Queens College – Science Teacher Careers

2012 Investigative Science Rubric for Students [2 pages]

HOW DO WE BEGIN?

Student 1. _____

Names: 2. _____

	Criteria	Standard	Yes/No?
EXPLORATION	Building and Linking to Prior Knowledge	Have you a **hardbound, non-spiral notebook** to record all data, thoughts and rough notes? Have you gathered information from multiple sources and compiled a Bibliography?	
	Preliminary Observations and Explanations	Have you collected **appropriate materials and instruments** to conduct your preliminary observations?	
		Are you using scientific concepts to explain preliminary observations?	
	Test preliminary explanations	Have you tested preliminary explanations in ways that allow the development of investigative questions?	
INVESTIGATION	Create a Question to Investigate	Have you constructed a clear **Science Inquiry investigative question,** based upon results of your preliminary explorations?,	
	Plan and Design Experiment	Have you designed a controlled scientific investigation that includes systematic observation and accurate measurements. Have you identified an independent variable and dependent variable(s)?	
	Data Collection	Have you **maintained a Lab notebook or Research Log**; and collected data using appropriate SI units and in ways that others can verify?	
	Materials & Methods	Have you accurately recorded your actual step-by-step **methods, observations, thought and data** in your Lab Notebook or Research Log? Does your plan include a **sufficient number of samples or trials** in your experiments?	

The 2012 ISS/Fair Planning Committee
- Contact Prof Mark Miksic at Queens College - 718-997-3379
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HAVE WE TOUCHED ALL THE BASES?

	Criteria	Standard	Yes/No?
ANALYSIS	Preliminary Observations and Explanations	Have you demonstrated conceptual understanding by using scientific concepts to explain your observations?	
	Data Presentation & Representation of Procedures	Do you **represent your data**, procedures, and results employing numbers, tables, graphs, drawings, and artwork in ways which communicate your investigations?	
	Data Interpretation and Scientific Argument	Do you fully understand your evidence and your data?	
		Can you **explain your procedures** and the underlying scientific concepts?	
	Conclusions	Can you describe and **support your conclusions** based upon your evidence?	
	Written and Oral Communication	Are your procedures and results presented **in clear and logical language?**	
APPLICATION	New Questions	Have you recorded new questions which were generated from your investigations?	
	Alternative Explanations and Next Steps	Have you considered **other possible explanations** for your results? Have you proposed other investigations you would perform given more time and resources?	
	Sources of Error Trouble-shooting	Do you recognize and state possible **sources of error** in your procedure and data collection? What are the **limitations in accuracy and precision** of the data and in your measurement techniques?	
GENERAL	Creativity Originality	How do you demonstrate creativity and inventiveness in the approach, design, conduct, and presentation of your research project?	
	Clarity and Organization	Are you careful, organized, and logical in planning and carrying out your investigations? Are your **presentations clear and organized** to allow others to understand and reproduce the investigations?	
	Communication: Written and Oral	In your presentation, have you demonstrated a thorough understanding of your investigation and its possible applications?	

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