

Scientific Inquiry Formative Assessment Rubric for Middle School Students

COMPONENT	Novice (Level 1)	Intermediate (Level 3)	Skillful (Level 5)
<p>I. Raising Questions and Proposing Tentative Explanations</p> <p>CINQ.1, CINQ.2 and CINQ.5</p>	<ul style="list-style-type: none"> • Your observations are limited and may include opinions and/or inferences. • The question you identified is vague or cannot be answered by a scientific investigation. 	<ul style="list-style-type: none"> • Your observations are objective and systematic, but limited in number and depth. • You have identified a testable question without a proposed scientific explanation. 	<ul style="list-style-type: none"> • Your observations are objective, systematic, varied, and enhanced by tools or diagrams. • You have identified a testable, open-ended question and proposed a scientific explanation.
<p>Examples from your work:</p>			
<p>II. Designing Controlled and Replicable Tests to Answer Scientific Questions</p> <p>CINQ.3, CINQ.4 and CINQ.5</p>	<ul style="list-style-type: none"> • Your procedure is not clear about what you changed and what you kept the same or what you measured to answer the question. • Your experiment cannot be repeated because it is confusing or lacking detail. 	<ul style="list-style-type: none"> • Your procedure describes a general plan to change the independent variable, measure the dependent variable and keep some factors constant. • Your experiment cannot be repeated because variables are not measurable or quantities are not stated. 	<ul style="list-style-type: none"> • Your procedure describes quantitatively how you plan to change the independent variable, measure the dependent variable and keep everything else constant. • Your experiment is replicable and it can generate data to answer the question.
<p>Examples from your work:</p>			

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<p>III. Recording and working with data</p> <p>CINQ.6 and CINQ.7</p>	<ul style="list-style-type: none"> You collected and recorded too little data to find patterns or be confident in the results. Data are displayed in incomplete or disorganized tables, and graphs are inappropriate for the data or are not constructed properly. 	<ul style="list-style-type: none"> You collected and recorded appropriate data to address the question, but not enough to identify patterns or to be confident in the results. Data are displayed systematically in tables, but some labels or measurement units may be missing. Graphs are labeled correctly, but there are minor scaling or plotting errors. 	<ul style="list-style-type: none"> You collected and recorded enough appropriate data to answer the question, be confident in the results, and you analyzed the data to find patterns. Data are displayed systemically and completely in tables that include labels and measurement units. Appropriate graphs clarify the conclusion and are labeled, scaled and plotted correctly.
<p>Examples from your work:</p>			
<p>IV. Communicating and critiquing evidence-based conclusions</p> <p>CINQ.8, CINQ.9 and CINQ.10</p>	<ul style="list-style-type: none"> You restated data or retold the procedure, but did not form a conclusion. You did not suggest any changes that could improve the investigation. 	<ul style="list-style-type: none"> Your conclusion summarizes data from your experiment, but you did not explain how the data relates to a proposed scientific explanation. You suggested changes to the investigation, but it is not clear how they would improve the investigation. 	<ul style="list-style-type: none"> Your conclusion states and interprets data from your experiment as evidence to support or refute the scientific explanation you proposed. You suggested changes to the investigation that would increase confidence in the conclusion.
<p>Examples from your work:</p>			