### Nature of Science:

Students will demonstrate the ability to work collaboratively and individually to generate testable questions or define problems, plan and conduct investigations using a variety of research methods in various settings, analyze and interpret data, reason with evidence to construct explanations in light of existing theory and previous research and effectively communicate the research processes and conclusions. (Scientific inquiry & engineering design)

<table>
<thead>
<tr>
<th>Practices</th>
<th>4 In Addition to Level 3</th>
<th>3 Competent</th>
<th>2 Emergent</th>
<th>1 Limited</th>
</tr>
</thead>
</table>
| Generate testable questions or define problems | I can develop testable questions and/or accurately define problems that relate to the investigation. I can make a logical prediction that relates to the investigation. **NGSS Science/Engineering Practices 3-5:** Specify qualitative relationships  
- Ask questions that can be investigated & predict outcome when a variable is changed  
- Use prior knowledge to describe problems that can be solved  
Define a simple design problem that can be solved | I can develop a question(s) and/or define a problem(s) that are related to the investigation. | I can ask a question(s) that is not testable and/or not related to the investigation. My prediction does not relate to the investigation. |
| Research, plan, and conduct investigations | I can use research to develop a plan and conduct an investigation. **NGSS Science/Engineering Practices 3-5:** Include investigations that control variables and provide evidence to support explanations or design solutions  
- Plan & conduct a collaborative investigation  
- Make predictions about what would happen if variable is changed  
- Make observations &/or measurements to produce data to serve as evidence  
- Evaluate method/tool for collecting data  
Test two different models to determine which is better | I can research, plan, and conduct investigations, but my work is incomplete and/or inaccurate. **Student may be able to do all parts, but not at competency level.** | I can research, plan, or conduct investigations. **Student may be able to do some parts.** |
| Analyze and interpret data | Inquiry packet: 6, 10 | I can analyze data to draw conclusions and support my thinking with evidence. “Evidence” could be from research as well as from data. | I can collect accurate data and analyze it to draw a conclusion(s). **Science/Engineering Practices 3-5:** Introduce quantitative data collection and conduct multiple trials of qualitative observations  
• Represent data in tables &/OR graphical displays  
• Analyze & interpret data using reasoning &/OR mathematics  
• Compare & contrast data collected by different groups  
Use data to evaluate and/OR refine a problem or design | I can collect, analyze, **and** interpret data, but the work is incomplete and/OR inaccurate. Student may be able to do all parts, but not at competency level. | I can collect, analyze, **or** interpret data. Student may be able to do some parts. |
| Construct explanations using evidence and effective communication | Reflection: 1, 2  
DOK 4: 1, 4 | I can apply scientific ideas and/OR make real world connections to further support my conclusions. | I can use specific evidence from the data to draw and communicate a detailed conclusion(s) using evidence. **Science/Engineering Practices 3-5:** Use evidence to construct explanations that describe and predict  
• Use evidence to construct or support an explanation or design  
• Apply scientific ideas to solve design problems  
• Generate and compare multiple solutions to a problem  
Communicate explanation in speaking and/OR writing using tables, diagrams, and/OR charts | I can recognize a pattern(s) in my data to draw and communicate a basic conclusion(s) about the investigation. | I can draw and communicate an incomplete or inaccurate conclusion about the investigation. |