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| Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. | | | | |
| With guidance, plan and conduct an investigation collaboratively with peers (for K). | | | | |
| Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. | | | | |
| Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question. | | | | |
| Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons. | | | | |
| Make observations (firsthand or from media) and/or measurements of a proposed object or tool or solution to determine if it solves a problem or meets a goal. | | | | |
| Make predictions based on prior experiences. | | | | |

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| Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. | | | | |
| Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials is considered. | | | | |
| Evaluate appropriate methods and/or tools for collecting data. | | | | |
| Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. | | | | |
| Make predictions about what would happen if a variable changes. | | | | |
| Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success. | | | | |

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| Planning and carrying out investigations to answer questions or test solutions to problems in 6–8 builds on K–5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or design solutions. | | | | |
| Plan and carry out investigations individually and collaboratively, identifying independent and dependent variables and controls. | | | | |
| Discuss and evaluate the accuracy of various methods for collecting data. | | | | |
| Collect data and generate evidence to answer scientific questions or test design solutions under a range of conditions. | | | | |
| Formulate a question that can be investigated within the scope of the classroom, school laboratory, or field with available resources and, when appropriate, frame a hypothesis (a possible explanation that predicts a particular and stable outcome) based on a model or theory | | | | |

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| Planning and carrying out investigations to answer questions or test solutions to problems in 9–12 builds on K–8 experiences and progresses to include investigations that build, test, and revise conceptual, mathematical, physical, and empirical models. Planning and carrying out investigations may include elements of all of the other practices. | | | | |
| Plan and carry out investigations individually and collaboratively and test designs as part of building and revising models, explaining phenomena, or testing solutions to problems. Consider possible confounding variables or effects and ensure the investigation's design has controlled for them. | | | | |
| Evaluate various methods of collecting data (e.g., field study, experimental design, simulations) and analyze components of the design in terms of various aspects of the study. Decide types, how much, and accuracy of data needed to produce reliable measurement and consider any limitations on the precision of the data (e.g., number of trials, cost, risk, time). | | | | |
| Select appropriate tools to collect, record, analyze, and evaluate data. | | | | |
| Plan and carry out investigations and test design solutions in a safe and ethical manner including considerations of environmental, social, and personal impacts. | | | | |