





## Niagara Falls City School District

630 66th Street, Niagara Falls, NY 14304

## Science - Grade 7 - Standard 1, Analysis, Inquiry and Design - Scientific Inquiry Skills Matrix (Weeks 10-40) Final

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NYS Performance Indicators	Objectives	Text Resources	Resources (Suggested Activities)	Cross-Curriculum Connections	Assessment Items
	<p style="text-align: center;"><b>STANDARD 1</b></p> <p style="text-align: center;"><b>Analysis, Inquiry and Design</b></p> <p style="text-align: center;"><b>SCIENTIFIC INQUIRY</b></p>				

**The following Standard 1 Performance Indicators can be found in the textbook reference section.**

**These Standards should be aligned with content throughout the year where applicable.**

**KEY IDEA 1**

**The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.**

*Scientific**Inquiry**S1.1*

Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations.

S1.1a Formulate questions about natural phenomena.

S1.1b Identify appropriate references to investigate a question.

S1.1c Refine and clarify questions so that they are subject to scientific investigation.

*Scientific**Inquiry**S1.2*

Construct explanations independently for natural phenomena, especially by proposing preliminary visual models

of phenomena.

S1.2a Independently formulate a hypothesis.

S1.2b Propose a model of a natural phenomenon.

S1.2c Differentiate among observations, inferences, predictions, and explanations.

*Scientific*

*Inquiry*

*S1.3*

Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.

*Scientific*

*Inquiry*

*S1.4*

Seek to clarify, to assess critically, and to reconcile with their own thinking the ideas presented by others, including peers, teachers,

authors, and scientists.

## KEY IDEA 2

**Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.**

*Scientific*

*Inquiry*

*S2.1*

Use conventional techniques and those of their own design to make further observations and refine their explanations, guided by a need for more information.

S2.1a Demonstrate appropriate safety techniques.

S2.1b Conduct an experiment designed by others.

S2.1c Design and conduct an experiment to test a hypothesis.

S2.1d Use appropriate tools and conventional techniques to solve problems about the natural world,

including:

- \* measuring
- \* observing
- \* describing
- \* classifying
- \* sequencing

*Scientific*

*Inquiry*

*S2.2*

Develop, present, and defend formal research proposals for testing their own explanations of common phenomena, including ways of obtaining needed observations and ways of conducting simple controlled experiments.

S2.2a	Include appropriate safety procedures.				
S2.2b	Design scientific investigations (e.g., observing, describing, and comparing; collecting samples; seeking more information, conducting a controlled experiment; discovering new objects or phenomena; making models)				
S2.2c	Design a simple controlled experiment.				
S2.2d	Identify independent variables (manipulated), dependent variables (responding), and constants in a simple controlled experiment.				
S2.2e	Choose appropriate sample size and number of trials.				

*Scientific*

*Inquiry*

S2.3

Carry out their research proposals, recording observations and measurements (e.g., lab notes, audiotape, computer disk, videotape) to help assess the explanation.

S2.3a Use appropriate safety procedures.

S2.3b Conduct a scientific investigation.

S2.3c Collect quantitative and qualitative data.

**KEY IDEA 3**

**The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.**



*Scientific**Inquiry**S3.1*

Design charts, tables, graphs, and other representations of observations in conventional and creative ways to help them address their research question or hypothesis.

S3.1a Organize results, using appropriate graphs, diagrams, data tables, and other models, to show relationships.

S3.1b Generates and uses scales, creates legends, and appropriately label axes.

*Scientific**Inquiry**S3.2*

Interpret the organized data to answer the research question or hypothesis and to gain insight into the

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	PROBLEM.				
	S3.2a Accurately describe the procedures used and the data gathered.				
	S3.2b Identify sources of error and the limitations of data collected.				
	S3.2c Evaluate the original hypothesis in light of the data.				
	S3.2d Formulate and defend explanations and conclusions as they relate to scientific phenomena.				
	S3.2e Form and defend a logical argument about cause-and-effect relationships in an investigation.				
	S3.2f Make predictions based on experimental data.				
	S3.2g Suggest improvements and recommendations for further studying.				
	S3.2h Use and interpret graphs and data tables.				74, 75

*Scientific*

*Inquiry*

*S3.3*

Modify their personal understanding  
of phenomena based on evaluation of  
their hypothesis.

Last updated: 7/27/2010