Student Name	Subject/Teacher	Assignment	Date

MSMHS Rubric 4: Scientific Research

Student applies scientific knowledge and concepts to a variety of investigative tasks. *6/2016 Edition*

Criteria	Exemplary	Approaching Exemplary	Proficient	Approaching Proficient	Beginning
Identify Problem and Develop Hypothesis (Introduction)	• Clearly explains the problem citing background knowledge and supporting content. • Identifies the correct independent and dependent variables and demonstrates a connection to the hypothesis. • Develops a hypothesis using background knowledge and supporting content appropriately		• Identifies the problem citing background knowledge or supporting content appropriately • Identifies all variables (independent, dependent, constant) • States an applicable hypothesis		• Does not correctly identity the problem • Does not correctly identify independent and dependent variables • Does not develop a hypothesis
Design and Perform Experiment (Method)	• Selects and develops a strategy that matches the stated problem including a controlled experiment if applicable, or, follows and communicates the given procedure clearly and concisely • Applies and understands all safety precautions		• Selects a strategy that matches the stated problem including a controlled experiment if applicable or, follows and communicates a strategy that matches the stated problem • Applies and understands all safety precautions		• Strategy does not match the problem, or, does not follow or communicate the strategy • Does not apply safety precautions
Collect and Organize Data (Results)	• Synthesizes raw data into analyzed data without interpreting what it means • Selects and appropriately titles data tables, graphs, and/ or diagrams including units • Concisely describes/ summarizes data		• Accurately presents all measured data without interpreting what it means • Organizes data into appropriate tables, graphs, and/ or diagrams including units • Adequately describes/ summarizes data		• Inaccurately measures, records and labels data • Lacks skills to organize data into data tables, graphs, and diagrams • No summary of data
Draw Conclusions (Discussion)	• Makes claim using scientific concepts with connections to the hypothesis • Uses specific evidence from the data to explain results supporting the claim • Uses appropriate reasoning to answer the research question citing background knowledge and supporting content.		• Makes a claim referring to the hypothesis • Uses evidence (data) to support the claim. • Use appropriate reasoning to answer the research question		• Makes an incorrect claim • Claim is not supported by data • Research question is not appropriately answered
Discuss Validity (Discussion)	• Reliability of data and validity of experiment is defined • Analyze the effect of experimental errors on the data • Develops procedural improvements or proposes alternatives or additions		• Reliability of data and validity of experiment is referenced • Identifies some possible experimental errors		• Reliability of data and validity of experiment is not discussed • Experimental errors are not identified

Additional Comments: