidence	● apply appropriate methods and/or tools for collecting data ● identify variables that changed in an investigation	● plan and conduct an investigation, with support, to produce data to collect appropriate evidence, using fair tests in which variables are controlled and the number of trials considered ● evaluate appropriate methods and/or tools for collecting data ● make observations and/or measurements to produce data to provide appropriate evidence to explain a phenomenon or test-design solution ● describe predictions about effects of changing variables ● test two different models of the same proposed object, tool, or process to determine which best meets desired outcome	● plan and conduct an investigation independently to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered ● evaluate predictions about effects of changing variables ● make and evaluate observations and/or measurements to produce data to provide appropriate evidence to explain a phenomenon or test design solution
Analyzing and Interpreting Data (DATA)	● identify data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) ● describe and/or compare quantitative data points, and display the data using simple graphs ● identify appropriate graphical representation of data	● represent data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) ● identify data that explains a phenomenon using logical reasoning, mathematics, and/or computation	● represent data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) and identify patterns that indicate relationships ● analyze and interpret data to make sense of phenomena using logical reasoning, mathematics, and/or computation ● compare and contrast data sets from different groups in order to describe similarities and differences in findings ● analyze data to refine a problem statement or the design of a proposed object, tool, or process	● represent and analyze data in tables and/or various graphical displays (bar graphs, pictographs, and/or pie charts) and explain patterns that indicate relationships ● compare and contrast data sets from different groups in order to identify flaws that could affect accurate conclusions

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			● use data to evaluate and refine design solutions	
Using Mathematics and Computational Thinking (MCT)	● compare graphs and/or charts generated from simple algorithms	● identify which tool is best used to collect specific data ● use graphs and/or charts generated from simple algorithms to compare alternative solutions to an engineering problem	● decide if qualitative or quantitative data are best used to answer a testable question ● organize simple data sets to reveal patterns that suggest relationships ● describe, measure, estimate, and/or graph quantities to address scientific and engineering questions and problems ● create and/or use graphs and/or charts generated from simple algorithms to compare alternative solutions to an engineering problem	● organize simple data sets and analyze revealed patterns that suggest relationships ● create and/or use graphs and/or charts generated from moderately complex algorithms to compare alternative solutions to an engineering problem
Constructing Explanations and Designing Solutions (E/S)	● identify observed relationships ● identify the best design solution from given information ● identify scientific ideas that solve design problems	● use evidence to support an explanation or design a solution to a problem ● describe a solution to a problem based on how well it meets criteria and constraints ● describe scientific ideas that solve design problems	● construct an explanation of observed relationships ● use evidence to construct and support an explanation or design a solution to a problem ● identify the evidence that supports particular points in an explanation ● apply scientific ideas to solve design problems ● generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution	● analyze and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution ● demonstrate and justify how the evidence supports an explanation

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Engaging in Argument from Evidence (ARG)	● identify arguments based on the evidence presented	● compare arguments based on the evidence presented ● use data to identify claims	● evaluate arguments based on the evidence presented ● distinguish among facts and reasoned judgment based on research findings ● construct and/or support an argument with evidence, data, and/or a model ● use data to evaluate claims about cause and effect ● make a claim about the merit of a solution to a problem by citing relevant evidence	● refine arguments based on an evaluation of the evidence presented ● evaluate solutions to problems by citing relevant evidence about how it meets criteria and constraints
Obtaining, Evaluating, and Communicating Information (INFO)	● read and comprehend simple scientific texts and/or other reliable media	● read and comprehend simple scientific texts and/or other reliable media and summarize scientific and technical ideas ● communicate scientific and/or technical information in tables, diagrams, and charts	● read and comprehend short but complex texts and summarize scientific and technical ideas and describe how they are supported by evidence ● compare and/or combine across complex texts and/or other reliable media to support the engagement in other scientific and/or engineering practices	● read and comprehend short but complex texts to summarize scientific and technical ideas to describe patterns and evidence about phenomena

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Cross-cutting Concepts				
Patterns (PAT)	●recognize that patterns in the natural world can be used to classify objects	●recognize that patterns in the natural world can be used to classify objects to explain phenomena and make predictions	●identify similarities and differences in order to sort and classify ●identify patterns related to time and use the patterns to make predictions	●demonstrate similarities and differences in order to sort and classify ●demonstrate patterns related to time and use them to make predictions
Cause and Effect (C/E)	●identify and test, with support, causal relationships	●identify and test, with support, causal relationships and use these relationships to explain change	●routinely identify and test causal relationships and use these relationships to explain change ●describe how events that occur together with regularity might or might not be a cause-and-effect relationship	●identify whether or not events that occur together with regularity are an example of a cause-and effect relationship
Structure and Function (S/F)	●recognize that different materials have different structures	●recognize that substructures have shapes and parts that serve functions	●demonstrate that different materials have different substructures, which can sometimes be observed ●describe that substructures have shapes and parts that serve functions	●demonstrate how substructures have different shapes and parts that are related to their function
Systems and Systems Models (SYS)	●identify a system from given information	●describe the function of a given system	●demonstrate that a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot ●describe a system in terms of its components and their interactions	●describe how two systems interact
Stability and Change (S/C)	● identify that changes occur rapidly or slowly over time	● demonstrate that some changes take place rapidly and others change slowly over time	● measure change in terms of differences over time, and observe that change may occur at different rates ● demonstrate how some systems appear stable, but over long periods of time they will eventually change	● describe the stability and change of a system using measured change as evidence

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Scale, Proportion, and Quantity (SPQ)	● use relative scales to allow objects and events to be compared and described	● differentiate very small scales from very large scales within observable phenomena by identifying differences in measurements	● recognize that natural objects and observable phenomena exist from the very small to the immensely large ● use standard units to measure and describe physical quantities such as weight, time, temperature, and volume	● use models to explain phenomena using measurements as evidence
Energy and Matter (E/M)	● identify that matter is made of particles ● identify what energy is	● describe that matter is made of particles ● identify that energy can be transferred	● demonstrate that matter is made of particles and that energy can be transferred in various ways and between objects ● observe the conservation of matter by tracking matter flows and cycles before and after processes to recognize that the total mass of substances does not change	● demonstrate conservation of matter by tracking matter cycles before and after processes and recognizing that the total mass of substances does not change ● demonstrate the conservation of energy by tracking the flow of energy in a variety of systems